SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING CHEMISTRY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Rishika want to investigate the reason for unpredicted explosion of home boiler. After explosion the following deposits were found on analysis of boiler pieces. **$CaSO_4$, $CaSiO_3$, $MgSiO_3$, Fe_2O_3, $Mg(OH)_2$, Na_2FeO_2, $CaCO_3$.** Looking at the data Rishika discussed about how boiler has suffered before explosion predicting the impurities present in water. Can you write the report discussing the attributes for explosion?	8 Marks
	b)	Write the chemistry of estimation of water hardness by EDTA method.	6 Marks

(OR)

2.	a)	What is the principle of reverse osmosis? Explain the process of reverse osmosis.	7 Marks
	b)	"Reverse osmosis is advantageous over ion exchange process". Justify the statement.	7 Marks

UNIT-II

3.	a)	Define self lubricating plastic. Give example and write its preparation. Name some specific of its applications.	7 Marks
	b)	Explain doped conducting polymers.	7 Marks

(OR)

4.	a)	Differentiate short and long fibre-reinforced composites.	7 Marks
	b)	What are the advantages of composite material? Mention its applications.	7 Marks

UNIT-III

5.		Explain the following tools with suitable examples. i) Alternative feed stocks. ii) Alternative products. iii) Alternative reaction conditions.	14 Marks

(OR)

6.	a)	Explain the synthesis of Biodiesel.	6 Marks
	b)	Explain sol-gel synthesis of Nanomaterials.	8 Marks

UNIT-IV

7.		Define sensor. Explain the working principle and construction of potentiometric sensor.	14 Marks

(OR)

8.	a)	Discuss the chemistry, construction and future application of Hydrogen - Oxygen Fuel cell used in earlier space missions.	8 Marks
	b)	Interpret the chemistry involved in Li-polymer battery during charging and discharging process.	6 Marks

UNIT-V

9.	a)	Classify the lubricants based on their state.	7 Marks
	b)	Examine the influence of 'pH' and 'purity of metal' on the rate of corrosion.	7 Marks

(OR)

10.	a)	Analyze the possible means of rendering a metal cathodic to protect it from corrosion.	7 Marks
	b)	What is metallic corrosion? Pin holes on tin coated iron are more prone to corrosion of iron than those on zinc coated iron. Why?	7 Marks

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

ENGINEERING PHYSICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Illustrate how a laser is different from other light sources. 4 Marks
   b) Explain the various types of optical fibers. 10 Marks

(OR)

2. a) Derive Einstein's coefficients for laser action. 10 Marks
   b) The numerical aperture of an optical fiber is 0.5 and core refractive index is 1.54. Find refractive index of the cladding and critical angle. 4 Marks

UNIT-II

3. a) Show that the energies of a particle in a one dimensional potential box are quantized. 10 Marks
   b) Write the conclusions of Kronig - Penney model of periodic potentials. 4 Marks

(OR)

4. a) Define Fermi level. What is Fermi-Dirac distribution and how it effect with temperature. 8 Marks
   b) Find the temperature at which there is a 1% probability that a state with energy 0.5 eV above Fermi energy. 6 Marks

UNIT-III

5. a) How do you apply frequency dependence of polarization to analyse variation of dielectric constant of material as frequency of alternating electric field changes from radio wave to optical frequency range? 5 Marks
   b) With usual notations show that $\alpha_e = \varepsilon_o(\varepsilon_r - 1)/N$. 9 Marks

(OR)

6. a) Classify semiconductors based on the band gap. 4 Marks
   b) Obtain an expression for the conductivity of intrinsic semiconductors in terms of their carrier concentration and carrier mobility. 7 Marks
   c) A semiconductor is known to have an electron concentration of $5 \times 10^{17}/m^3$. If the electron drift velocity is 350m/s in an electric field of 1000V/m, calculate the conductivity of this material. 3 Marks

UNIT-IV

7. a) Define reverberation and reverberation time. Summarize the condition for basic requirement of acoustically good hall. 11 Marks
   b) A cinema hall has a volume of 7500 m^3. What should be the total absorption in the hall if the reverberation time of 1.5 seconds is to be maintained? 3 Marks

(OR)

8. a) Describe the BCS theory of superconductivity. 9 Marks
   b) What are cooper pairs? 2 Marks
   c) Calculate the critical current for a lead wire of 0.5mm radius at 4.2 K. Lead has a critical temperature 7.18 K and $H_o = 6.5 \times 10^4 Am^{-1}$. 3 Marks

UNIT-V

9. a) What are nano materials? List any four applications of nano materials. 6 Marks
   b) Suggest and describe a method which can give us an understanding of the possible crystal structure by using a mono chromatic X- ray diffraction. 8 Marks

(OR)

10. a) Derive an expression for the interplanar spacing in case of a cubic structure. 8 Marks
    b) Discuss the physical, chemical and thermal properties of nano materials. 6 Marks

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

MATRICES AND NUMERICAL METHODS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Construct the Diagonal matrix $A=\begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$. 14 Marks

(OR)

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

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

UNIT-II

3. a) Using the bisection method, find a real root of the equation **x log x=3.375** lying between 2 and 3. 7 Marks

b) If P is the pull required to lift a load W by means of a pulley block, evaluate a linear equation of the form **P= mW+c** connecting P and W, using the following data: 7 Marks

P	12	15	21	25
W	50	70	100	120

Where P and W are taken in kg-wt. Compute P when W=150 kg-wt.

(OR)

4. a) Using bisection method, find an approximate root of the equation $\sin x = \frac{1}{x}$ that lies between x=1 and x=1.5(measured in radians). Carry out computation up to **5th** stage. 7 Marks

b) A chemical company, wishing to study the effect of extraction time on the efficiency of an extraction operation, obtained the data shown in the following table: 7 Marks

Extraction time in minutes (x)	27	45	41	19	3	39
Efficiency (y)	57	64	80	46	62	72

Fit a straight line to the given data by the method of least squares.

UNIT-III

5. a) Evaluate $f(1.28)$ if $f(1.15) = 1.0723, f(1.20) = 1.0954, f(1.25) = 1.1180$ and $f(1.30) = 1.1401$ — 7 Marks

   b) Construct the unique polynomial $P(x)$ of degree 2 or less such that $P(1) = 1, P(3) = 27, P(4) = 64$ using Lagrange's interpolation formula. — 7 Marks

(OR)

6. a) The following table gives the viscosity of a lubricant as a function of temperature — 7 Marks

Temperature ^{0}C	100	120	150	170
Viscosity	10.2	7.9	5.1	4.4

Using Lagrange's formula, find the viscosity of the lubricant at a temperature 130^0C.

   b) Develop the relations between the difference operators — 7 Marks

(i) $\mathbf{E = e^{hD}}$ (D is the differential operator) (ii) $(1+\Delta)(1-\nabla) = 1$

UNIT-IV

7. a) The population of a certain town (as obtained from census data) is shown in the following table — 7 Marks

Year	1951	1961	1971	1981	1991
Population (in thousands)	19.96	39.65	58.81	77.21	94.61

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

   b) State Simpson's 1/3 rule and applying it to evaluate $\int_0^{\frac{\pi}{2}} \sqrt{\sin\theta}\, d\theta$. — 7 Marks

(OR)

8. a) The following data gives the velocity of a particle for 20 seconds at an interval of 5 seconds. Obtain the initial acceleration using the data — 7 Marks

Time t (sec)	0	5	10	15	20
Velocity v (m/sec)	0	3	14	69	228

   b) Evaluate $\int_0^6 x \sec x\, dx$ taking eight sub intervals by Trapezoidal rule. — 7 Marks

UNIT-V

9. Find **y(0.5), y(1)** given that **dy/dx = x-y, y(0)=1,** with **h=0.5** using modified Euler method. — 14 Marks

(OR)

10. a) Evaluate ***y*(0.8)** using Runge-Kutta method of order 4, given $y' = \sqrt{x+y}$ and ***y* = 0.41** at ***x* = 0.4**. — 7 Marks

    b) Using Milne's predictor and corrector formulae, find ***y*(4.4)** given $5xy' + y^2 - 2 = 0, y(4) = 1, y(4.1) = 1.0049, y(4.2) = 1.0097$ and ***y*(4.3)=1.0143**. — 7 Marks

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MULTI-VARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Obtain the solution of the differential equation $\frac{dy}{dx}+\frac{y\cos x+\sin y+y}{\sin x+x\cos y+x}=0$. 7 Marks

   b) Obtain the orthogonal trajectories of circles $r=a\cos\theta$. 7 Marks

(OR)

2. a) Design a mathematical equation for the orthogonal trajectories of the family of curves $r=2a(\cos\theta+\sin\theta)$ 7 Marks

   b) If the temperature of the body is changing from 100°C to 70°C in 15 minutes estimate the time for which the body comes to 40°C, the temperature of air being 30°C. 7 Marks

UNIT-II

3. a) Determine the solution of $(D^3-5D^2+8D-4)y=e^{2x}$. 7 Marks

   b) Apply variation of parameter method and obtain the solution of $\frac{d^2y}{dx^2}+4y=\tan 2x$. 7 Marks

(OR)

4. a) Applying the method of variation of parameters, solve the differential equation $(D^2-2D)y=e^x\sin x$. 7 Marks

   b) Solve the equation $\frac{d^2y}{dx^2}-y=\frac{2}{1+e^x}$ by the method of variation of parameters. 7 Marks

UNIT-III

5. a) Estimate the extreme values of the function $f(x,y)=x^3+3xy^2-3x^2-3y^2+4$. 7 Marks

   b) If $u=x+y+z, y+z=uv, z=uvw$ show that $\frac{\partial(x,y,z)}{\partial(u,v,w)}=u^2v$. 7 Marks

(OR)

6. a) If $u=f(2x-3y,3y-4z,4z-2x)$ then prove that $\frac{1}{2}\frac{\partial u}{\partial x}+\frac{1}{3}\frac{\partial u}{\partial y}+\frac{1}{4}\frac{\partial u}{\partial z}=0$. 7 Marks

   b) If $u=\frac{yz}{x}, v=\frac{zx}{y}, w=\frac{xy}{z}$ show that $\frac{\partial(u,v,w)}{\partial(x,y,z)}=4$. 7 Marks

UNIT-IV

7. a) Find the perimeter of the cardioid $r = a(1 - \cos\theta)$ 7 Marks

b) Change the order of integration and evaluate $\int_0^b \int_0^{\frac{a\sqrt{b^2-y^2}}{b}} xy\,dxdy$. 7 Marks

(OR)

8. Evaluate $\int_0^1 \int_{x^2}^{2-x} xy\,dxdy$ by the change of order technique. 14 Marks

UNIT-V

9. a) If, $f = \left(x^2 + y^2 + z^2\right)^{-n}$ then evaluate div (grad f) and further determine n if div (grad f) = 0. 7 Marks

b) Apply Stokes theorem evaluate $\oint_C [(x + y)dx(2x - z)dy + (y + z)dz]$ where C is the boundary of the triangle with vertices (2,0,0), (0,3,0) and (0,0,6). 7 Marks

(OR)

10. a) Find the directional derivative of $\mathbf{xyz^2 + xz}$ at (1,1,1) in a direction of the normal to the surface $\mathbf{3xy^2 + y = z}$ at (0,1,1) 7 Marks

b) Find the angle between the normal to the surface $\mathbf{x^2 = yz}$ at the points (1,1,1) and (2,4,1) 7 Marks

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TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. List the various features of effective communication and provide some tips for effective communication. 14 Marks

(OR)

2. Discuss the different levels of communication in detail. 14 Marks

UNIT-II

3. What is passive listening and how can it be advantageous/disadvantageous in some situations? 14 Marks

(OR)

4. What are the various traits of a good listener? Explain how each type of non-verbal communication relates to listening. 14 Marks

UNIT-III

5. Discuss a few of paralinguistic features. 14 Marks

(OR)

6. Suggest ways to enhance confidence, clarity and fluency in speeches and presentations. 14 Marks

UNIT-IV

7. Discuss briefly the mechanics of reading skill. 14 Marks

(OR)

8. Explain the following in about 150 words each: 14 Marks
   i) Study skills. ii) Inductive logic.
   iii) Lexical meaning. iv) SQ3R.

UNIT-V

9. Describe how you achieve conciseness and flow in technical writing with the help of suitable examples. 14 Marks

(OR)

10. Why has technical writing become too important for the industry and organization? Explain the various characteristics of technical writing. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

ELECTRIC CIRCUITS

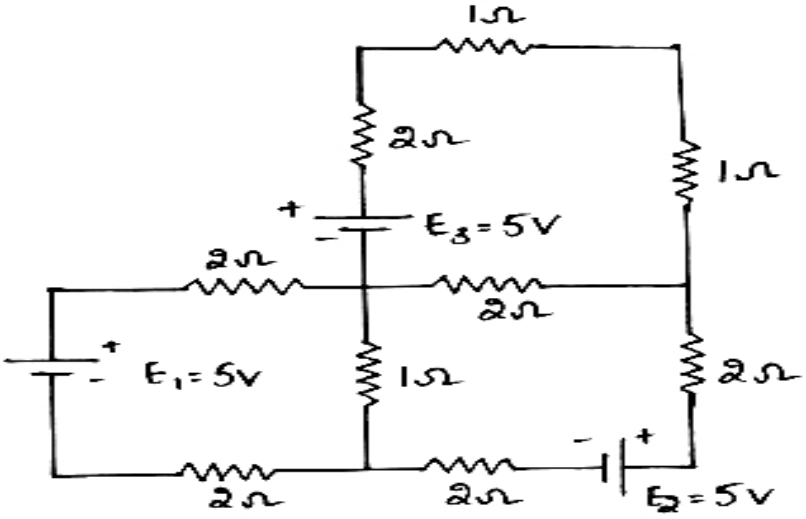
[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

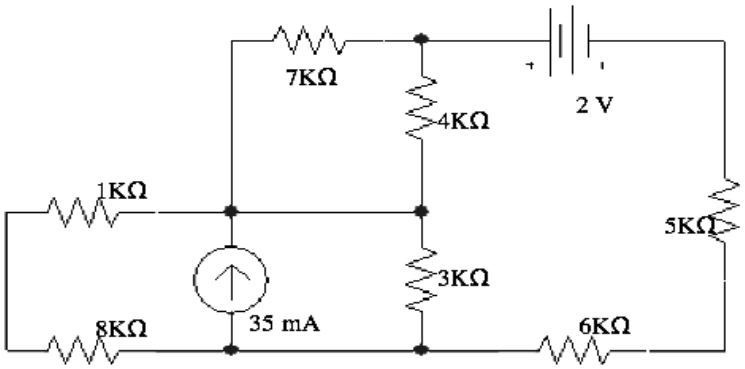
UNIT-I

1. Using nodal method, find the battery current in the circuit. 14 Marks

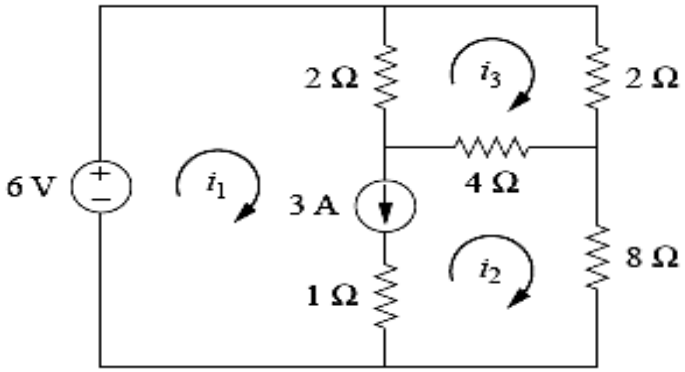


(OR)

2. a) First simplify the network shown in figure and apply the nodal analysis to solve current passing through 3 kΩ. 9 Marks



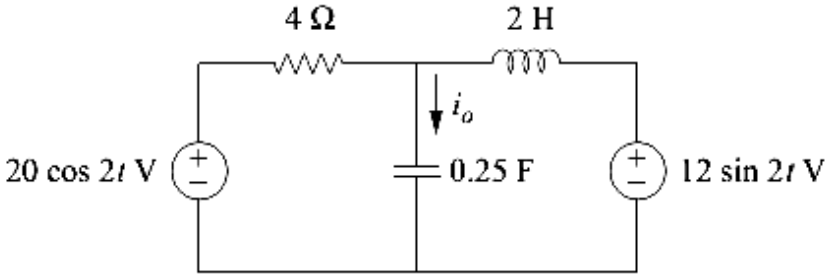
b) Write the mesh equations for the circuit shown in figure. 5 Marks



UNIT-II

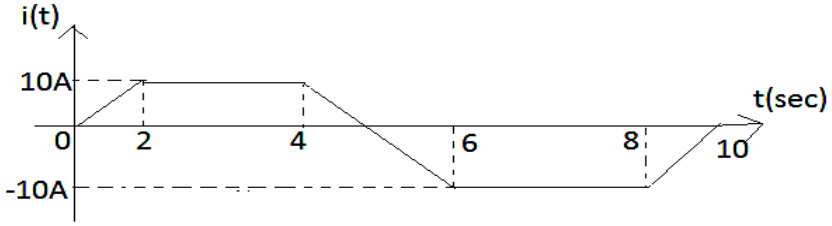
3. a) Define the terms peak, peak to peak, average, RMS values, peak and form factor of sine wave. 6 Marks

b) Solve for i_0 in figure using mesh analysis. 8 Marks



(OR)

4. a) Compute the effective value, average value, form factor and peak factor of the waveform shown in figure. 7 Marks

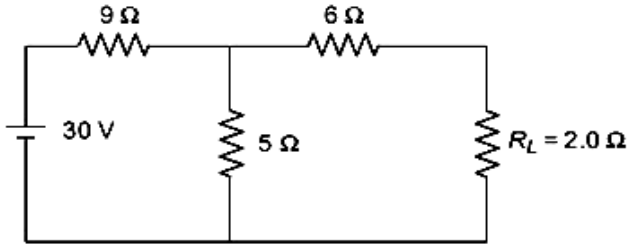


b) Define current locus. Explain the procedure to draw the current locus diagram for series RL circuit. 7 Marks

UNIT-III

5. a) State and explain compensation theorem. 7 Marks

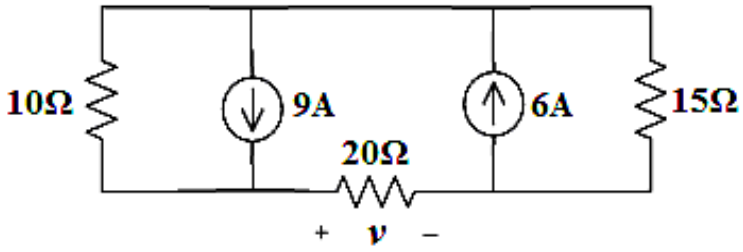
b) Calculate the change in current of the network given below using compensation theorem when load resistor changes to 10 ohms. 7 Marks



(OR)

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

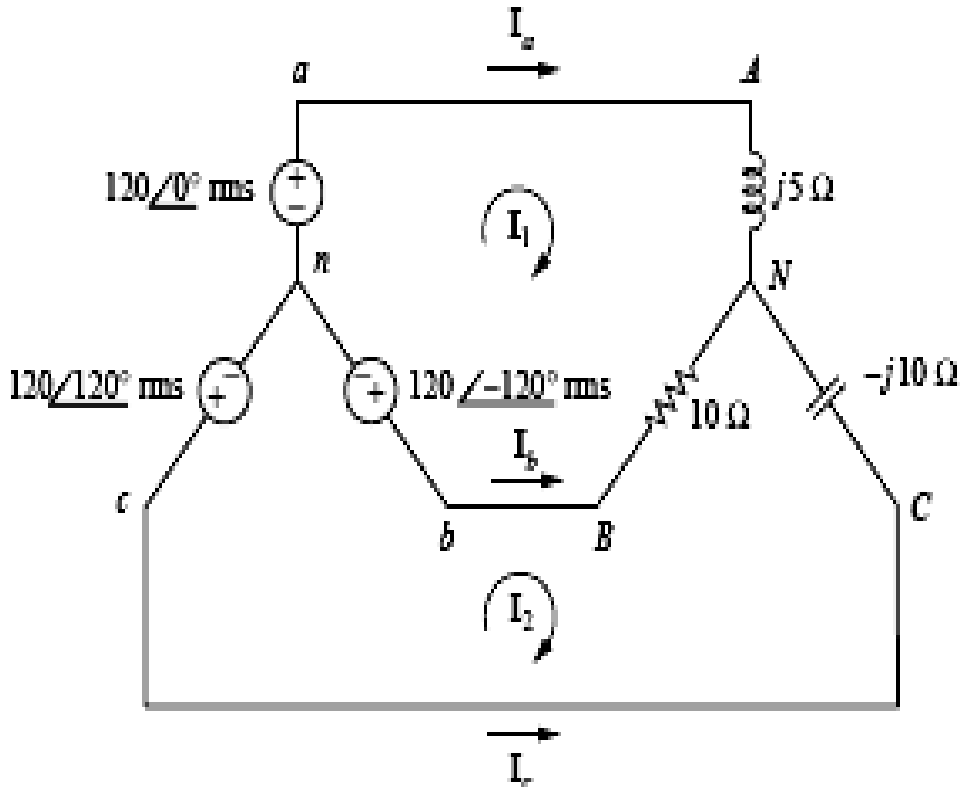
b) In the circuit shown below, find the voltage across the 20Ω resistor using Superposition theorem. 7 Marks



UNIT-IV

7. a) A 3-phase, 3-wire balanced Y-connected supply of $400\angle 0^0$ V is connected to a balanced 3-phase, 3-wire Δ-connected load of (10-j10) Ω per phase. Determine the line currents and the power consumed by the load. Follow RYB phase sequence. Draw the phasor diagram. 7 Marks

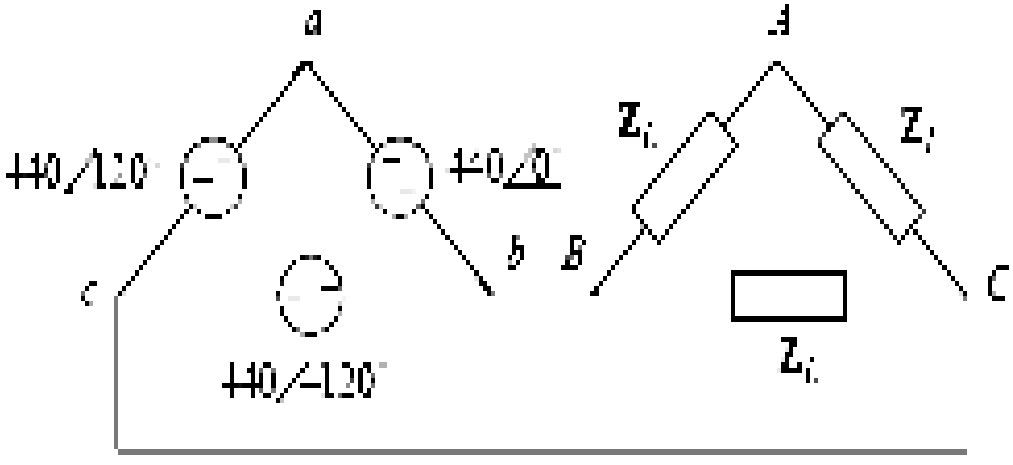
   b) For the unbalanced circuit in figure, find: (i) the line currents. (ii) the total complex power absorbed by the load. (iii) the total complex power absorbed by the source. 7 Marks



(OR)

8. a) An unbalanced 4-wire, star-connected load has a balanced 3-phase 4-wire, star supply of 400V, the loads are $\mathbf{Z_R}$**= (4+j8) Ω,** $\mathbf{Z_Y}$**= (3+j4) Ω and** $\mathbf{Z_B}$**= (15+j20) Ω.** Calculate the (i) Line currents, (ii) Current in the neutral wire, and (iii) The power consumed by the load. (Follow RBY phase sequence). Also draw the phasor diagram. 8 Marks

   b) Three 440V generators form a delta connected source that is connected to a balanced delta connected load of $\mathbf{Z_L}$ **= 10 + j8 Ω** per phase as shown in figure. Determine the phase currents. 6 Marks



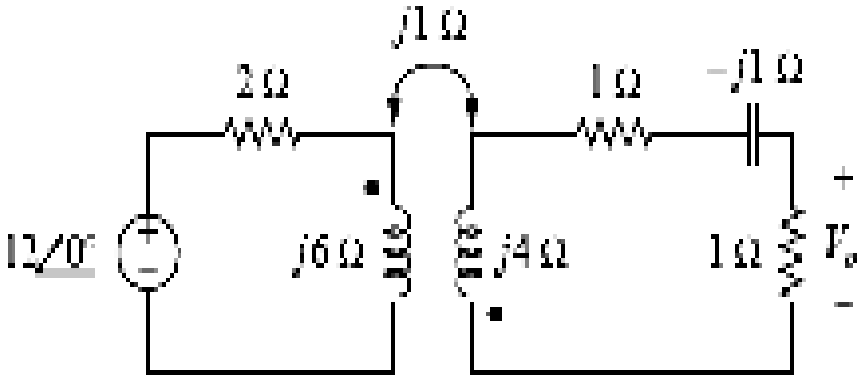
UNIT-V

9. a) Consider L_1 and L_2 be the self-inductances of two coupled coils and **M** be the mutual inductance between them. Derive the relation between self and mutual inductance with coupling coefficient — 6 Marks

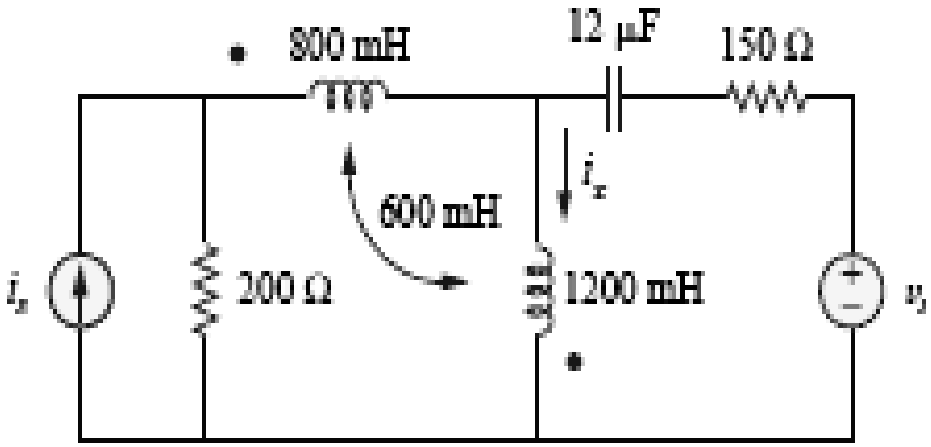
   b) Two coupled coils have **K=0.8, N_1=500 turns, N_2=1000 turns** and the mutual flux being **0.9wb**, find the primary coil flux. If the primary current be 10A, find the primary and secondary coil inductance. — 8 Marks

(OR)

10. a) For the circuit shown in figure, find the V_0. — 7 Marks



   b) Use the mesh analysis to find $\mathbf{i_x}$ in figure, where $\mathbf{i_s}$ = 6 cos(600t) A and $\mathbf{v_s}$ = 165 cos (600t + 30^0) V. — 7 Marks



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

NETWORK ANALYSIS

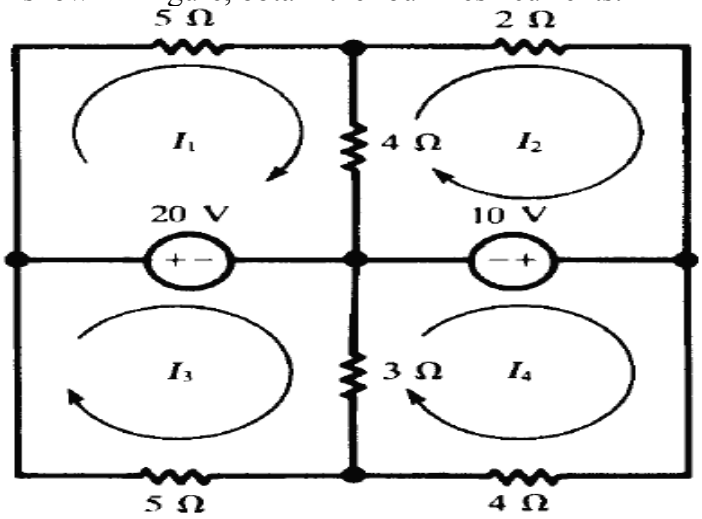
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

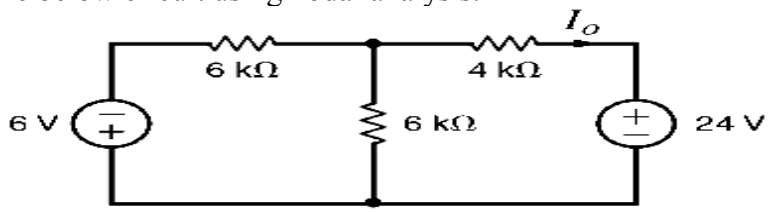
UNIT-I

1. In the network shown in figure, obtain the four mesh currents. 14 Marks

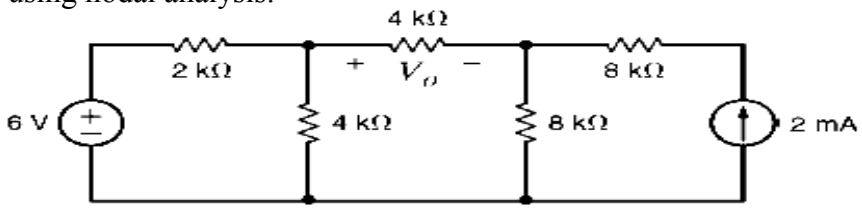


(OR)

2. a) Find I_0 in the below circuit using nodal analysis. 6 Marks



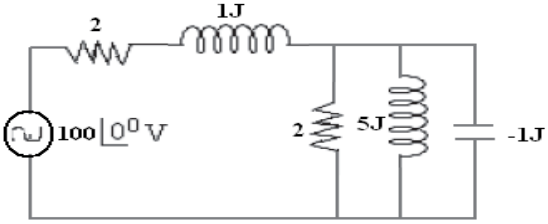
b) Find V_0 using nodal analysis. 8 Marks



UNIT-II

3. a) Define the terms peak, peak to peak, average, RMS values, peak and form factor of sine wave. 7 Marks

b) Find the power factor and complex power drawn by the circuit shown in the figure. Also draw the phasor diagram for the supply voltage and current. 7 Marks



(OR)

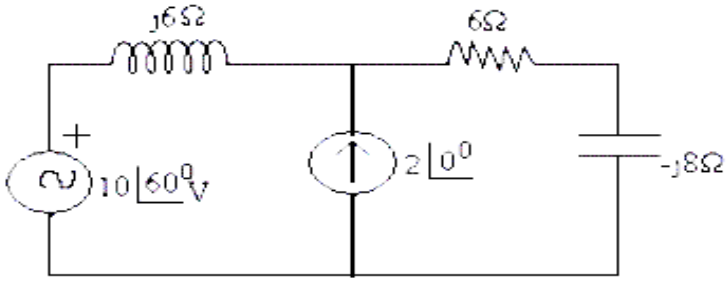
4. a) Draw the locus diagram of series RL circuit with R as variable. 7 Marks

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

UNIT-III

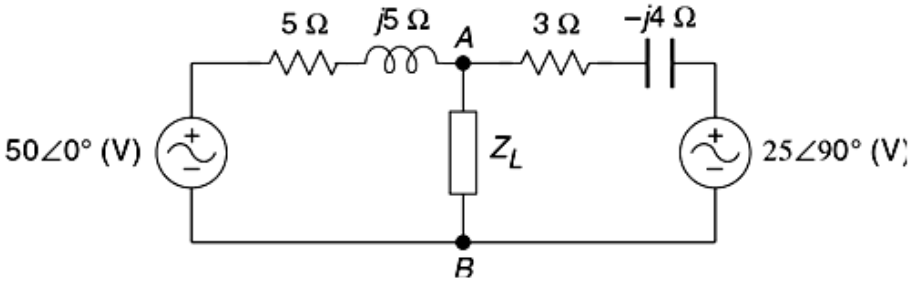
5. a) Explain the procedure used to solve a network problem using superposition theorem. 7 Marks

   b) For the circuit shown in figure, find the current in the 6Ω resistor using superposition theorem. 7 Marks

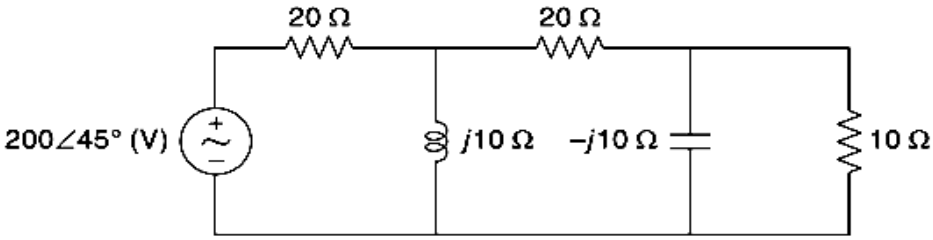


(OR)

6. a) Compute the equivalent impedance for which Z_L will receive the maximum power. What is the maximum power delivered to load? 7 Marks

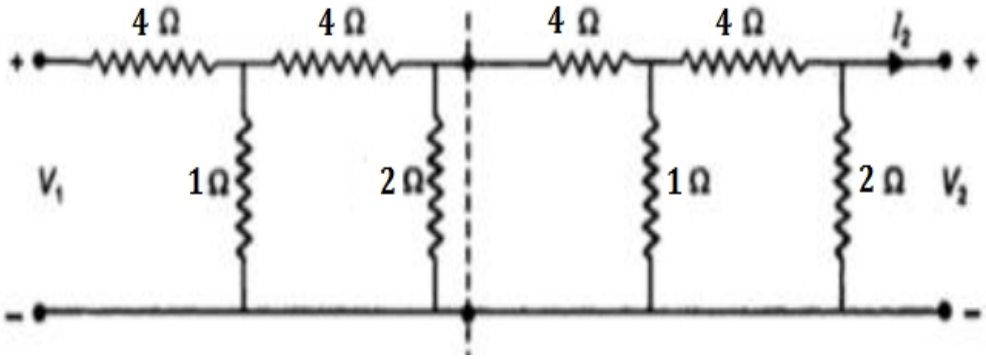


   b) Verify the reciprocity theorem for the ladder network shown in figure. 7 Marks



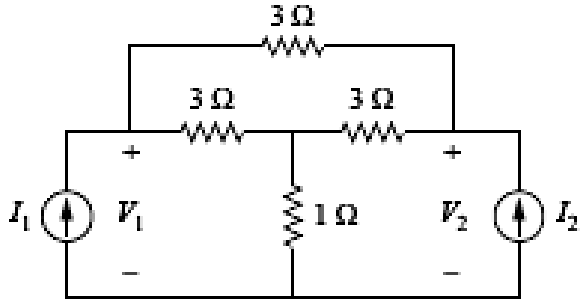
UNIT-IV

7. Find the Transmission parameters of the network shown in figure. 14 Marks

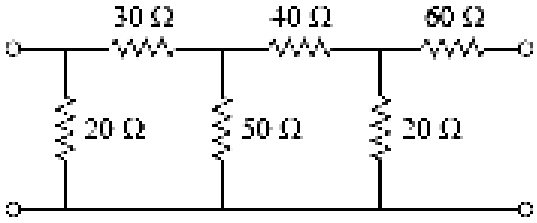


(OR)

8. a) In the bridge circuit of figure, $I_1 = 10$ A and $I_2 = -4$ A. (i) find V_1 and V_2 using Y parameters. (ii) Confirm the results of part (i) by direct current analysis. 8 Marks

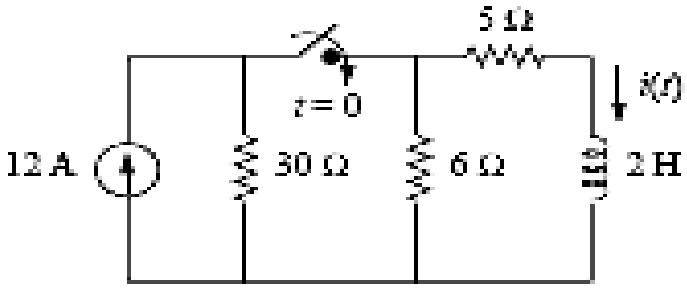


b) Compute the open circuit parameters of the two port network shown in figure. 6 Marks

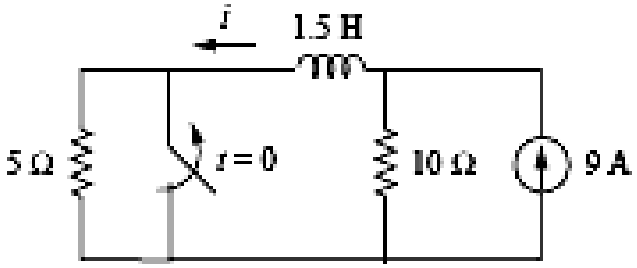


UNIT-V

9. a) The switch in figure was open since long time but closed at **t = 0**. If **i(0) = 10 A**, find **i(t)** for **t>0.** 7 Marks



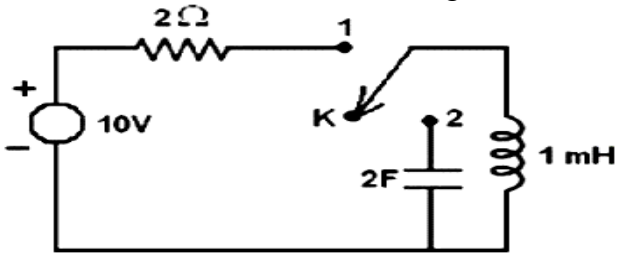
b) The switch in figure has been in closed position for long time. For switching at t=0, find i(t) for t>0. 7 Marks



(OR)

10. a) Explain the steady state and transient behavior of the network elements R, L and C. 7 Marks

b) For the circuit given in figure, steady state conditions are reached when the switch K is in position '1'. At t = 0, the switch is changed to position 2. Use the time domain method to determine the current through the inductor for all t>0. 7 Marks



CODE No.:16BT10501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROGRAMMING IN C

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Analyze Arithmetic, Logical, Bitwise and Conditional operators with example programs. 14 Marks

(OR)

2. a) Demonstrate various data types in 'C' with their syntax and examples. 7 Marks
   b) Define Token. List various 'C' tokens with examples. 7 Marks

UNIT-II

3. a) What is the purpose of the while statement? When is the logical expression evaluated? What is the minimum number of times that a while loop can be executed? 9 Marks
   b) A 'C' program contains the following statements: 5 Marks

```
#include <stdio.h>
int i, j , k;
```

Write an appropriate scanf() function to enter numerical values for **i, j** and **k**, assuming

i) The values for **i,j** and **k** will be decimal integers.
ii) The value for **i** will be a decimal integer, **j** an octal integer and **k** a hexadecimal integer.
iii) The values for **i** and **j** will be hexadecimal integers and **k** will be an octal integer.

(OR)

4. Write a 'C' program that prints largest among three numbers. 14 Marks

UNIT-III

5. a) How Recursion is implemented? Describe with an example. 7 Marks
   b) Write a 'C' program that illustrates Scope rules in blocks. 7 Marks

(OR)

6. a) Using recursive functions implement a program to print all prime numbers between given two positive numbers N,M where N<M. What is a recursion? Write a recursive function to find **N**. 7 Marks
   b) Write a program to calculate the sum of the elements in two tables of integers. 7 Marks

UNIT-IV

7. a) Define String. Explain String input and output functions with syntax. 7 Marks
   b) Write a 'C' program to check whether the given string is Palindrome or not. 7 Marks

(OR)

8. a) Develop a program to read a long text and then find the number of characters, number of vowels, number of consonants, number of digits, number of words, number of white spaces and number of special symbols. 7 Marks

b) Explain the concept of passing pointers to a function and demonstrate with an example program. 7 Marks

UNIT-V

9. a) Explain basic file operations with its syntax. 7 Marks

b) Write a 'C' program to illustrate opening and closing of files. 7 Marks

(OR)

10. a) Demonstrate how to work with binary files. 7 Marks

b) Write a 'C' program to compare two files. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

ENGINEERING CHEMISTRY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Discuss briefly about boiler troubles and methods to be adapted for their treatment. 14 Marks

(OR)

2. a) Discuss permutit process for water softening. 7 Marks
   b) 1g of $CaCO_3$ was dissolved in dil. HCl and diluted to 1000ml. 50ml of this solution required 48ml of EDTA solution for titration. 50ml of hard water sample required 15ml of EDTA solution for titration. 50ml of same hard water on boiling, filtering, etc required 10ml of EDTA solution. Calculate the different kinds of hardness in ppm. 7 Marks

UNIT-II

3. a) Discuss the preparation, properties and uses of PTFE and PMMA Resin. 7 Marks
   b) Explain engineering applications of composites. 7 Marks

(OR)

4. a) Summarize the fiber reinforced composites. 7 Marks
   b) What are the advantages of composite material? Write their engineering applications. 7 Marks

UNIT-III

5. Write the applications of nanomaterials in science and technology. 14 Marks

(OR)

6. a) Write notes on : 8 Marks
      i) Use of alternative feedstocks.
      ii) Use of innocuous reagents.
   b) Write informative notes on recent trends in nano technology. 6 Marks

UNIT-IV

7. a) Distinguish electrolytic cell and electrochemical cell with neat diagrams and explain their in house and industrial applications in your everyday life. 10 Marks
   b) Explain the significance of the title of this outcome, “Energy from Electron Transfer.” 4 Marks

(OR)

8. a) Discuss the chemistry, construction and future application of Hydrogen-Oxygen Fuel cell used in earlier space missions. 7 Marks
   b) Discuss the applications of electrochemical sensors. 7 Marks

UNIT-V

9.	a)	Illustrate with the aid of label diagrams that show how a Magnesium bar and DC electrical power supply could be used to prevent or at least decrease the extent of corrosion of a steel underground pipeline used for carrying gases.	7 Marks
	b)	Write short notes on viscosity, viscosity index, flash and fire points, cloud and pour points.	7 Marks

(OR)

10.	a)	A student, in replying to an examination question, writes: "Corrosion of metal is due to electrical currents of electrochemical origin, Stop current stop corrosion". Comment on the correctness or otherwise of this statement on the basis of your knowledge of electrochemistry.	10 Marks
	b)	Write the qualities of a good lubricant.	4 Marks

CODE No.:16BT1BS02 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

ENGINEERING PHYSICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss various pumping mechanisms in lasers.	5 Marks
	b)	Explain the construction and working of Nd: YAG laser.	9 Marks
		(OR)	
2.	a)	Explain the conditions required for achieving lasing action.	4 Marks
	b)	Discuss the construction and working of a four level laser system you know, with the help of energy level diagram.	6 Marks
	c)	Summarize the advantages of optical fiber communication system over conventional system.	4 Marks

UNIT-II

3.	a)	Explain variation of potential for an electron moving in a one-dimensional lattice.	6 Marks
	b)	Draw and explain band diagrams for conductors, insulators and semiconductors.	6 Marks
	c)	Explain Fermi-energy level.	2 Marks
		(OR)	
4.	a)	Write the basic postulates of quantum mechanics.	4 Marks
	b)	Explain the concept of wave-particle duality and obtain an expression for wavelength of matter waves.	10 Marks

UNIT-III

5.	a)	Define drift and diffusion currents in a semiconductor. Derive expression for drift and diffusion currents in semiconductor.	9 Marks
	b)	Deduce the Einstein relation in semiconductors.	5 Marks
		(OR)	
6.	a)	Explain intrinsic and extrinsic semiconductors.	6 Marks
	b)	Obtain an expression for the electrical conductivity in semiconductors.	8 Marks

UNIT-IV

7.	a)	Define Superconductivity. Mention the important property changes that occur in materials when they change from normal to superconducting state.	6 Marks
	b)	Describe type-I and type-II superconductors.	8 Marks
		(OR)	
8.	a)	Write a short note on absorption coefficient. Suggest a method for measuring absorption coefficient.	10 Marks
	b)	Suggest remedies to improve acoustics of buildings.	4 Marks

UNIT-V

9.	a)	What do you mean by nanomaterial? Explain any five properties of nanomaterials.	8 Marks
	b)	Elaborate the fabrication of nanomaterials by using ball milling method.	6 Marks
		(OR)	
10.	a)	Write differences between crystalline and amorphous solids.	4 Marks
	b)	Write procedure of finding Miller Indices of a plane in a crystal.	4 Marks
	c)	Draw (132), (020) and (211) planes in a cubic crystal.	6 Marks

CODE No.:16BT1HS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Discuss the common barriers of communication. 7 Marks
   i) Use of jargon.
   ii) Expectations and prejudices.
   iii) Cultural differences.

   b) "Distraction/Noise, Emotions, Time Pressures, Inattention are the barriers of communication". Explain with suitable examples. 7 Marks

(OR)

2. Define communication and classify the modes of communication with appropriate examples. 14 Marks

UNIT-II

3. What is the correlation between listening and taking notes? Give a few tips for effective note-taking. 14 Marks

(OR)

4. State the importance of listening and explain how it is different from hearing. 14 Marks

UNIT-III

5. a) Construct a media interview with **any one** of the following. 7 Marks
   i) Favorite cricketer.
   ii) Favorite film actor.
   iii) Favorite politician.

   b) Discuss the features of 'symposium' 'presentation' 'conference' and elaborate the process of participation in the academic environment. 7 Marks

(OR)

6. What are the main types of speaking? Discuss about: 14 Marks
   i) One-on-One Speaking.
   ii) Small-Group or Team-Based.
   iii) Full-Class Discussions.
   iv) In-Class Debates and Deliberations.

UNIT-IV

7. Explain and illustrate various ways of inferring a word's meaning in a context. 14 Marks

(OR)

8. Assess the applicability of SQ3R reading technique in developing the comprehensive skill. 14 Marks

UNIT-V

9. Appraise the various techniques for effective technical writing. 14 Marks

(OR)

10. a) Match the following words with suitable synonyms. 7 Marks

i) edifice	a) animosity
ii) odious	b) common
iii) torpor	c) construction
iv) rancour	d) sluggishness
v) rife	e) hateful

b) Match the following words with suitable antonyms. 7 Marks

i) hearty	a) miserable
ii) clarify	b) intemperate
iii) ecstatic	c) confuse
iv) moderate	d) reserved
v) gregarious	e) frail

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

TRANSFORMATION TECHNIQUES AND PARTIAL DIFFERENTIAL EQUATIONS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Represent the modified saw-toothed wave form 14 Marks

$f(x) = 0$ for $-\pi < x \le 0$

$= x$ for $0 < x \le \pi$

as a Fourier series and hence evaluate $1 + \frac{1}{3^2} + \frac{1}{5^2} + \text{------}$.

(OR)

2. Obtain the Fourier expansion of $x \sin x$ as a cosine series in $(0, \pi)$ and 14 Marks

hence show that $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \ldots = \frac{1}{4}(\pi - 2)$.

UNIT-II

3. 14 Marks

Apply Parseval's identity in Fourier transforms, evaluate $\int_0^\infty \frac{dx}{(4 + x^2)(9 + x^2)}$.

(OR)

4. 14 Marks

Find the finite sine transform of $f(x) = \begin{cases} -x, & x < c \\ \pi - x, & x > c \end{cases}$ where $0 \le c \le \pi$.

UNIT-III

5. 14 Marks

Evaluate $L^{-1}\left\{\frac{s}{(s^2 + 1)^2}\right\}$ by convolution property.

(OR)

6. Find the general solution to $\boldsymbol{y'' + 9y = \cos 2t}$ by Laplace transform method. 14 Marks

UNIT-IV

7. 14 Marks

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

(OR)

8. i) Evaluate $Z(\sin h\, n\theta)$. 14 Marks

ii) Determine Z-transform of unit step sequence**.**

UNIT-V

9. Form the partial differential equation, by eliminating the arbitrary constants 14 Marks

from $2z = \frac{x^2}{a^2} + \frac{y^2}{b^2}$.

(OR)

10. Solve $\frac{\partial^2 z}{\partial x^2} + z = 0$, given that when $\mathbf{x = 0, z = e^y}$ and $\frac{\partial z}{\partial x} = 1$. 14 Marks

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CODE No.:16BT20101 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Interpret the various agencies which tend to reduce the life of a building stone.	14 Marks
		(OR)	
2.	a)	Explain about the physical and mechanical properties of wood.	10 Marks
	b)	Write about the blasting process of stones.	4 Marks

UNIT-II

3.	a)	Explain about the various grades of light and medium concrete.	7 Marks
	b)	Explain about the importance of grade of concrete.	7 Marks
		(OR)	
4.		Explain about the strength and chemical tests of cement.	14 Marks

UNIT-III

5.		Distinguish between Thermoplastics and Thermosetting plastics.	14 Marks
		(OR)	
6.		Write the various uses of aluminum with respect to construction works.	14 Marks

UNIT-IV

7.		Explain about different types of foundations.	14 Marks
		(OR)	
8.		Explain about different types of roofs with the help of sketches.	14 Marks

UNIT-V

9.	a)	Enumerate different types of heavy earth moving equipments and its specific uses.	7 Marks
	b)	Discuss the advantages of using machines over manual labour.	7 Marks
		(OR)	
10.	a)	Write short notes on effects of dampness.	7 Marks
	b)	Explain about the methods of damp proofing.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

ENGINEERING MECHANICS

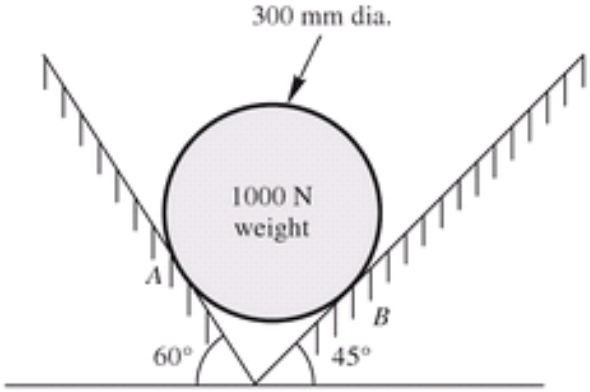
[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

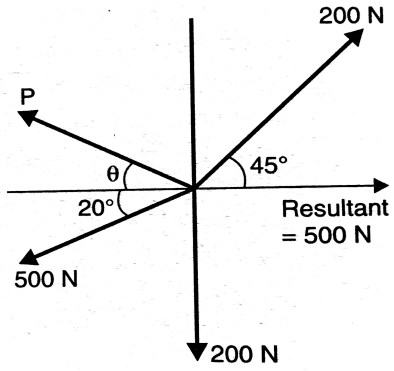
UNIT-I

1. a) Explain different types of force systems with suitable examples. 4 Marks
   b) Forces A and B are acting at an angle θ .Their two resultant 'R' will make an angle **α** with the force A, determine the value of **cos α**. 3 Marks
   c) A sphere of weight 1000N rests in a V shaped groove as shown in figure. Determine the reactions exerted on the sides of the groove at A and B if all surfaces are perfectly smooth. 7 Marks



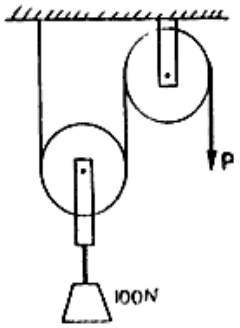
(OR)

2. a) Find the magnitude of the two forces, such that if they act at right angles, their resultant is $\sqrt{10}N$. But if they act at 60°, their resultant is $\sqrt{13}N$. 7 Marks
   b) The four coplanar forces are acting at a point as shown in figure. One of the forces is unknown and its magnitude is shown by P. The resultant is having a magnitude of 500N and is acting along x-axis. Determine the unknown force P and its inclination with x-axis. 7 Marks

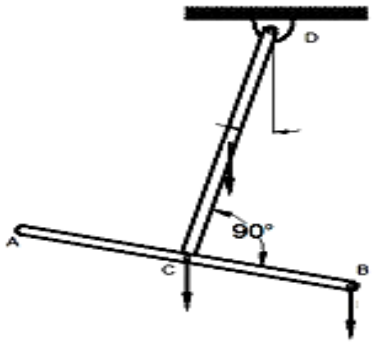


UNIT-II

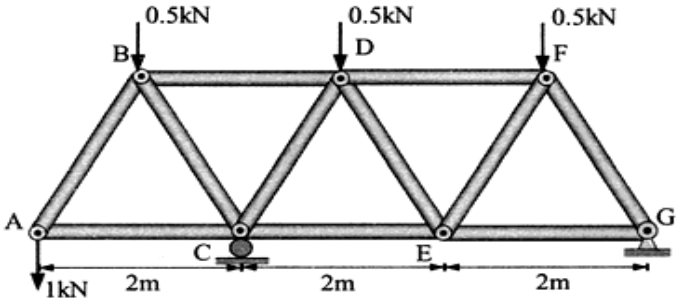
3. a) Using the principle of virtual work, determine the effort P required to hold the weight of 100N in equilibrium in a system of two frictionless pulleys of the same diameter as shown in figure. 3 Marks



b) A rigid **T** is made out of metal bars AB and CD as shown in figure each 1.4m long and weigh 40kg and 30kg respectively. It is supported in to a vertical plane. Compute angle **α** for equilibrium, subjected to a load of 500N at B. 5 Marks

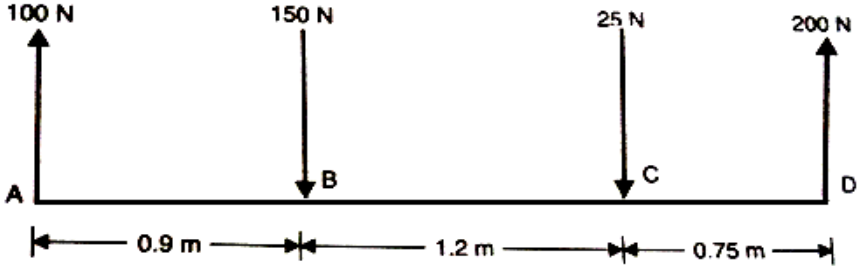


c) Using method of sections, determine the forces in members BD and CD of the truss as shown in figure. All triangles are equilateral. 6 Marks



(OR)

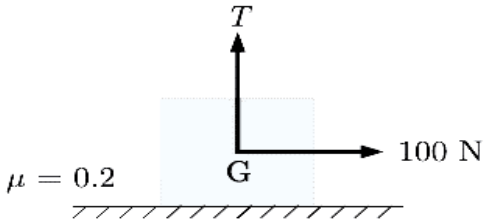
4. a) Four parallel forces of magnitudes 100N, 150N, 25N and 200N are shown in the figure. Determine the magnitude of the resultant and also the distance of the resultant from point A. 9 Marks



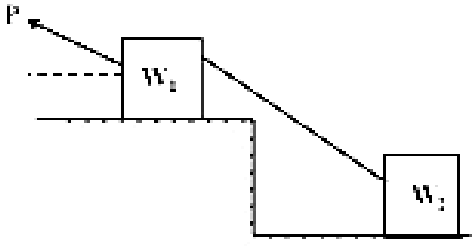
b) Write a short note on vectorial representation of moment of a force. 5 Marks

UNIT-III

5. a) A block weighing 981N is resting on a horizontal surface. The coefficient of friction between the block and the horizontal surface is $\mu = 0.2$. A vertical cable attached to the block provides partial support as shown. A man can pull horizontally with a force of 100N. What will be the tension, T (in N) in the cable if the man is just able to move the block to the right? 6 Marks

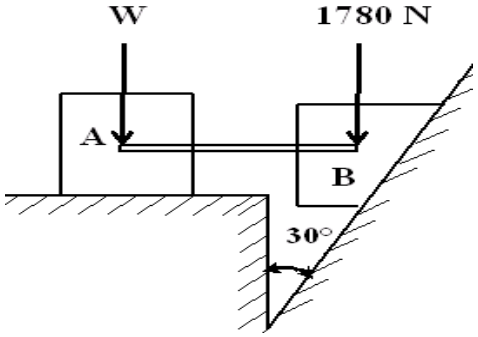


b) Two blocks having weights W_1 and W_2 are connected by a string and rest on horizontal planes as shown in the figure. If the angle of friction for each block is φ, find the magnitude and direction of the least force P applied to the upper block that will include sliding. 8 Marks

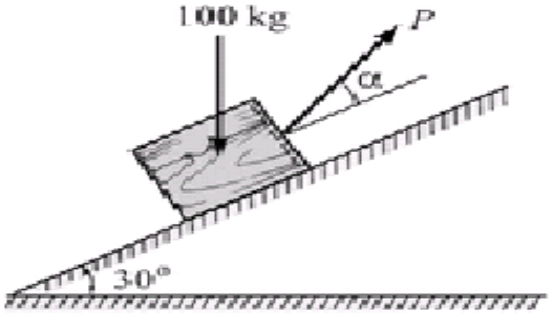


(OR)

6. a) Two blocks connected by a horizontal link AB are supported on two rough planes as shown in figure. The coefficient of friction for block A on the horizontal plane is $\mu = 0.4$. The angle of friction for block B on the inclined plane is $\varphi = 15°$. What is the smallest weight W of block A for which equilibrium of the system can exist? 7 Marks



b) Determine the minimum value of force P required to cause motion of a 100kg block to impend upon a 30° plane shown in figure. The coefficient of friction is 0.2. 7 Marks

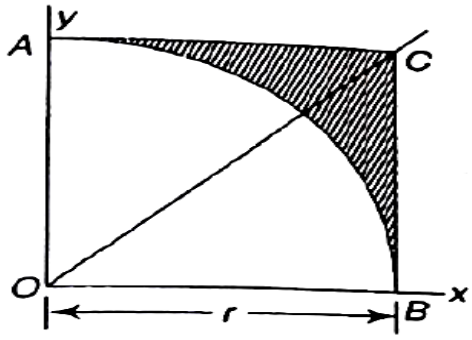


UNIT-IV

7. a) Determine the centroid of the semicircular area whose radius is R. 7 Marks
   b) Determine the centroid of a triangular area having base 'b' and height 'h'. 7 Marks

(OR)

8. a) Define the terms polar moment of inertia with suitable sketch. 3 Marks
   b) Calculate the polar moment of inertia about 'O' of the shaded area shown in the figure. 6 Marks



   c) Explain the method of finding the centroids of composite area with suitable example. 5 Marks

UNIT-V

9. a) i) What is the relation between angular velocity and linear velocity? 4 Marks
   ii) State D'Alemberts principle.
   b) A train of weight 200 x 10^4N is running on a horizontal track at a constant speed of 10m/s, overcoming a constant frictional force of 20 x 10^3N. What is the power of the engine driving the train? 3 Marks
   c) A stone is dropped from the top of a tower 60m high. At the same instant, another stone is thrown vertically upwards from the foot of tower to meet the first stone at a height of 18m. Determine: 7 Marks
   i) The time when the two stones meet.
   ii) The velocity with which the second stone was thrown up.

(OR)

10. a) i) What is the acceleration of a body of mass '**m**' when it is sliding on a smooth plane and inclined at an angle **θ** to the horizontal?. 4 Marks
   ii) Two bodies of masses 10kg and 15kg are hung from the ends of an extensible rope passing over a frictionless pulley. If masses of both the bodies are doubled, what about the acceleration of the system will be?
   b) An elevator of gross weight W = 4450N when stopping, moves with constant deceleration and from the constant velocity v = 1.8m/s, comes to rest in 2s. Determine the force P transmitted during stopping to the floor of the elevator by the feet of a man weighing 765.5N. 3 Marks
   c) A 667.5N man sits in a 333.75N canoe and fire a rifle bullet horizontally directly over the bow of the canoe. Neglect friction of the water, find the velocity v with which the canoe will move after the shot if the rifle has a muzzle velocity of 660m/s. 7 Marks

CODE No.:16BT20241 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

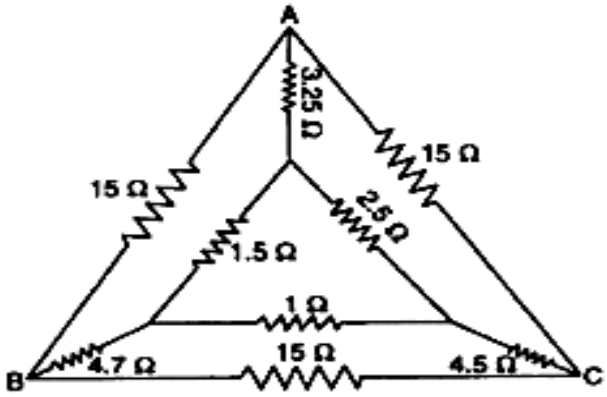
[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Find the resistance between the points B and C of the circuit shown. 10 Marks

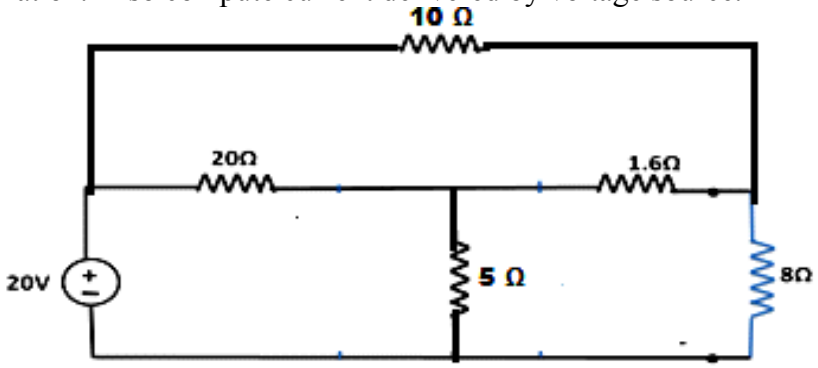


b) Define the terms: potential difference, mmf, emf, current and power. 4 Marks

(OR)

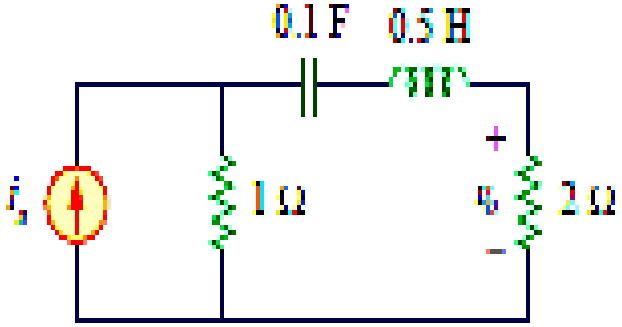
2. a) State and explain the terms node, loop, path with examples. 6 Marks

b) Compute the equivalent resistance across voltage source using star/delta transformation. Also compute current delivered by voltage source. 8 Marks

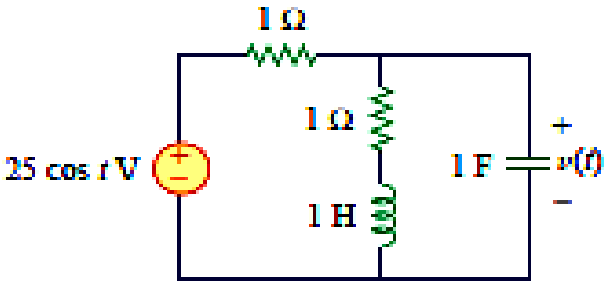


UNIT-II

3. a) If the voltage across 2Ω resistor $\mathbf{V_0} = -5 \cos 2t$, Compute the source current $\mathbf{i_s}$. And also draw the phasor diagram representing source current and $\mathbf{V_0}$. 7 Marks



b) Compute the *v(t)*, shown in figure below. 7 Marks



(OR)

4. Two impedances $\mathbf{Z_1}$**=(150-j157)Ω** and $\mathbf{Z_2}$ **= (100+j100)Ω** are connected in parallel across a 200V, 50Hz supply. Find 14 Marks

(i) Branch currents. (ii) Total current.
(iii) Complex power. (iv) Total power.
Sketch the complete phasor and admittance diagrams.

UNIT-III

5. a) Explain the construction and working principle of DC generator. 7 Marks
b) An 8 pole DC generator has flux of 40mWb per pole and winding is connected in lap winding with 960 conductors. Calculate the generated EMF on open circuit when it runs at 400 r.p.m. If the armature is wave wound at what speed must the machine be driven to generate the same voltage. 7 Marks

(OR)

6. a) State and explain the construction features of three phase induction motor. 7 Marks
b) A 10 pole DC generator has per pole flux of 48mWb and winding is connected in lap with 960 conductors. Calculate the generated EMF on open circuit when it runs at 400 r.p.m. If the armature is wave wound at what speed must the machine be driven to generate the same voltage. 7 Marks

UNIT-IV

7. Select suitable application for Hall effect transducer and describe the construction, principle of working. 14 Marks

(OR)

8. a) State the need for data acquisition system. Explain the data acquisition system with the help of block diagram. 7 Marks
b) Explain the principle operation of LVDT with the help of neat sketch. 7 Marks

UNIT-V

9. a) Derive the expressions for ripple factor of full wave rectifier with and without a capacitive filter. 10 Marks
b) A half wave rectifier is fed by 220V, 50Hz via a step down transformer of turns ratio is 11:1. Find: 4 Marks
i) The output DC.
ii) Peak Inverse Voltage under no load condition.

(OR)

10. a) Explain in detail about frequency response of CE amplifier. 7 Marks
b) Explain how transistor acts as an amplifier. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

ENGINEERING MATERIALS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Define the following properties with examples: 10 Marks
   i) Specific heat. ii) Thermal conductivity.
   iii) Melting point. iv) Density.
   b) Differentiate between soft magnetic material and hard magnetic material. 4 Marks

(OR)

2. a) Explain the difference between ductility and malleability. 7 Marks
   b) Explain the mode of failure in ductile and brittle materials. 7 Marks

UNIT-II

3. a) Explain Heyn's intercept method for determination of grain size. 6 Marks
   b) Calculate the atomic packing factor for FCC and SC. 8 Marks

(OR)

4. a) Explain the following terms: 8 Marks
   i) Space lattice. ii) Coordination number.
   iii) Atomic packing factor. iv) Unit cell.
   b) Derive the relation between atomic radius and lattice parameter for FCC material. Give three examples of FCC structure. 6 Marks

UNIT-III

5. a) Give the applications of Aluminum and its alloys. 7 Marks
   b) Write short notes on super alloys. 7 Marks

(OR)

6. a) Discuss the properties and applications of pure Aluminum. 7 Marks
   b) Discuss properties, microstructure and applications of white cast iron. 7 Marks

UNIT-IV

7. a) What is the purpose of addition of MgO and Al_2O_3 to soda lime glass? 7 Marks
   b) Write the properties of Carbon-Fiber Reinforced Plastic (CFRP). 7 Marks

(OR)

8. How ceramic materials are classified? Discuss each class with their properties and applications. 14 Marks

UNIT-V

9. List the various hardness measuring methods. Explain any two of them in brief. 14 Marks

(OR)

10. a) Compare and contrast between Destructive and Non-destructive tests. 7 Marks
    b) Explain the Brinell Hardness test. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Compare the performance of inductor, L-section and π–section filters. 7 Marks
   b) In a full wave rectifier with capacitor filter, find out ripple factor, I_{dc} and load resistance if C = 600μF, T = 20ms, V_r = 1.2V and V_{dc} = 9V. 7 Marks

(OR)

2. Explain the operation of a **p-n** junction diode in forward biased and reverse biased condition. Draw its V-I characteristics. 14 Marks

UNIT-II

3. a) With reference to bipolar junction transistors, define the following terms and explain. 7 Marks
      i) Emitter efficiency.
      ii) Base transportation factor.
      iii) Large signal current gain.
   b) How transistor acts as an amplifier? 7 Marks

(OR)

4. a) Draw the circuit of self bias circuit and derive the expression for stability factor. 6 Marks
   b) In a CE germanium transistor amplifier using self bias circuit, R_C=2.1$K\Omega$, β = 50, V_{CC} = 9V and the operating point is required to be set at I_C = 3mA and V_{CE} = 3V. Determine the values of R_1, R_2 and R_E. 8 Marks

UNIT-III

5. a) In a CE transistor amplifier circuit, R_c = 5 kΩ, R_s = 1.2 kΩ, h_{re} = 2.5 x 10^{-4}, h_{ie} = 1.1 kΩ, h_{fe} = 100, h_{oe} = 25 μmho. Find R_i, A_i, A_v and R_o. 10 Marks
   b) Find the value of h_{re} in terms of CB h-parameters. 4 Marks

(OR)

6. a) A CE amplifier is driven by a voltage source of internal resistance R_s=800Ω and the load impedance R_L = 1000Ω. The h-parameters are h_{ie}= 1$k\Omega$, h_{re} = 2 x 10^{-4}, h_{fe} = 50 and h_{oe} = 25μA/V. Compute the current gain A_I, input resistance R_i, voltage gain A_V and output resistance R_o using exact analysis. 9 Marks
   b) Determine the h-parameters for common emitter configuration from the characteristic curves. 5 Marks

UNIT-IV

7. a) Discuss the biasing methods for FETs. 6 Marks

   b) Calculate the operating point of the self biased JFET having the supply voltage V_{DD} = 20 V, maximum value of drain current I_{DSS} = 10 mA and V_{GS} = - 3V at I_D = 4 mA. Also determine the values of resistors R_D and R_S to obtain this bias condition. 8 Marks

(OR)

8. Explain the principle of CS amplifier with the help of circuit diagram. Derive the expressions for A_V, input impedance and output impedance. 14 Marks

UNIT-V

9. Explain about : 14 Marks

   i) Varactor diode.

   ii) Schottky barrier diode with necessary sketches.

(OR)

10. Explain the characteristics of tunnel diode with the help of energy band diagram. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

BASIC ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Derive the ripple factor for half wave rectifier and full wave rectifier. 8 Marks
   b) Derive the L section filter in full wave rectifier. 6 Marks

(OR)

2. Determine the ripple factor of an L-section filter comprising a 10H choke and 8μF capacitor, used with a FWR. The DC voltage at the load is 50V. Assume the line frequency as 50Hz. 14 Marks

UNIT-II

3. What are the compensation techniques used for V_{BE} and I_{CO}? Explain with help of suitable circuits. 14 Marks

(OR)

4. a) Draw the transistor biasing circuit using fixed bias arrangement and explain its principle with suitable analysis. 10 Marks
   b) Define alpha and beta of a transistor and derive the relationship between them. 4 Marks

UNIT-III

5. a) Explain a FET amplifier in the common source configuration with a neat circuit diagram. 10 Marks
   b) Compare the JFET and MOSFET. 4 Marks

(OR)

6. Explain the construction and working of a JFET and draw the graph for drain and transfer characteristics. 14 Marks

UNIT-IV

7. a) Draw the circuit diagram of general oscillator and obtain the maintenance condition and the frequency of oscillations. 10 Marks
   b) Discuss the frequency range of RC and LC oscillators. 4 Marks

(OR)

8. a) What do you understand by feedback in amplifiers? Explain the terms feedback factor and open loop gain. 8 Marks
   b) Calculate the gain, input impedance, output impedance of voltage series feedback amplifier having A=300, R_i=1.5KΩ, R_O=50KΩ and β=1/12. 6 Marks

UNIT-V

9. Explain how the UJT can be used as a negative-resistance device with the aid of static characteristics. 14 Marks

(OR)

10. Explain the tunneling phenomenon. Explain the characteristics of tunnel diode with the help of necessary energy band diagrams. 14 Marks

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CODE No.:16BT20541 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

FOUNDATIONS OF DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Illustrate bucket sort algorithm with an example. 14 Marks

(OR)

2. a) Illustrate a non recursive, in-place version of the quick-sort algorithm. The algorithm should still be based on the same divide-and-conquer approach, but use an explicit stack to process sub problems. 7 Marks
   b) Suggest a pseudo code for quick-sort algorithm and drive worst-case and best-case complexities for it. 7 Marks

UNIT-II

3. Convert the following infix expression to postfix using stack. 14 Marks
   ((A-(B+C))*D)$(E+F)

(OR)

4. a) Show how to evaluate the expression in the postfix using stack. 7 Marks
   b) What is LIFO? How to represent Queue? Explain. 7 Marks

UNIT-III

5. a) List out the advantages of doubly linked list over singly linked list. 6 Marks
   b) Write a program to insert a given value into an ordered doubly linked list into its proper position. 8 Marks

(OR)

6. Describe and compare the linked list implementation of stack and queue. 14 Marks

UNIT-IV

7. a) Construct binary tree and identify preorder from given inorder and postorder traversals. 9 Marks
   Inorder: D B E A F C
   Postorder: D E B F C A
   b) Can we construct a binary tree, if preorder and postorder are given? Justify your answer. 5 Marks

(OR)

8. Write routines to implement the basic binary search tree operations. 14 Marks

UNIT-V

9. a) Illustrate connected graph and complete graph. Give an example. 7 Marks
   b) Write a function to compute the hash values for a specific set of keys using the division/modulo method. 7 Marks

(OR)

10. a) How do you pick a good hash function? 7 Marks
    b) How do we deal with collisions? 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

OBJECT ORIENTED PROGRAMMING THROUGH C++

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is type conversion? Explain about implicit and explicit type conversion.	7 Marks
	b)	Write a program which illustrates the format of floating point values.	7 Marks
		(OR)	
2.		Define the terms encapsulation, polymorphism and inheritance in object oriented programming.	14 Marks

UNIT-II

3.	a)	When will the destructor of an object does not get called during function execution.	7 Marks
	b)	With a suitable program mechanism for call by value and call by reference.	7 Marks
		(OR)	
4.	a)	What is the difference between Void, Boolean and I/O functions?	7 Marks
	b)	Differentiate between data types and derived data types.	7 Marks

UNIT-III

5.		How to use arrays with enumerated types and explain type definitions.	14 Marks
		(OR)	
6.	a)	Differentiate between passing by reference and passing by constant reference.	7 Marks
	b)	Write a program to swap two numbers using pointers.	7 Marks

UNIT-IV

7.		Write a class fraction that defines methods addition, subtraction, multiplication and division of fractions by overloading basic arithmetic operators.	14 Marks
		(OR)	
8.	a)	What operators cannot be overloaded as friend operators' functions? Explain the reasons.	7 Marks
	b)	Discuss different ways using which one object can be assigned to another object of the same type.	7 Marks

UNIT-V

9.		Describe the various classes available for file operations.	14 Marks
		(OR)	
10.		Explain different file handling functions in C++.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Regular Examinations June - 2017

DIGITAL LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain any five properties of Boolean Algebra with example. 7 Marks
   b) Compare BCD and binary system of coding. 7 Marks

(OR)

2. a) Compute dual of the following Boolean expressions. 7 Marks
   i) AB+A(B+C)+B'(B+D) ii) A+B+A'B'C
   b) Compliment the following Boolean expressions. 7 Marks
   i) A'B+A'BC'+A'BCD+A'BC'D'E ii) ABEF+ABE'F'+A'B'EF

UNIT-II

3. Simplify the following Boolean functions using K-maps:
   i) $F(A, B, C, D, E) = \Sigma(0, 1, 4, 5, 16, 17, 21, 25, 29)$ 8 Marks
   ii) $F(A, B, C, D) = \Pi(1, 3, 5, 7, 13, 15)$ 6 Marks

(OR)

4. Simplify the following expression using K-map and implement with two-level NAND gate circuit: $F = AB' + ABD + ABD' + A'C'D' + A'BC'$ 14 Marks

UNIT-III

5. a) Draw and explain the concept of 4-bit Carry-Look-Ahead adder. 7 Marks
   b) Implement the following function using 8 x 1 multiplexer 7 Marks
   $F(A, B, C, D) = \sum(1, 3, 5, 6, 7)$.

(OR)

6. a) With the help of a circuit diagram, explain the operation of series full adder and compare its performance with parallel adder. 8 Marks
   b) Describe the function of an encoder and list its applications. 6 Marks

UNIT-IV

7. a) What is race around problem in JK flip-flops? Explain a method of eliminating this problem. 8 Marks
   b) Show the logic diagram of a clocked D flip-flop with AND and NOR gates. 6 Marks

(OR)

8. a) Explain the circuit diagram of a S-R flip-flop using 2-input NOR gates. 7 Marks
   b) Draw and explain 4-bit shift register with an example. 7 Marks

UNIT-V

9. Design an Excess-3 to BCD code converter using PLA. 14 Marks

(OR)

10. a) Realize the following functions using PROM of size 8 x 3. 8 Marks
    $F_1 = \Sigma m(0, 4, 7)$; $F_2 = \Sigma m(1, 3, 6)$; $F_3 = \Sigma m(1, 2, 4, 6)$
    b) Explain ROM organization. 6 Marks

CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations December - 2016

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) Define a space lattice and unit cell.
b) Describe the BCC crystal structure.
c) Obtain an expression for the packing factor of BCC structure.

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

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

4. a) Distinguish between Hard and Soft magnetic materials.
b) Derive the Clausius-Mossotti equation and explain its significance.

5. a) What is absorption coefficient? How it is determined experimentally?
b) The reverberation time of an empty hall of volume 1000m^3 and average absorption coefficient 0.1 is 4 sec. If the material of absorption coefficient 0.2 is brought into hall, what is the reverberation time ?
c) What are the methods of quieting?

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

7. a) Explain the basic principle of working of an optical fiber.
b) Briefly explain the optical fiber communication system.

8. a) What are the properties and applications of nano materials? What are carbon nanotubes?
b) Write a note on fabrication of nano materials. Mention few applications of nano materials.

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2016

ENGINEERING CHEMISTRY

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. Give an account on preparation and engineering applications of PVC.

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

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

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

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

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2016

ENGINEERING MATHEMATICS

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

b) 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. Trace the curve $y^2(a+x) = x^2(3a - x)$.

5. a) Evaluate $L\{e^{-2t}\cos t\}$

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

6. Using Laplace transform method , solve $(D^2+1)y = 6\cos 2t$, $t > 0$, if $y = 3$, $Dy = 1$ when $t = 0$.

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

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

8. a) Find the constants a, b, c so that the vector $\bar{A} = (x + 2y + az)\bar{i} + (bx - 3y - z)\bar{j} + (4x + cy + 2z)^k$ is irrotational. Also find φ such that $\bar{A} = \nabla\phi$.

b) Evaluate by Greens theorem $\oint_C (y - \sin x)\,dx + \cos x\,dy$ where C is the triangle enclosed by the lines $y = 0$, $x = \pi/2$ and $\pi y = 2x$.

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations December - 2016

MATHEMATICAL METHODS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define rank of a matrix. Find the rank of 'A' by reducing it's echelon form, where

$$A = \begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}.$$

b) Show that the equations $x - 4y + 7z = 8$, $3x + 8y - 2z = 6$, $7x - 8y + 26z = 31$ are consistent and solve them.

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

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

3. a) Find the real root of the equation $\mathbf{x e^x - \cos x = 0}$, using Newton Raphson Method.

b) Fit a straight line of the form $\mathbf{y = a + bx}$ by the method of least squares to the data given below.

x	1	2	3	4
Y	4	11	35	100

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

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

x	5	6	9	11
y	12	13	14	16

5. a) From the following table, find the value of x for which y is maximum and find this value of y.

x	1.2	1.3	1.4	1.5	1.6
y	0.932	0.9636	0.9855	0.9975	0.9996

b) Estimate the value of the integral $\int_1^3 \frac{1}{x}\,dx$ by Simpsons's 1/3rd rule with 4 strips and 8 strips respectively. Determine the error by direct integration.

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

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

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

8. a) Obtain a Fourier series for $\mathbf{f(x)} = |x| \quad -\pi \le x \le \pi$.

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

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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 - 2016

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. a) Write a C program to find the largest of three numbers using conditional expression.
b) Differentiate between auto casting and explicit casting with an example for each.

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

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

6. a) Explain the different storage classes in C.
b) Differentiate **struct**ure and **union**. Write a program to illustrate the difference.

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

8. a) Explain formatted input and output functions with examples.
b) Write a C program to read *n* numbers from command line, find the sum and display on the console.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify the optimization problems.
b) Illustrate any two engineering applications of optimization.

2. a) 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 : $\mathbf{f(x) = 4x^3 - 18x^2 + 27x - 7}$.

3. Solve the following by simplex method
Maximize $\boldsymbol{F = x_1 + 2x_2 + x_3}$
Subject to

$$\boldsymbol{2x_1 + x_2 - x_3 \le 2}$$
$$\boldsymbol{-2x_1 + x_2 - 5x_3 \ge -6}$$
$$\boldsymbol{4x_1 + x_2 + x_3 \le 6}$$
$$\boldsymbol{x_1 \ge 0,\ x_2 \ge 0,\ x_3 \ge 0}$$

4. Solve the following assignment problem:

	Time (Hours)			
	Job 1	Job 2	Job 3	Job 4
Machine 1	14	5	8	7
Machine 2	2	12	6	5
Machine 3	7	8	3	9
Machine 4	2	4	6	10

5. Find the minimum of the function $\boldsymbol{f = x^5 - 5x^3 - 20x + 5}$ by Fibonacci search in the interval (0,5).

6. a) Why is the Powell's method called a pattern search method?
b) Perform two iterations of the steepest descent method to minimize the function $f(x_1, x_2) = 100\,(x_2 - x_1^2)^2 + (1 - x_1)^2$ from the starting point $\begin{Bmatrix} -1.2 \\ 1.0 \end{Bmatrix}$.

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

8. Solve the following linear programming problem by Dynamic programming:
Maximize $\boldsymbol{Z = 2x_1 + 3x_2}$
Subject to $\boldsymbol{x_1 - x_2 \le 1}$, $\boldsymbol{x_1 + x_2 \le 3}$ and $\boldsymbol{x_1 \ge 0, x_2 \ge 0}$.

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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 - 2016

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. Calculate reactions at A, B, C and D as shown in Fig. 1.

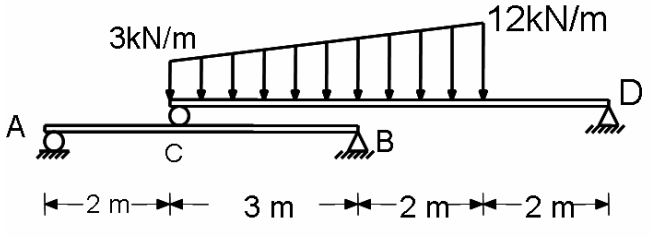

Fig. 1

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

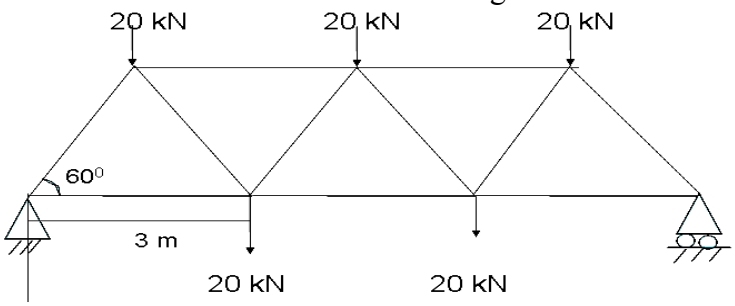

Fig. 2

4. a) What are plane trusses? Discuss the assumptions in design of trusses.
b) Determine the force in each member of the truss shown in Fig.3, and state if the members are in tension or compression. Set $P_1 = P_2 = 4$ kN

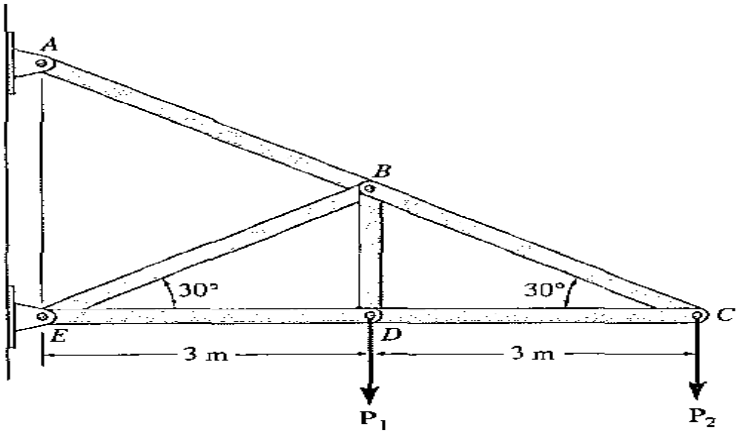

Fig. 3

5. a) Define:

(i) Centroid.
(ii) Centre of mass.
(iii) Centre of gravity.

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

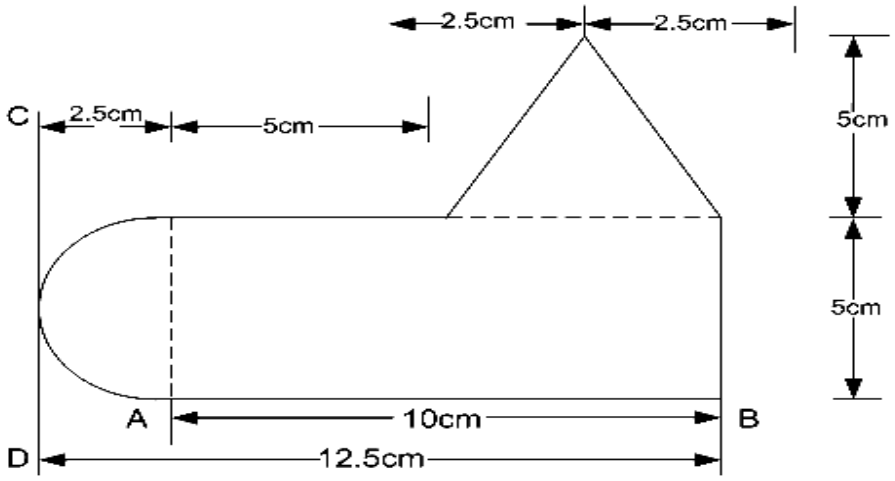

Fig.4

6. a) Define the terms:

(i) Moment of inertia (ii) Radius of gyration

b) Compute the moment of inertia with respect to an axis passing through two opposite apexes of regular hexagon of side 'a'.

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

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

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

(i) lift is moving upward.
(ii) lift is moving downward.

CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various joints in Stone masonry.
b) Write in detail the objects of foundations and essential requirements of a good foundation.

2. a) What are the different types of Stair cases? Explain with the help of figures.
b) Explain the Classification of roofs.

3. a) Write the causes and effects of dampness. Explain the methods of prevention of dampness.
b) Explain the ingredients of the paint. Write the qualities of an ideal paint.

4. a) Explain the importance and general principles of organization.
b) State the causes for accidents. Write the different approaches to safety in construction.

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

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

7. a) What is meant by work break down structure? Give an example of work break down structure for house construction and Highway project.
b) For the given data, draw the step - by - step development of the network and give numbering to the events.

Event	1	2	3	4	5	6	7	8	9	10
Immediate Predecessor	-	1	2	2	2	3,5	3,4	3,7	7	3,6,8,9

8. The following figure shows the network for a construction project, with the three time estimates of each activity marked. Determine:
i) Critical path and its standard deviation
ii) Probability of completion of project in 40 days

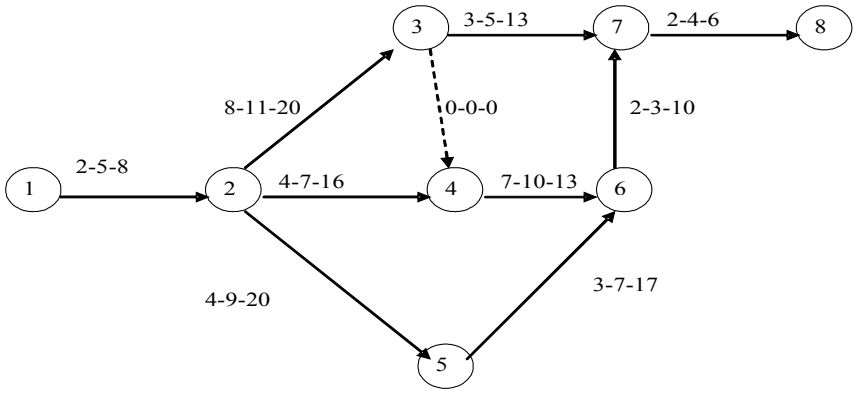

Figure 2

CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

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) Derive the emf equation of a single phase transformer.
b) What is the efficiency and all day efficiency and explain the same.

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

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

5. a) Explain clearly how the revolving field is produced in three phase induction motors.
b) What is meant by slip in induction motors? Obtain a relation between frequency of rotor and stator currents, slip and rotor e.m.f. and rotor reactance.

6. a) Explain cogging and crawling in squirrel cage induction motor.
b) Explain the principle of induction generator.

7. a) Explain the no-load test on a 3-phase induction motor with a neat circuit diagram
b) A 110V, 3 phase star connected induction motor takes 25A at a line voltage of 30V, with a power input of 440W and core loss of 40W, with rotor blocked. The A.C. stator resistance per phase is 0.08 Ω. Find the equivalent leakage reactance per phase of the motor and rotor resistance per phase.

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

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CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

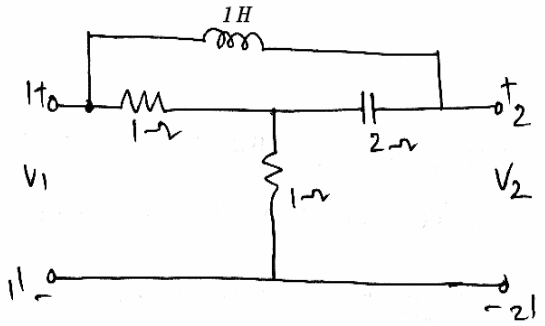
PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

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



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

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

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

5. a) What is phase sequence? Explain its significance.
b) Derive the expressions for watt meter readings in two watt meter method with balanced delta connected load. How do you calculate the power factor of the balanced load from watt meter readings?

6. A 1-phase transformer has 500 primary and 1200 secondary turns. The net cross sectional area of the core is 75cm^2. If the primary winding be connected to 400V, 50Hz supply. Calculate the peak value of flux density in the core and voltage induced in the secondary winding.

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

8. a) Explain the principle operation of shaded pole motor.
b) Draw the characteristics of stepper motor.

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CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. a) What three basic types of current and polarity are used in arc welding?
b) What is the difference between a consumable and non consumable electrode? Explain with examples.

4. a) List and explain the destructive tests applied in welding.
b) What are the essential steps in brazing operation? Explain.

5. a) Describe about plasticity cycle, recrystallization and recovery of metals.
b) Explain the construction and working of 4 high rolling mill.

6. a) Write short notes on elements of die and press.
b) Explain the working of hydraulic press with neat sketch.

7. a) Explain the mechanism of blanking.
b) What are the different stages of blanking.

8. Explain the working of laser beam machining and its applications.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the OS structure and its components.
b) Write short notes on operating system services.

2. a) What is a process? Discuss different process states.
b) Write about multithreading.

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

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

5. a) Write about internal and external fragmentation.
b) Explain any three page replacement algorithms.

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

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?

CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING PHYSICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are Miller Indices? Explain its significance.
b) State and explain Bragg's law.

2. a) Write a short note on electrical conductivity in semi conductors.
b) Write the diode equation and explain the terms in it.

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

4. a) Explain Hysteresis loop, soft and hard magnetic materials.
b) A circular loop of copper having a diameter of 10 cm carries a current of 500 mA. Calculate the magnetic moment associated with the loop.

5. a) Explain the terms: reverberation and time of reverberation.
b) Explain the methods used in acoustic quieting? Explain one method.

6. a) Discuss in detail the BCS theory of super conductivity.
b) With a neat diagram, explain the working of a semiconductor laser.

7. Describe an optical fiber, importance of optical fiber communication systems and give their applications.

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

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING CHEMISTRY

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Flash and fire point properties of lubricants.
b) Give the classification of liquid crystals.

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

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

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

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

6. a) Explain chemical shift in NMR spectroscopy.
b) Give the applications of Flame photometry.

7. a) Explain the properties of nanomaterials.
b) Explain the top down and bottom up methods of preparation of nanomaterials.

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

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING MATHEMATICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Solve $y\log y\,dx + (x - \log y)\,dy = 0$.

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 : $\mathbf{y''' + 2y'' - y' - 2y = 1 - 4x^3}$

b) Solve the differential equation $\mathbf{(D^2 + 1)\,y = cosec\ x}$ by the method of variation of parameters.

3. a) Find the error in calculating the volume of a cone, when there is an error of 0.06cm each in the measuring the radius of 6cm and height 12cm.

b) Find the minimum value of $\mathbf{x^2 + y^2 + z^2}$, given that $\mathbf{xyz = a^3}$.

4. a) Show that the evolute of the cycloid $\mathbf{x = a(\theta - \sin\theta)}$, $\mathbf{y = a(1 - \cos\theta)}$ is another cycloid.

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

5. a) Find the Laplace transform of $\mathbf{t\,e^{-t}\sin 3t}$.

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

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) The arc of the curve $\mathbf{y = x^3}$ between y = 0 and y = 2 is revolved about y axis. Find the area of the surface generated.

b) Change the order of integration evaluate $\int_0^{4a}\int_{x^2/4a}^{2\sqrt{ax}} dy\,dx$.

8. a) Prove that $\nabla\left\{\frac{f(r)\bar{r}}{r}\right\} = \frac{1}{r^2}\frac{d(r^2 f(r))}{dr}$.

b) Use Green's theorem to evaluate $\int_C (x^2 y dx + x^2 dy)$, where C is the boundary described counter clock wise of the triangle with vertices (0,0) (1,0), (1,1).

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MATHEMATICAL METHODS

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

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

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

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

3. a) Evaluate $\sqrt{12}$ and $1/\sqrt{12}$ by the fixed point iteration method.

b) Fit a parabola of the form $y = a + bx + cx^2$ to the following data.

x	1	2	3	4	5	6	7
y	23	5.2	9.7	16.5	29.4	35.5	54.4

4. Given that **f(2) =10, f(1)= 8, f(0) = 5, f(-1) = 10**, estimate f**(0.5)** by using Gauss's forward formula.

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

x	0.60	0.65	0.70	0.75
y	0.6221	0.6155	0.6138	0.6170

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

6. Use Runge -Kutta 4^{th} 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. Find the Z- transform of i) $\sin(3n + 5)$. ii) $\left\{\frac{1}{(n+2)(n+1)}\right\}$.

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

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CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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) Distinguish between **while** and **do-while** control loops with examples.
b) Write a C program to demonstrate **switch** statement.

4. a) Write a program to find GCD of given two numbers
b) Write a program to check whether a given number is palindrome or not.

5. a) Write a C program for binary search.
b) Define string. Write about data to string and string to data conversion with suitable examples.

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

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

8. a) Explain formatted input and output functions with examples.
b) Write a program to read **n** numbers from command line, find the sum and display on the console.

CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between
   (i) concurrent forces and non-concurrent forces.
   (ii) like parallel force system and unlike parallel force system.

   b) The resultant of the two forces, when they act at 60° is 14N. If the same forces are acting at right angles, their resultant is $\sqrt{136}$ N. Determine the magnitude of the two forces.

2. Calculate reactions at A, B, C and D as shown in Fig. 1.

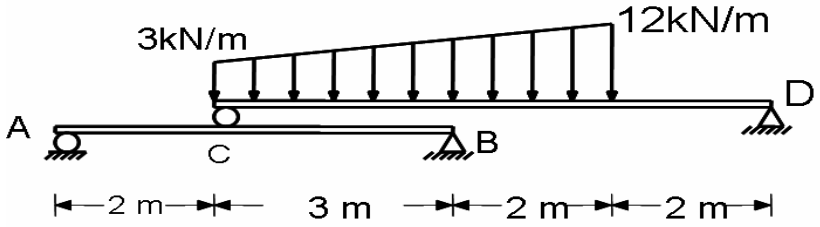

Fig. 1

3. a) Define static and kinetic friction. Write the laws of friction.

   b) What should be the value of the angle θ so that motion of the 40-kg block (Fig.2) impends down the plane? The coefficient of friction μ for all surfaces is 1/3.

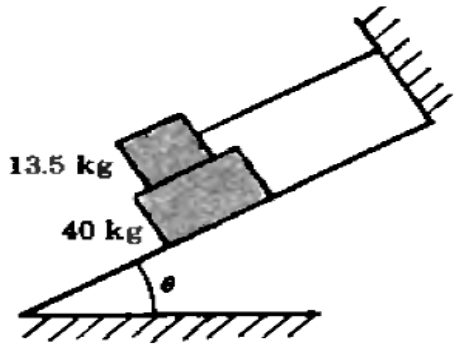

Fig.2

4. a) Explain
   (i) Angle of friction.
   (ii) Angle of repose.

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

5. Determine centroid of lamina of uniform thickness as shown in fig. 3

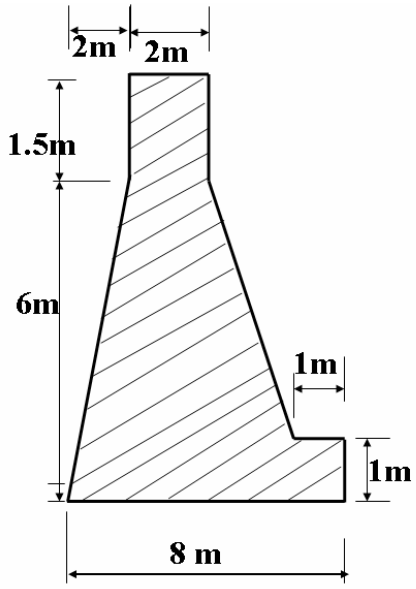

Fig. 3

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 - axes.

7. a) Distinguish between
(i) resultant velocity and relative velocity.
(ii) acceleration and retardation.
b) A cricket ball thrown from a height of 1.8m at an angle of 30° with the horizontal with a speed of 18m/sec is caught by another field man at a height of 0.60m from the ground. How far apart are the two men ?

8. a) State Newton's laws of motion.
b) A man weight 600N on the earth. Find his weight on the moon, where the gravitational acceleration is 1.635m/sec^2.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2016

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]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are Einstein's Coefficients? Find the relation between Einstein's Coefficients.	4 Marks
	b)	Describe the construction and working of He-Ne Laser with the help of suitable diagrams. How is it superior to Ruby Laser?	10 Marks
		(OR)	
2	a)	What is the acceptance angle? Find out the expression for numerical aperture and acceptance angle of step index optical fiber.	10 Marks
	b)	Calculate numerical aperture and acceptance angle for step index optical fiber when core and cladding refractive indices are 1.50 and 1.49 respectively.	4 Marks

UNIT-II

3	a)	What are the absolute frames of reference?	6 Marks
	b)	Discuss about Mass-Energy Equivalence.	8 Marks
		(OR)	
4	a)	How to determine the miller Indices in cubic crystals.	6 Marks
	b)	Derive the Bragg's law and describe the X-ray powder diffraction method.	8 Marks

UNIT-III

5	a)	Describe the various scattering source of electrical resistance in metals.	6 Marks
	b)	Derive and explain Fermi-Dirac distribution.	8 Marks
		(OR)	
6	a)	Discuss the electron in a periodic potential.	8 Marks
	b)	Explain the origin of energy band formation in solids.	6 Marks

UNIT-IV

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

UNIT-V

9	a)	What are Cooper pair of electrons? Describe BCS theory of superconductivity in detail.	8 Marks
	b)	Explain Meissner effect. How is it used to classify the superconductors?	6 Marks
		(OR)	
10	a)	Explain the factors that differentiate nano materials from that of bulk materials.	5 Marks
	b)	What are the different types of carbon nano tubes? What are their properties?	9 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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ENGINEERING CHEMISTRY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How composites are advantageous over normal materials? What are the different constituents available in the composites?	7 Marks
	b)	What are important applications of composites? Give some specific examples.	7 Marks
		(OR)	
2	a)	What are insulators? Differentiate between the different types of insulating materials.	7 Marks
	b)	What are important characteristics of insulating materials? How they are classified?	7 Marks

UNIT-II

3	a)	A sample of water on analysis gives the following $MgCl_2$=9.5ppm, $CaSo_4$=3.4ppm, $Mg(HCO_3)_2$=7.3ppm and $MgSO_4$=6.0ppm. Calculate temporary and permanent hardness of the sample.	7 Marks
	b)	What are scales and sludges? How do they affect the boiler? How can they be prevented?	7 Marks
		(OR)	
4	a)	Discuss the estimation of hardness by EDTA method.	7 Marks
	b)	Discuss desalination of brackish water by reverse osmosis method.	7 Marks

UNIT-III

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

UNIT-IV

7	a)	Describe the fractional distillation of petroleum.	7 Marks
	b)	Define the calorific value of a fuel? Distinguish Grass and Net calorific values.	7 Marks
		(OR)	
8	a)	Explain about flash and fire points and cloud and pour point? What are their significances?	8 Marks
	b)	Write notes on Octane and Cetane number. Explain their significances for IC engines.	6 Marks

UNIT-V

9	a)	Define nano materials. Give the classification of nano materials with some examples.	7 Marks
	b)	Explain the principle of Green Engineering with some examples.	7 Marks
		(OR)	
10	a)	Write about any two methods for synthesis of nano materials.	7 Marks

b) Discuss Green Computing method. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2016

ENGINEERING MATHEMATICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Solve **y' + 2y tan(x) = sin(x)** such that **y(π/3) = 0**. 7 Marks

b) Solve $\frac{dy}{dx} - y\tan x = y^2 \sec x$ 7 Marks

(OR)

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

b) Solve the differential equation $(D^2 + a^2)\, y = \tan ax$ using the method of variation of parameters 7 Marks

UNIT-II

3 a) Verify if $u = 2x - y + 3z$, $y = 2x - y - z$, $w = 2x - y + z$ are functionally dependent. 7 Marks

b) Determine the point where the function $u = x^2 + xy + 3x + 2y + 5$ has a maxima or minima. 7 Marks

(OR)

4 a) Trace the curve $x^3 + y^3 = 3axy$ for all $a > 0$. 7 Marks

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

UNIT-III

5 a) Find the perimeter of the cardioids $r = a(1 - \cos\theta)$ 7 Marks

b) Find the surface area of the solid of revolution of the curve $r = a(1 + \cos\theta)$. 7 Marks

(OR)

6 a) Evaluate $\int_0^1 \int_0^{\sqrt{1-y^2}} x^3 y \, dxdy$ by changing the order of integration. 7 Marks

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

UNIT-IV

7 a) Find the Laplace transform of $t\,e^{2t}\sin 3t$. 7 Marks

b) Find $L^{-1}\left\{\dfrac{s+2}{(s^2+4s+5)^2}\right\}$. 7 Marks

(OR)

8 a) Find the inverse Laplace transform of $\dfrac{s}{(s+2)^2+9}$. 7 Marks

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

UNIT-V

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

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

(OR)

10 a) Use Gauss divergence theorem to evaluate $\iint_S \overline{A}\cdot d\overline{S}$ where $A=x^3\bar{i}+y^3\bar{j}+z^3\bar{k}$ and S is the surface of the sphere $x^2+y^2+z^2=a^2$. 7 Marks

b) A vector field is given by $F=(x^2-y^2+x)\bar{i}-(2xy+y)\bar{j}$. Show that the field F is irrotational and find its scalar potential. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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MATHEMATICAL METHODS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

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

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

(OR)

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

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

UNIT-II

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

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

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

(OR)

4 a) Use Newton's interpolation to find y when x = 8.25 for the following data. 7 Marks

x :	3	4	5	6	7	8	9
y :	2.7	6.4	12.5	21.6	34.3	51.2	72.9

b) Find y(10) from the data 7 Marks

x :	5	6	9	11
y :	12	13	14	16

UNIT-III

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

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

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

(OR)

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

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

UNIT-IV

7 a) Obtain the Half Range Cosine series for $x \sin x$ in $(0, \pi)$. 7 Marks

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

(OR)

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

b) Find the Fourier series to represent function $f(x) = |x|, -\pi < x < \pi$ 7 Marks

UNIT-V

9 a) Form the partial differential equation for $z = yf(x) + xg(y)$ 7 Marks

b) Solve the one dimensional heat flow equation $\frac{\partial u}{\partial t} = C^2 \frac{\partial^2 u}{\partial x^2}$ given that 7 Marks

$u(x,0) = u(L,t) = 0, t > 0$ and $u(x,0) = 3\sin\frac{\pi x}{L}, 0 < x < L$.

(OR)

10 a) Form the PDE from the relation **z= f(x+ it)+g(x-it).** 7 Marks

b) The end A and B of a rod 20cm. long have the temperature 30^0C and 80^0C until steady state prevail. The temperature of the ends are changed to 40^0C to 60^0C. Find the temperature distribution in the rod at time t. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations December - 2016

PROGRAMMING IN C AND DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is programming language? What is its analogy to English language? Give its classification.	7 Marks
	b)	Discuss various flowchart notations with illustrations.	7 Marks
		(OR)	
2	a)	How C language has been standardized? How programs can be developed?	7 Marks
	b)	Explain bitwise operators with suitable code segments.	7 Marks

UNIT-II

3	a)	Write a C program to print the reverse number of a given number.	7 Marks
	b)	Describe formatted input in **scanf** function.	7 Marks
		(OR)	
4	a)	Mention any three formatted and unformatted input and output statements used in C programming language.	7 Marks
	b)	Discuss multi-way selection statement with an example program.	7 Marks

UNIT-III

5	a)	Discus representation of array elements in memory with illustrations.	7 Marks
	b)	Write a program to display sum of the primary diagonal numbers in n x n matrix.	7 Marks
		(OR)	
6	a)	What is a string with respect to C? How is it declared, initialized and manipulated?	7 Marks
	b)	Describe parameter passing techniques for functions.	7 Marks

UNIT-IV

7	a)	Write about dynamic memory allocation and C functions for it.	7 Marks
	b)	What is the need for enumerations? Explain with an example program.	7 Marks
		(OR)	
8	a)	With a program, explain the usage of command line arguments.	7 Marks
	b)	Explain working with text files.	7 Marks

UNIT-V

9	a)	Compare linked list with array. List the merits and demerits of linked list.	7 Marks
	b)	Explain operations performed on doubly linked list.	7 Marks
		(OR)	
10	a)	What is queue? Discuss all its variants.	7 Marks
	b)	Discuss tree as a data structure. Explain its applications in detail.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2016

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the characteristics of a flowchart?	7 Marks
	b)	Draw flowchart for finding largest among three numbers.	7 Marks
		(OR)	
2	a)	What is a constant? List out different constants used in C.	7 Marks
	b)	What is the use of variable? Why they are needed?	7 Marks

UNIT-II

3	a)	Give different loops used in C.	7 Marks
	b)	Write a C program to check given number is perfect number or not.	7 Marks
		(OR)	
4	a)	Write note on nested loop statements.	7 Marks
	b)	Write a C program to print the given number in prime or not.	7 Marks

UNIT-III

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

UNIT-IV

7	a)	What are advantages of pointers? How it is used in arrays?	7 Marks
	b)	Write a C program for swapping two elements using pointers.	7 Marks
		(OR)	
8	a)	What is meant by pointer? Explain about pointer to array.	7 Marks
	b)	Write a C program to copy one string to another string using pointers.	7 Marks

UNIT-V

9	a)	What are characteristics of a data structure? Why data structures are used?	7 Marks
	b)	Write a C program for stack implementation using pointers.	7 Marks
		(OR)	
10	a)	Write a C program to implement queue.	7 Marks
	b)	Write a C program to copy the contents of a file into another file.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2016

TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	During his childhood, many people influenced Abdul Kalam in a positive way. Write a note on who they are and how they influenced him.	14 Marks
	(OR)	
2	According to Albert Mehrabian "93% of our communication is done through non-verbal communication." Justify.	14 Marks

UNIT-II

3	How did N.R.Narayan Murthy realize the vision of eradicating poverty in societies? Explain citing examples from his life.	14 Marks
	(OR)	
4	Differentiate between active and passive listening. What are the five steps to active listening?	14 Marks

UNIT-III

5	Recall the most terrible disaster that has occurred recently and the kind of rescue operations that you could have provided given a chance to volunteer.	14 Marks
	(OR)	
6	The most effective way to hold an audience's attention is to make proper use of paralinguistic features. In the light of the statement, discuss the importance of various paralinguistic features.	14 Marks

UNIT-IV

7	How does C.V.Raman synthesize the study of science with love of nature?	14 Marks
	(OR)	
8	What is critical reading and what are the sub-skills required for critical reading?	14 Marks

UNIT-V

9	Write a character sketch of Baron Hausberg highlighting i) his fortune as described by Trevor ii) his desire to be painted as a beggar	14 Marks
	(OR)	
10	What are the features of effective writing? Explain with reference to coherence, clarity, precision and conciseness.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2016

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

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

(OR)

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

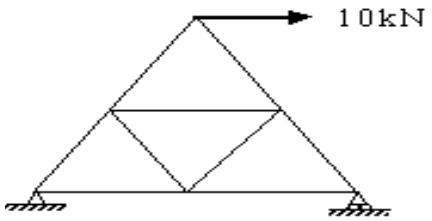
UNIT-II

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

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

(OR)

4 Detrmine the forces in the members of the truss shown in the following figure. All triangles are equilateral triangles. 14 Marks



UNIT-III

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

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

(OR)

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

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

UNIT-IV

7 The position of a particle moving along a straight line is defined by the relation $\mathbf{x = t^3-9t^2+15t+18}$ where x is expressed in metre ***m*** and ***t*** in seconds. Determine the time, position and acceleration of the particle when its velocity becomes zero. 14 Marks

(OR)

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

UNIT-V

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

(OR)

10 A slender rod 5m long moves with its ends contact with horizontal and vertical floors. For a position, that the base of the bar is 3m from the vertical wall, the end resting on the horizontal floor moves with a rightward with a speed of 6m/s and a leftward acceleration of $8m/sec^2$. Determine the velocity and acceleration of the other end. 14 Marks

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

ENGINEERING PHYSICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the characteristics of lasers and write about the applications in medical field.	6 Marks
	b)	Describe the construction and working of a semiconductor laser with neat diagram.	8 Marks

(OR)

2	a)	What is a hologram? Discuss about the construction and reconstruction of image on a hologram with neat diagrams.	10 Marks
	b)	An optical fiber has a core glass material of refractive index 1.6 and cladding glass material of refractive index 1.55. What are the values for critical angle and the angle of cone of acceptance?	4 Marks

UNIT-II

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

UNIT-III

5	a)	What are matter waves? Show that the wavelength λ associated with a particle of mass m and when kinetic energy E is equal to $\frac{h}{\sqrt{2mE}}$.	6 Marks
	b)	Explain the Fermi-Dirac function F(E) for electrons in a metal and write the effect of temperature on F(E).	8 Marks

(OR)

6	a)	How can you differentiate the metals, semiconductors and insulators on the basis of band theory of solids.	7 Marks
	b)	Using the Kronig-Penny model, show that for P<<1, the energy of lowest energy band is $E = \frac{h^2 P}{ma^2}$.	7 Marks

UNIT-IV

7	a)	Derive the Clausius- Mossotti equation.	8 Marks
	b)	State and explain the polarization and dielectric constant.	6 Marks
		(OR)	
8	a)	Distinguish between intrinsic and extrinsic semiconductors with examples.	6 Marks
	b)	Derive the Einstein's relation.	8 Marks

UNIT-V

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

ENGINEERING CHEMISTRY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

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

UNIT-II

3	a)	A sample of water on analysis gives the following. $MgCl_2$=9.5ppm, $CaSo_4$=3.4ppm, $Mg(HCO_3)_2$=7.3ppm, $MgSO_4$=6.0ppm. Calculate temporary and permanent hardness of the sample.	7 Marks
	b)	What are scales and sludges? How do they effect the boiler? How can they be prevented?	7 Marks
		(OR)	
4	a)	Discuss the estimation of hardness by EDTA method.	7 Marks
	b)	Discuss desalination of brackish water by reverse osmosis method.	7 Marks

UNIT-III

5	a)	How to construct the nickel-cadmium battery?	7 Marks
	b)	Discuss about phosphoric acid fuel cells.	7 Marks
		(OR)	
6	a)	Define corrosion. Explain galvanic corrosion.	7 Marks
	b)	Calculate the standard emf of Ni-Ag cell whose E°_{Ni} and E°_{Ag} are - 0.25 and 0.83V also write the cell representation.	7 Marks

UNIT-IV

7	a)	Define lubricants. Discuss its important functions.	7 Marks
	b)	Explain the characteristics of a good fuel with some examples.	7 Marks
		(OR)	
8	a)	Describe how the calorific value of a gaseous fuel is determined by using Junkers gas calorimeter.	7 Marks
	b)	Write short note on: i) Cloud point. ii) Mechanical Strength.	7 Marks

UNIT-V

9	a)	Define nano materials. Give the classification of nano materials with examples.	7 Marks
	b)	Explain the principle of Green Engineering with examples.	7 Marks
		(OR)	
10	a)	Write about any two methods for synthesis of nano materials.	7 Marks
	b)	Discuss Green Computing method.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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

ENGINEERING MATHEMATICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Solve: $r\sin\theta\, d\theta + (r^3 - 2r^2\cos\theta + \cos\theta)dr = 0$. 7 Marks

b) Solve: $y'' - 6y' + 9y = \dfrac{e^{3x}}{x^2}$ by the method of variation of parameters. 7 Marks

(OR)

2 a) Solve: $y'' + 4y' + 4y = 3\sin x + 4\cos x$, $y(0) = 1$ and $y'(0) = 0$. 7 Marks

b) Find the orthogonal trajectories of the cardioids $r = a(1 - \cos\theta)$. 7 Marks

UNIT-II

3 a) If $\boldsymbol{u = x^2 - 2y^2}$, $\boldsymbol{v = 2x^2 - y^2}$ where $\boldsymbol{x = r\cos\theta}$, $\boldsymbol{y = r\sin\theta}$ then show that $\dfrac{\partial(u,v)}{\partial(r,\theta)} = 6r^3\sin 2\theta$. 7 Marks

b) Trace the curve $\boldsymbol{x^3 + y^3 = 3ay}$. 7 Marks

(OR)

4 a) If $u = x^4y^2\sin^{-1}\left(\dfrac{y}{x}\right)$ then find the value of $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y}$. 7 Marks

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

UNIT-III

5 a) Find the area of the segment cut off from the parabola $\boldsymbol{x^2 = 8y}$ by the line $\boldsymbol{x - 2y + 8 = 0}$. 7 Marks

b) Find the length of an arc of the curve **y = log sec x** between **θ = 0** and **π/3**. 7 Marks

(OR)

6 a) Evaluate $\int_0^a\int_0^{\sqrt{a^2-x^2}} e^{-(x^2+y^2)}dxdy$. 7 Marks

b) Evaluate $\int_0^1\int_0^{\sqrt{1-x^2}}\int_0^{\sqrt{1-x^2-y^2}} \dfrac{dx\,dy\,dz}{\sqrt{1-x^2-y^2-z^2}}$. 7 Marks

UNIT-IV

7 a) Find the Laplace transform of $\boldsymbol{e^{-3t}t^2\sin t}$. 7 Marks

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

(OR)

8 a) Find the inverse Laplace transform of $\frac{s}{(s^2+9)^2}$. 7 Marks

b) Solve **y''- 3y'+2y = 4t+e^{3t}** given **y(0)=1**, **y'(0)= -1**, using Laplace transform. 7 Marks

UNIT-V

9 a) Prove that **div(grad r^n) = n(n+1) r$^{(n-2)}$** , if $\bar{r} = xi + yj + zk$. 7 Marks

b) Evaluate $\int_s curl\, \bar{f} \cdot \bar{n}\, ds$ where $\bar{f}$ **= (x^2+y-4)i + 3xy j +(2xz+z^2)k** and **S** is the surface of the paraboloid **z = 4 - (x^2+y^2)** above the xy-plane. 7 Marks

(OR)

10 a) Find the maximum value of the directional derivative of **f(x, y, z)=x^{2}yz** at **(1,4,1).** 7 Marks

b) Apply Green's theorem to evaluate $\int_C (2xy - x^2)dx + (x^2 + y^2)dy$, where C is bounded by **y=x^2** and **x=y^2**. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

MATHEMATICAL METHODS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Reduce the matrix $A = \begin{bmatrix} 1 & 2 & -1 & 4 \\ 2 & 4 & 3 & 4 \\ 1 & 2 & 3 & 4 \\ -1 & 2 & 6 & -7 \end{bmatrix}$ into Echelon form and hence find its rank. 7 Marks

b) Find the Characteristic roots of the matrix $\begin{pmatrix} 1 & 2 & 3 \\ 0 & -4 & 2 \\ 0 & 0 & 7 \end{pmatrix}$ and verify Caley-Hamilton theorem. 7 Marks

(OR)

2 a) Show that the system of equations $2x_1 - 2x_2 + x_3 = \lambda x_1$, $2x_1 - 3x_2 + 2x_3 = \lambda x_2$, $-x_1 + 2x_2 = \lambda x_3$ can posses a non-trivial solution only, if $\lambda = 1, \lambda = -3$. Obtain the general solution in each case. 7 Marks

b) Reduce the quadratic form $8x^2 + 7y^2 + 3z^2 - 8yz + 4zx - 12xy$ into the canonical form and specify the matrix of transformation. 7 Marks

UNIT-II

3 a) Find an approximate root of the equation $x^3 - 3x - 5 = 0$, using Newton-Raphson method and correct to four decimal places. 7 Marks

b) Fit a parabola $y = a + bx + cx^2$ to the following data 7 Marks

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

(OR)

4 a) Estimate the value of f(3.5) from the following data. 7 Marks

x :	3	4	5	6	7	8	9
f(x) :	2.7	6.4	12.5	21.6	34.3	51.2	72.9

b) Define forward, backward , central difference operators. 7 Marks

UNIT-III

5 a) The distance covered by an athlete for the 50 metre is given in the table: 7 Marks

Time(sec)	: 0	1	2	3	4	5	6
Distance (metre)	: 0	2.5	8.5	15.5	24.5	36.5	50

Determine the speed of the athlete at t = 5 sec. correct to two decimals.

b) Solve $y' = x + y$, given $y(1) = 0$. Find $y(1.1)$ and $y(1.2)$ by Taylor's series method. Also compare the result with its exact value. 7 Marks

(OR)

6 a) Given that 7 Marks

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

evaluate $\int_4^{5.2} \log x dx$ by Simpson's 3/8**th** rule.

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

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

UNIT-IV

7 a) Obtain the half range cosine series for $x \sin x$ in $(0,\pi)$. 7 Marks

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

(OR)

8 a) Find $Z^{-1}(\frac{z}{(z-2)(z-3)})$ using convolution theorem. 7 Marks

b) Find the Fourier series to represent function $f(x) = |x|, -\pi < x < \pi$. 7 Marks

UNIT-V

9 a) Form the partial differential equation for $z = yf(x) + xg(y)$. 7 Marks

b) Solve the one dimensional heat flow equation $\frac{\partial u}{\partial t} = C^2 \frac{\partial^2 u}{\partial x^2}$ given that 7 Marks

$u(x,0) = u(L,t) = 0, t > 0$ and $u(x,0) = 3\sin\frac{\pi x}{L}, 0 < x < L$.

(OR)

10 a) Solve by the method of separation of variables $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, where $u(x,0) = 6e^{-3x}$. 7 Marks

b) A tightly stretched string with fixed end points x=0 and x=k is initially at its rest in its equilibrium position. If it is set to vibrate by giving each of its points a velocity **λx(k – x),** find the displacement of the string at any distance x from one end at any time. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROGRAMMING IN C AND DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw a flow chart that to find the reverse of a given number.	7 Marks
	b)	What is a compiler? Differences between compiler and an interpreter.	7 Marks
		(OR)	
2	a)	Describe the process of compilation and executing high-level language programs.	7 Marks
	b)	Write the advantages and limitations of using flowcharts.	7 Marks

UNIT-II

3	a)	What are non-formatted input and output statements in C? Give suitable examples.	7 Marks
	b)	Explain the use of **break** and **continue** statement in loops with example.	7 Marks
		(OR)	
4	a)	Explain the **while** statement with an example.	7 Marks
	b)	Write a C program to find the GCD of two numbers.	7 Marks

UNIT-III

5	a)	Write a C program for searching an element using binary search. How many elements can be found by using two or less than two comparisons in binary search.	7 Marks
	b)	What are the different ways of passing arguments in C? Illustrate them with an example.	7 Marks
		(OR)	
6	a)	What is user defined function? What is recursion and write the advantages of recursion?	7 Marks
	b)	Write the recursive C program to find the factorial of a given number.	7 Marks

UNIT-IV

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

UNIT-V

9	a)	Write an algorithm to insert new node at the beginning, at middle position and at the end of a singly linked list.	7 Marks
	b)	Describe binary search with the help of an example. Take minimum seven values.	7 Marks
		(OR)	
10	a)	Construct a binary search tree from the given values. Consider the first value as the root value. Values: **45, 23, 29, 85, 92, 7, 11, 35, 49, 51.**	7 Marks
	b)	Write C program for binary search using function.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

PROBLEM SOLVING AND COMPUTER PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define algorithm. Explain the characteristics of algorithm.	7 Marks
	b)	Explain about different types of constants in C.	7 Marks
		(OR)	
2	a)	Explain the types of operators in C language.	7 Marks
	b)	Write a C program to print the grades of students in an academic institution using else if ladder.	7 Marks

UNIT-II

3	a)	Write a C program for reads four integers from the keyboard. Calculate their averages and then prints the numbers with their averages.	7 Marks
	b)	Write about Initialization and Updating concepts with examples.	7 Marks
		(OR)	
4	a)	Write a C program to print the Fibonacci series.	7 Marks
	b)	Define switch condition and explain with a C program.	7 Marks

UNIT-III

5	a)	Give an expression to find the physical address of an element in an array.	7 Marks
	b)	Write a program to print lower triangle of a matrix.	7 Marks
		(OR)	
6	a)	Define string. List out string functions in C.	7 Marks
	b)	Write a program to concatenation of two strings.	7 Marks

UNIT-IV

7	a)	Define pointer. Explain pointer to pointer.	7 Marks
	b)	Write a program for swapping two elements using pointers.	7 Marks
		(OR)	
8		Write a program for string sorting using pointers.	14 Marks

UNIT-V

9	a)	Explain comment line arguments with the help of example.	7 Marks
	b)	Write a C program to reverse the content of a file.	7 Marks
		(OR)	
10	a)	Define stack. Illustrate stack with the help of example.	7 Marks
	b)	Write a C program to perform push and pop operation in stack.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

TECHNICAL ENGLISH

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Describe the instances that led to communal harmony among Orthodox Hindu Brahmin families and Muslims at Rameshwaram during the childhood days of Kalam.	14 Marks
		(OR)	
2		"Communication refers to the exchange of ideas, information, feelings and emotions". Explain	14 Marks

UNIT-II

3	a	Explain the philanthropic side of Narayana Murthy's personality.	7 Marks
	b	Define the terms "fixed mind set" and "growth mind set" according to Narayana Murthy.	7 Marks
		(OR)	
4		What are the barriers for effective listening? How can you, as a good listener, overcome these barriers?	14 Marks

UNIT-III

5		Disasters both natural and manmade expose the most vulnerable sections of society to grave danger. Explain with reference to the havoc created by Tsunami at Malacca.	14 Marks
		(OR)	
6		List four factors each that are essential for improving fluency and accuracy with reference to speaking.	14 Marks

UNIT-IV

7		Give an account of C.V. Raman's early life and education Highlight the credentials of C.V. Raman in his career with reference to 'Raman Effect'.	14 Marks
		(OR)	
8		How do eye movements and eye fixations affect reading? How could one improve one's reading efficiency? Elucidate.	14 Marks

UNIT-V

9		Describe the appearance of the beggar-man as he stood in the studio of Alan Trevor. Also describe how and through whom did Hughie get ten thousand pounds.	14 Marks
		(OR)	
10		Write short notes on the following: i) Ideation in technical communication. ii) Linguistic competence. iii) Organizational competence.	14 Marks

iv) Communication barriers.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

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

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

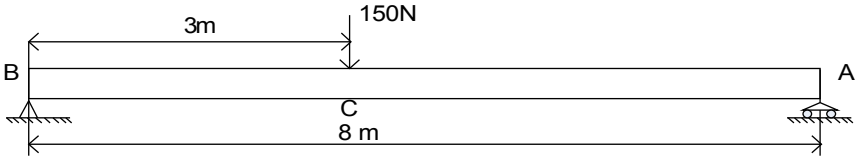
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) List out the forces omitted from the equation of virtual work. 6 Marks

b) Using the principle of virtual work, determine the reaction at B of a simply supported beam of span 8m as shown in figure. 8 Marks



(OR)

2 A screw press ***s*** used to compress books. The thread is a double thread square head with a pitch of 5mm and mean radius of 30mm. The coefficient of friction **μ** for the contact surfaces of the threads is 0.35. Determine the torque required for a pressure of 700N. 14 Marks

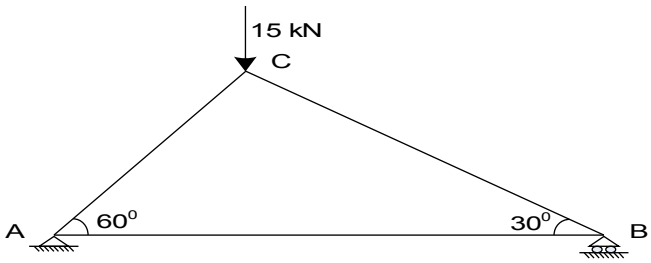
UNIT-II

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

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

(OR)

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



UNIT-III

5 Determine the second moment area of a Tee- section about two orthogonal axes passing through the centroid. Height of the section is 220mm, flange width is 150mm, flange thickness is 20mm. 14 Marks

(OR)

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

UNIT-IV

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

(OR)

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

UNIT-V

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

(OR)

10 A slender rod 5m long moves with its ends contact with horizontal and vertical floors. For a position, that the base of the bar is 3m from the vertical wall, the end resting on the horizontal floor moves with a rightward with a speed of 6m/s and a leftward acceleration of 8m/sec^2. Determine the velocity and acceleration of the other end. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Reduce the matrix $A = \begin{bmatrix} 1 & 2 & 1 & 0 \\ -2 & 4 & 3 & 0 \\ 1 & 0 & 2 & -8 \end{bmatrix}$ to canonical form (normal) and find its rank. 7 Marks

b) Two eigen values of the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ are = 1 each. Find the eigen values and eigen vectors of the matrix A^{-1}. 7 Marks

(OR)

2 a) Investigate the values of λ and μ so that the equations 7 Marks
2x+3y+5z=9
7x+3y-2z=8
2x+3y+λ z=μ
Have (i) no solution (ii) a unique solution and (iii) an infinite number of solutions.

b) Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$ and find its inverse. Also express $\mathbf{A^5-4A^4-7A^3+11A^2-A-10\ I}$ as a linear polynomial in A. 7 Marks

UNIT-II

3 a) Using Lagrange's interpolation formula find the value of '*y*' when *x* = 5 if the following values of x and *y* given. 7 Marks

x :	0	2	3	6
y :	648	704	729	792

b) Using Regula-falsi method, find the real root of the equation $xe^x - 2 = 0$, correct to three decimal places. 7 Marks

(OR)

4 a) The following table gives corresponding values of x and *y*. Construct the difference table and then express *y* as a function of *x*. 7 Marks

x :	0	1	2	3	4
y :	3	6	11	18	27

b) By the method of least squares, fit a parabola $y = a + bx + cx^2$ to the following data. 7 Marks

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

UNIT-III

5 a) Solve $dy/dx = 4-2x$, $y(0)=2$ with $h=0.5$ in two steps using modified Euler method. 7 Marks

b) A rod is rotating in a plane. The following table gives the angle θ(radians) through which the rod has turned for various values of time t seconds. 7 Marks

t	0	0.2	0.4	0.6
θ	0	0.12	0.49	1.12

Calculate the angular acceleration of the rod when t=0.6 seconds.

(OR)

6 a) Solve the differential equation $dy/dx = x^2+y$, $y(0)=1$ by Euler method and compute y(0.02), y(0.04) and y(0.06). 7 Marks

b) A solid of revolution is formed by rotating about the X-axis, the area between the X-axis, the lines x=0 and x=1 and a curve through the points with the following coordinate: 7 Marks

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

UNIT-IV

7 a) Find the Fourier series to represent the function $f(x)$ given by 7 Marks

$$f(x) = \begin{cases} -k & for \ -\pi < x < 0 \\ k & for \ 0 < x < \pi \end{cases}$$

Hence deduce that $1-1/3+1/5-1/7+ \ldots = \pi/4$.

b) 7 Marks

Use Fourier cosine integral, show that $\int_0^\infty \frac{\cos \omega x}{1+\omega^2} d\omega = \frac{\pi}{2} e^{-x} (x > 0)$.

(OR)

8 a) Obtain the half –range sine and cosine series for e^x in $(0, \pi)$. 7 Marks

b) Find the Fourier integral representation of $f(x) = \begin{cases} 1-x^2 & for \ |x| \le 1 \\ 0 & for \ |x| > 1 \end{cases}$ 7 Marks

UNIT-V

9 a) Form the partial differential equation by eliminating the arbitrary function ϕ from $\phi\ (y/x, x+y+z) = 0$. 4 Marks

b) A tightly stretched flexible string has its ends fixed at x=0 and $x=L$. At time $t=0$, the string is given a shape defined by $f(x) = \lambda x(L-x)$, where λ is a constant and then released. Find the displacement at any point x of the string at any time $t > 0$. 10 Marks

(OR)

10 a) Form the partial differential equation by eliminating the arbitrary functions f_1 and f_2 from $z = x f_1(x+t) + f_2(x+t)$. 4 Marks

b) A tightly stretched string with fixed end points $x = 0$ and $x = 1$ is initially in a position given by $y = y_0 \sin^3(\pi x)$. If it is released from rest from this position, find the displacement $y(x, t)$, using variable separable method. 10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define Beta and Gamma functions and derive the relation between them. 7 Marks

b) Show that $\frac{d}{dx}\left[x^n J_n(x)\right] = x^n J_{n-1}(x)$. 7 Marks

(OR)

2 a) Express $\int_0^1 x^m (1-x^n)^p \, dx.$ in terms of gamma function and evaluate 7 Marks

$\int_0^1 x^5 (1-x^3)^{10} \, dx$.

b) Derive orthogonality relation of Bessel functions. 7 Marks

UNIT-II

3 a) Prove that the function $f(z)$ defined by $f(z) = \frac{x^3(1+i) - y^3(1-i)}{x^2+y^2}, (z \neq 0)$ is $= 0 \quad , (z = 0)$ 7 Marks

continuous and Cauchy-Riemann equations are satisfied at the origin but $f'(0)$ does not exist.

b) Find ***a*** and ***b*** if $f(z) = (x^2 - 2xy + ay^2) + i(bx^2 - y^2 + 2xy)$ is analytic. Hence find $f(z)$ in terms of z. 7 Marks

(OR)

4 a) If $f(z)$ is analytic then show that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right) |\text{Real } f(z)|^2 = 2|f'(z)|^2$. 7 Marks

b) Find the analytic function whose real part is $\frac{y}{x^2+y^2}$. 7 Marks

UNIT-III

5 a) Evaluate $\int_0^{1+i} (x - y + ix^2)\, dz$ along the real axis from z =0 to z = 1 and then along a line parallel to imaginary axis from z = 1 to z = 1 +i. 7 Marks

b) Use Cauchy's and integral formula to evaluate $\oint_c \frac{e^{2z}}{(z+1)^4} dz$ where c is the circle $|z| = 2$. 7 Marks

(OR)

6 a) Evaluate $\oint_c \frac{3z^2 + 7z + 1}{(z+1)} dz$ where c is the circle $|z+i|=1$. 7 Marks

b) Expand $f(z) = \frac{(z-2)(z+2)}{(z+1)(z+4)}$ is the region (i) $|z| <$ |, (ii) $|z| > 4$, (iii) $1<|z|<4$. 7 Marks

UNIT-IV

7 a) Determine the poles and corresponding residues for the function $f(z) = \frac{z^2}{(z-1)^2(z+2)}$. 7 Marks

b) By the method of residues evaluate $\int_0^{2\pi} \frac{d\theta}{2+\cos\theta}$. 7 Marks

(OR)

8 a) Calculate the value of $\oint_c \frac{1-2z}{z(z-1)(z-2)}\,dz$ where c is the circle $|z|=1.5$. 7 Marks

b) Evaluate $\int_{-\infty}^{\infty} \frac{x^2}{(x^2+a^2)(x^2+b^2)}\,dx$ $(a>0, b>0)$. 7 Marks

UNIT-V

9 a) If $w = \frac{1+iz}{1-iz}$, find the image of $|z| < 1$. 7 Marks

b) Find the bilinear transformation which maps the points (-1, 0, 1) in to the points $(0, i, 3i)$. Also find the fixed points of the transformation. 7 Marks

(OR)

10 a) Define cross ratio of four points and show that a bilinear transformation preserve cross ratio of points in a complex plane theorem where c is $|z|=2$. 7 Marks

b) Show that the image of the hyperbola $x^2 - y^2 = 1$ under the transformation $w = \frac{1}{z}$ is the lemniscates $\rho^2 = \cos 2\phi$. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

PROBABILITY AND STATISTICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define random variable, discrete random variable, continuous random variable and conditional probabilities. 7 Marks

b) If x and y are continues random variable, then prove that $E(X+Y) = E(X) + E(Y)$. 7 Marks

(OR)

2 a) If *x* and *y* are continuous random variable, then prove that $E(XY) = E(X)E(Y)$. 7 Marks

b) A Probability cure y = f (x) has a range from 0 to $\propto$ if $\mathbf{f(x) = e^{-x}}$, find the mean, variance and the third moment. 7 Marks

UNIT-II

3 a) If a Poisson distribution is such that $\frac{3}{2}P(x=1) = P(x=3)$, find 7 Marks

i) P(x ≥1) ii) P(x ≤ 3) iii) P(2 ≤ x ≤ 5)

b) In a sample of 1000 cases, the mean of a certain test is 14 and standard deviation is 2.5. Assuming the distribution to be normal, find 7 Marks

i) How many students score between 12 and 15?

ii) How many students score above 18?

(OR)

4 a) Fit a binomial distribution for the following data and calculate the expected frequencies. 7 Marks

x	0	1	2	3	4	5
f(***x***)	38	144	342	287	164	25

b) Find the mean and standard deviation of a normal distribution in which 31% of items are under 45 and 8% are over 64. 7 Marks

UNIT-III

5 a) Write briefly 7 Marks

i) Advantages and limitations of statistical quality control.

ii) **np** and **c** charts.

b) Obtain the rank correlation co-efficient for the following data. 7 Marks

x	9	12	15	17	19
y	7	8	9	12	15

(OR)

6 a) Derive any three properties of Regression Lines. 7 Marks

b) Find the correlation co-efficient between x and y variables. 7 Marks

X	9	11	14	15	17	19
Y	7	5	8	9	11	12

UNIT-IV

7 a) Define the following 8 Marks
i) Sampling distribution
ii) Standard error
iii) Errors in sampling
iv) Level of significance

b) According to the norms established for a mechanical aptitude test, persons who are 18 years old have an average height of 73.2 with a standard deviation of 8.6. If 4 randomly selected persons of that age averaged 76.7, test the hypothesis m = 73.2 against the alternative hypothesis m > 73.2 at the 0.01 level of significance. 6 Marks

(OR)

8 a) A manufacturer claimed that atleast 95% of the equipment which he supplied to factory conformed to specifications. An examination of a sample of 200 pieces of equipment revealed that 18 were faulty. Test his claim at 5% level of significance. 7 Marks

b) Samples of students were drawn from two universities and from their weights in kilograms, mean and standard deviations are calculated and shown below. Make a large sample test to test the significance of the difference between the means. 7 Marks

	Mean	**S.D.**	**Size of the sample**
University A	55	10	400
University B	57	15	100

UNIT-V

9 a) The time taken by workers in performing a job by method I and method II is given below: 7 Marks

Method I	20	16	26	27	23	22	-
Method II	27	33	42	35	32	34	38

Do the data show that the variances of time distribution from population from which these samples are drawn do not differ significantly?

b) A dice is thrown 60 times with the following results. Test the goodness of fit at 5% level. 7 Marks

Face	1	2	3	4	5	6
Frequency	8	7	12	8	14	11

(OR)

10 a) A random sample of 10 boys had the following IQ's : 70, 120, 110, 101, 88, 83, 95, 98,107, 100. 7 Marks
i) Do these data support the assumption of a population mean I. Q. of 100.
ii) Find a reasonable range in which most of the mean I.Q. Values of samples of 10 boys lie.

b) Two researchers adopted different sampling techniques while investigating some group of students to find the number of students falling into different intelligence level. The results are as follows: 7 Marks

Researchers	**Below Average**	**Average**	**Above Average**	**Genius**	**Total**
X	86	60	44	10	200
Y	40	33	25	2	100
Total	126	93	69	12	300

Would you say that the sampling techniques adopted by the two researchers are significantly different?

CODE No.:14BT3HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

ENVIRONMENTAL SCIENCES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the impacts of modern agriculture system?	7 Marks
	b)	Explain the role of individual in conservation of natural resources.	7 Marks
		(OR)	
2		Briefly explain the renewable and non renewable resources.	14 Marks

UNIT-II

3	a)	Differentiate between ecosystem and ecotone. With help of a forest ecosystem, explain the various components of the ecosystem.	7 Marks
	b)	Discuss the different types of ecological pyramids.	7 Marks
		(OR)	
4	a)	Explain the threats that lead to loss of biodiversity. What would be the effects of loss of biodiversity?	7 Marks
	b)	Explain what do you mean by In-situ and Ex-situ conservation of Biodiversity.	7 Marks

UNIT-III

5		Briefly explain the Solid Waste Management and Disaster Management.	14 Marks
		(OR)	
6		Write about the sources, effects and control methods of Thermal and Nuclear Pollution.	14 Marks

UNIT-IV

7	a)	List the gases responsible for global warming. Explain the possible consequences of green house effect.	7 Marks
	b)	Present salient features of Water Act.	7 Marks
		(OR)	
8	a)	Explain the concept of sustainable development.	7 Marks
	b)	Write a detailed note on wasteland reclamation.	7 Marks

UNIT-V

9	a)	What is the role of Information Technology in Environment and human health?	7 Marks
	b)	Explain about HIV/AIDS and at least five water borne diseases.	7 Marks
		(OR)	
10		Explain the characteristics of population and the causes for variations among Nations.	14 Marks

CODE No.:14BT30101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Define Geology and write its importance in civil engineering.	14 Marks
	(OR)	
2	Write types of soils and conservation measures for soil erosion in India.	14 Marks

UNIT-II

3	Describe the identification of minerals using physical properties.	14 Marks
	(OR)	
4	Give an account of megascopic study of Granite, Shale and Marble.	14 Marks

UNIT-III

5	Describe the folds, basing on the position of axial plane and degree of compression of beds.	14 Marks
	(OR)	
6	Explain the radio metric and geothermal methods.	14 Marks

UNIT-IV

7	Describe fundamental properties which control occurrence and distribution of groundwater in various geological formations.	14 Marks
	(OR)	
8	Write about earthquakes, classification, intensity and seismic belts.	14 Marks

UNIT-V

9	Explain earthquake and its impact on civil engineering structures. Suggest best possible earthquake resistant structures.	14 Marks
	(OR)	
10	Describe geological and non-geological investigations required for reservoirs.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A bar of 50mm diameter was subjected to 250kN axial pull and the resulting extension was found to be 0.12mm over the gauge length of 200mm. Also the corresponding contraction in diameter was recorded as 0.009mm. Determine the following: 14 Marks

i) Poisson's ratio ii) Bulk modulus
iii) Modulus of rigidity iv) Young's modulus

(OR)

2 Three steel bars A, B and C are having same axial rigidity AE, support a horizontal rigid beam as shown in Fig.1. Bar B and C have length 'h' and that of the bar A is '2h'. Determine the distance between the Bar A and B 'x', such that the rigid beam will remain in horizontal position, when Load 'P' is applied at mid point. 14 Marks

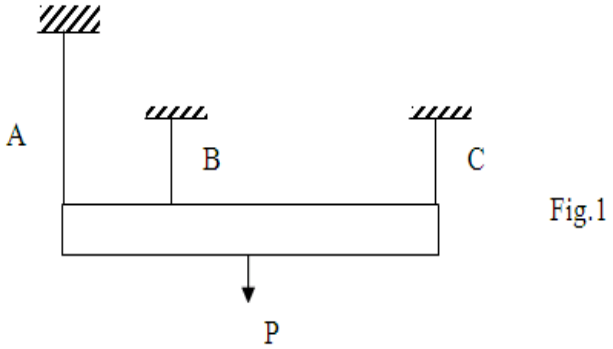


Fig.1

UNIT-II

3 Sketch the shear force and bending moment diagrams showing the salient values for the loaded beam shown in the Fig.2 AD=5m; DB=4m and BC=2m. 14 Marks

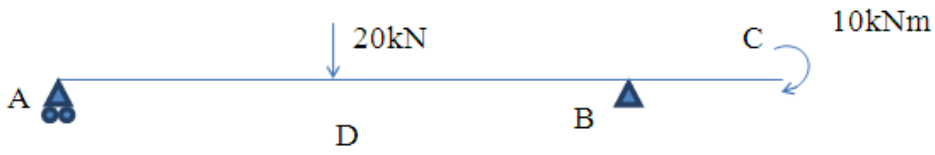


Fig. 2

(OR)

4 What is point of contraflexure? Locate the same for an overhanging beam of simply supported span of 10m, with two sides overhanging portions of 2.5m each, subjected to a UDL of 3kN/m and end concentrated loads of 5kN. Draw the BMD and SFD. 14 Marks

UNIT-III

5 Design the following cross sections to resist a BM of 20kN-m. Allowable stress 14 Marks

in material is limited to 50MPa. Compare the cross sectional area and mention which section is efficient.

i) Rectangular section with breadth to depth ratio 0.5

ii) Square cross section

iii) Triangular cross section with base to height ratio 1.

(OR)

6 A circular concrete beam of diameter 300mm is subjected to axial load of 200kN and a BM of 10kN-m. Sketch the stress distribution across the depth of the beam and mention the position of neutral axis. What is the BM that coincide the neutral axis with the bottom fiber of the beam? 14 Marks

UNIT-IV

7 a) Define the term pure torsion. Find suitable expression to determine the angle of twist of any cross section of a circular shaft subjected to an external torque. 7 Marks

b) A hollow shaft is of 120mm external diameter and diameter ratio 0.6. If the maximum shear stress in the shaft is limited to 100MPa and allowable twist is 1° per metre length, find the maximum power that can be transmitted to the shaft, if it is to rotate at100 r.p.m. Take C = 8 $\mathbf{x}10^4$ MPa. 7 Marks

(OR)

8 a) Name the various types of springs. Distinguish between bending springs and torsion springs. 7 Marks

b) In a close coiled spring, the diameter of each coil is to be 10 times that of wire of the spring and the max. shear stress is not to exceed 60 N/mm². Maximum permissible deflection under a load of 400N is 10cm. Taking the shear modulus as 9 $\mathbf{x}$ 10^4 N/mm², determine the number of coils, the diameter of the coil and energy stored in the coil. 7 Marks

UNIT-V

9 A hollow cylindrical cast iron column of 150mm external diameter and 15mm thickness, 3.6m length is hinged at one end and fixed at the other. Find:

i) The ratio of Euler's and Rankine's loads

ii) The length for which the critical load by Euler's and Rankine's formula will be equal.

Take E = 8.4$\mathbf{x}10^4$ N/mm², f_c = 525 N/mm² and α = 1/1600. 14 Marks

(OR)

10 a) Prove that in the case of a thin cylindrical shell subjected to an internal fluid pressure, the volumetric strain is equal to twice the circumferential strain plus the longitudinal strain. 7 Marks

b) A spherical shell of 1.2m internal diameter is subjected to an internal pressure of 3N/mm². Find the thickness of the shell if permissible stress is 120N/mm². Also determine the change in volume. Take E = 2 $\mathbf{x}$ 10^5N/mm² and μ = 0.3. 7 Marks

CODE No.:14BT30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the processes involved in manufacture of bricks in order.	7 Marks
	b)	Describe four common defects in timber.	7 Marks
		(OR)	
2	a)	Describe briefly the qualities of a good building stone preservative.	7 Marks
	b)	Discuss the factors affecting the strength of timber.	7 Marks

UNIT-II

3	a)	Discuss briefly the classification of limes. What are the applications of lime in building construction?	7 Marks
	b)	Differentiate between mild steel rods and HYSD Bars.	7 Marks
		(OR)	
4	a)	What is building lime and why is it important and used in building construction?	7 Marks
	b)	Describe the qualities and uses of i) Aluminum. ii) Rubber.	7 Marks

UNIT-III

5	a)	What are the various ingredients of cement concrete?	7 Marks
	b)	Explain the importance of workability in concrete construction. What is meant by segregation and bleeding?	7 Marks
		(OR)	
6	a)	What are Bouge Compounds? Explain their role in setting and hardening process of Portland cement.	7 Marks
	b)	Define Workability of concrete. What are the factors influencing the workability?	7 Marks

UNIT-IV

7		Explain the Schmidts Rebound Hammer test with the help of neat sketch.	14 Marks
		(OR)	
8		Explain the various techniques of measuring Pulse velocity through concrete with the help of neat sketches.	14 Marks

UNIT-V

9	a)	What is creep? Draw a sketch showing the typical creep strain-time curve under uniaxial compression for concrete.	7 Marks
	b)	Describe briefly the different types of shrinkage. What are the factors affecting	7 Marks

shrinkage of concrete?

(OR)

10 Design a concrete mix to be used in structural elements by IS method for following requirements. 14 Marks

i) Characteristic compressive strength at 28 days, f_{ck}	$15N/mm^2$
ii) Maximum size of aggregate	20mm
iii) Shape of coarse aggregate	Angular
iv) Degree of workability desired, compacting factor	0.85
v) Type of exposure	Moderate
Test data for concrete making materials	
Specific gravity of cement	3.15
Specific gravity of coarse aggregate	2.70
Specific gravity of fine aggregate	2.62
Water absorption (air dry to saturated surface dry)	
Coarse aggregate, percent	0.5%
Fine aggregate	1.61%
Surface moisture	
Coarse aggregate	Nil
Fine aggregate	2%

vi) Compressive Strength of cement at 28 days satisfies the requirement of IS: 269-1989

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

FLUID MECHANICS-I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

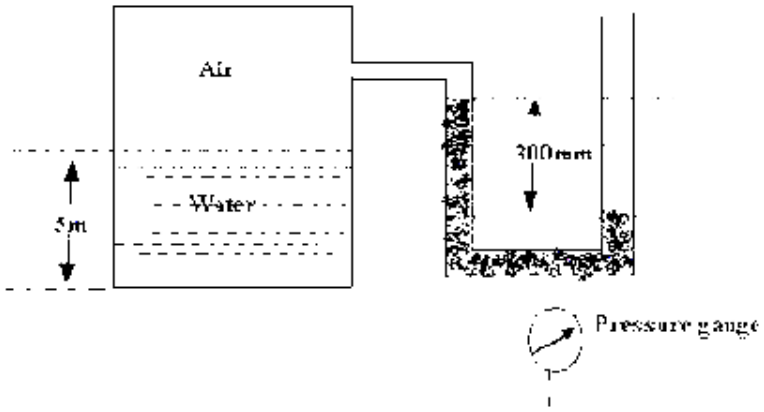
1 a) Find the total pressure and position of centre of pressure on a triangular plate of base 2.4m and height 3.6m which is immersed in water in such a way that the plan of the plate makes an angle of 600 with the free surface of the water. The base of the plate is parallel to water surface and is at a depth of 3.0m from water surface. 8 Marks

b) Write short notes on: 6 Marks
i) Pascal Law ii) Hydrostatic law iii) Surface Tension

(OR)

2 a) For measuring small pressure differences, explain with sketches how an inclined U-tube manometer is used? 7 Marks

b) A pressure gauge is fitted at the bottom of a closed vessel to which a simple manometer is also fitted as shown in figure. Determine the reading indicated by the pressure gauge, if manometric liquid is mercury. 7 Marks



UNIT-II

3 a) State Bernoulli's theorem for steady flow of an incompressible fluid. Derive an expression for Bernoulli's equation from the first principle and state the assumptions made for such a derivation. 7 Marks

b) A 300mm × 150mm inclined venture meter carries water. The reading recorded by an inverse U- tube manometer is 400mm. The specific gravity of the manometric fluid is 0.8. If the loss between the inlet and throat is 0.3 times the kinetic head of the pipe, determine the discharge and coefficient of discharge. 7 Marks

(OR)

4 a) Define path line, streak line and the streamline. For what type of flow these lines are identical? 7 Marks

b) Define the Equation of Continuity? Derive the Continuity Equation for three dimensional flows from fundamentals by indicating the assumptions made where ever are required. 7 Marks

UNIT-III

5 A pipe of diameter 20cm and length 2000m connects two reservoirs, having 14 Marks

difference in water levels as 20m. Determine the discharge through the pipe. If an additional pipe of diameter 20cm and length 1200m is attached to the last 1200m length of the existing pipe, find the increase in the discharge. Take f = 0.015 and neglect minor losses.

(OR)

6 a) Derive an equation for discharge of an Orifice meter. 7 Marks

b) An Orifice meter with orifice diameter 15 cm is inserted in a pipe of 30 cm diameter. The pressure gauges fitted upstream and downstream of the Orifice meter give readings of 14.715 N/cm^2 and 9.81 N/cm^2 respectively. Find the rate of flow of water through the pipe in litres/sec. Take C_d = 0.60. 7 Marks

UNIT-IV

7 Air owes over a smooth plate with a velocity of 8 m/s. The length of the plate is 1.5 m and width 1 m. If the laminar boundary exists up to a value of Reynold number is equals to 5×10^5, find the maximum distance from the leading edge up to which laminar boundary layer exists. Find the maximum thickness of laminar boundary layer if the velocity profile is given by $\mathbf{u/U= (y/\delta-(y/\delta)^2)}$.
Take Kinematic viscosity for air is equals to 0.15 stokes. 14 Marks

(OR)

8 a) Explain the phenomenon of boundary layer separation and its influence on the drag of an immersed body. 6 Marks

b) In a plate of 2m length and 1m wide, experiments were conducted in a wind tunnel with a wind speed of 50Km/hr. The plate is kept at such an angle that the coefficients of drag and lift are 0.18 and 0.9 respectively. Determine drag force, lift force, resultant force and power exerted by the air stream on the plate. Take density of air as 1.15Kg/m^3. 8 Marks

UNIT-V

9 Define the terms 'dimensional analysis' and 'model analysis'. The resisting force **R** of a supersonic plane during flight can be considered as dependent upon the length of the aircraft ***l***, velocity **V**, air viscosity **μ**, air density **ρ** and bulk modulus of air **K**. Express the functional relationship between these variables and the resisting force. 14 Marks

(OR)

10 Explain the three types of similarities. A pipe of diameter 1.5m is required to transport on oil of sp. gr. 0.9 and viscosity 3×10^{-2} poise at the rate of 3000litres/s. Tests were conducted on a 15 cm diameter pipe using water at 20°C. Find the velocity and rate of flow in the model. Viscosity of water at 20°C= 0.01 poise. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and prove Gauss's law in Point form.	7 Marks
	b)	State and prove Divergence theorem.	7 Marks
		(OR)	
2	a)	State and prove Gauss's law in integral form.	7 Marks
	b)	Find the force on charge Q1 = 45 mC located at (5,0,0) due to charge Q2 = 25 mC is at (0,4,5) in free space.	7 Marks

UNIT-II

3	a)	What is meant by boundary condition? Explain the significance of boundary conditions in electric fields.	7 Marks
	b)	Derive the expression for capacitance of a spherical capacitor.	7 Marks
		(OR)	
4	a)	What do you mean by Joule's law in electric circuit theory? Deduce the equation representing this law.	7 Marks
	b)	In a dielectric material $\overline{E_x} = 5v/m$ and $\overline{P} = \frac{(3\overline{a_x} - \overline{a_y} - 4\overline{a_z})}{10\pi} nc/m^2$. Calculate: i) Susceptibility ii) $\overline{E}$ iii) $\overline{D}$	7 Marks

UNIT-III

5	a)	State and prove Biot-Savort's law.	7 Marks
	b)	Find the Magnetic Field intensity at Point P(2,2,3) caused by a current filament of 25 A in the a_z direction and extending from Z = 0 to Z = 6.	7 Marks
		(OR)	
6	a)	Write Maxwell's Fourth equation in Integral form and explain.	7 Marks
	b)	Obtain the expression for Magnetic Field Intensity due to a infinitely long co-axial transmission line by applying Ampere's circuital Law.	7 Marks

UNIT-IV

7	a)	Explain the classification of magnetic materials.	7 Marks
	b)	Derive the expression for magnetic energy density in a magnetic field.	7 Marks
		(OR)	
8	a)	Calculate the self-inductance per unit length of an infinitely long solenoid.	7 Marks
	b)	Explain about the magnetic boundary conditions.	7 Marks

UNIT-V

9	a)	Explain the concept of polarization.	7 Marks
	b)	Starting from Ampere's circuital law in differential form, derive the corresponding Maxwell's equation in vector differential form for time varying fields.	7 Marks
		(OR)	
10	a)	Explain the concept of reflection and refraction in magnetic materials.	7 Marks

b) State and explain about Faraday's law. 7 Marks

CODE No.:14BT30202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Discuss the principle of operation of DC machine as a motor and as a generator. 7 Marks

b) Derive the expression of EMF generated in case of generator from the first principles. 7 Marks

(OR)

2 a) State the advantages of analyzing energy conversion devices by field energy concept. 7 Marks

b) Show that the torque developed in a doubly excited magnetic system is equal to the rate of increase of field energy with respect to the displacement at constant currents. 7 Marks

UNIT-II

3 Draw the developed view of 36-slot, 4 pole simplex wave winding of DC machine. Work out for winding table. Show the placement of brushes. 14 Marks

(OR)

4 a) Derive an expression for demagnetising and cross-magnetising ampere-turns per pole in dc generator. 7 Marks

b) The open circuit characteristic of DC generator at rated speed is 7 Marks

I_f(Amps)	1.0	2.5	5.0	7.0	8.0	12	15	18
OC Volts	22	231	400	479	539	605	642	671

The field and armature winding resistances are 46ohms and 0.12ohm respectively. Estimate the no-load voltage when armature current is 360amps and when 1amp of field current is needed to counteract armature reaction.

UNIT-III

5 a) Explain the working of equalizer bar in parallel operation of DC series generator. 7 Marks

b) What are the factors which will affect the voltage build up in self excited DC generators? 7 Marks

(OR)

6 a) Explain how two shunt generators work in parallel and how they share the load. 7 Marks

b) Two shunt generators operating in parallel deliver a total current of 250A. One of the generators is rated 50KW and the other 100KW. The voltage rating of both machines is 500V and have a regulation of 6 percent (smaller one) and 4 percent. Assuming linear characteristics; 7 Marks

Determine :

i) the current delivered by each machine.
ii) terminal voltage.

UNIT-IV

7 a) Sketch the speed- torque characteristics of DC shunt, series and compound 7 Marks

motors. Clearly explain the reasons for the shape of these curves.

b) A DC shunt motor drives a centrifugal pump whose torque varies as square of speed. The motor is fed from 220V supply and takes 60A when running at 800rpm. What resistance must be inserted in the armature circuit in order to reduce the speed to 600rpm? 7 Marks

(OR)

8 a) Discuss various speed control methods of DC shunt motor with relevant circuit diagrams. 7 Marks

b) A 3kW series motor runs normally at 800rpm on 200V dc supply taking 16A, when field coils are connected in series. Calculate the speed and current taken by motor if the field coils are reconnected in two parallel groups of two in series. Load torque varied square of speed. Assume flux directly proportional to current and ignore losses. 7 Marks

UNIT-V

9 a) Draw the circuit diagram of Field's test. How the efficiency of each machine is computed from results of Field's test ? Indicate different steps of calculations. 7 Marks

b) A 500V shunt motor takes 8A on no-load. The armature and field resistances are 0.2ohm and 250ohms respectively. Find the efficiency of DC machine 7 Marks
i) As motor taking 90A at 500V
ii) As generator delivering 90A at 500V

(OR)

10 a) How the performance of two identical DC shunt machines could be determined by utilizing minimum amount of power from supply? The two machines are mechanically coupled. 7 Marks

b) Retardation test is conducted on DC separately excited machine. The induced voltage falls from 220V to 190V in 30 seconds on opening armature circuit and 5 seconds and suddenly connecting armature to load resistance taking 12A (average). Find the efficiency of DC machine when run as motor taking 2A. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

ELECTRIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) A bridge network ABCD is arranged as follows: Resistance between terminals AB, BC, CD, DA and BD are 10Ω, 30Ω, 15Ω, 20Ω and 40Ω respectively. A 4V battery is connected with negligible internal resistance between terminals A and C. Determine the current through each element in the network using network reduction techniques. 7 Marks

b) Find the value of applied d.c. voltage for the network, shown in Fig.1. 7 Marks

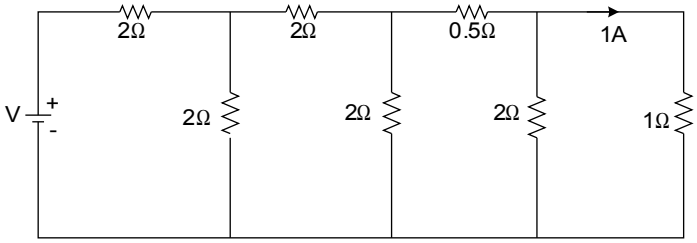


Fig.1.

(OR)

2 a) Three equal resistances are available. Derive 7 Marks
i) The ratio of the equivalent resistances when they are connected in parallel.
ii) The ratio of the current through each element when they are connected in parallel.

b) Find the voltage across the 2A source which polarities as shown in Fig.2. 7 Marks

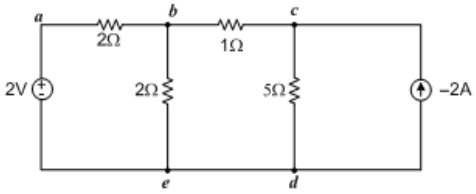


Fig.2.

UNIT-II

3 a) In a R-L series circuit, the inductance is variable. If an A.C. voltage of V volts is applied at 50Hz, find the maximum power transfer from source to load. 7 Marks

b) A voltage of $v = 200 \sin \omega t + 50 \sin 3\omega t$ is applied across a parallel circuit consists of $Z_1 = 20\Omega$, $Z_2 = 20+j15.7\Omega$ and $Z_3 = -j63.7\Omega$. If the supply voltage has a frequency of 50Hz, obtain the r.m.s. values of current in each branch, the total current and power input.

(OR)

4 a) A series RL has R= 35Ω and L= 0.98H. It is connected in parallel to a capacitor of 250μF and the combination is connected across 220V, 50Hz supply. Find the (i) current in each element (ii) voltage across each element (iii) power factor and also draw the phasor diagram showing the total current. 7 Marks

b) Derive an expression of resonance frequency of parallel RC and RL circuit. 7 Marks

UNIT-III

5 a) A three phase balanced system supplies 110V to a delta connected load whose phase impedances are **(3.89+j 7.98)Ω**. Determine (i) line currents (ii) phase currents (iii) total input power and draw the phasor diagram. 7 Marks

b) Three inductive coils, having per phase resistance of 54Ω and inductive reactance of 35Ω are connected in star across 415V, 3-phase, 50Hz supply. Calculate the ratings of three capacitors which must be connected in star to the supply in order to bring the overall p.f. to unity. 7 Marks

(OR)

6 a) Obtain the relationship between line and phase voltages and currents in a three phase balanced star connection. 6 Marks

b) A three phase induction motor 100kVA at 0.6pf lag from a 440V three phase 50Hz (balanced). There is another load on the same line and load is connected in the form of a **Δ** having 9 ohm resistance and -j54 ohm reactance in series in each phase. Find (i) the total VA power (ii) average power, reactive power, line current and the power factor of the combination. 8 Marks

UNIT-IV

7 a) Write down the mesh equations in the coupled circuits shown in Fig.3. 6 Marks

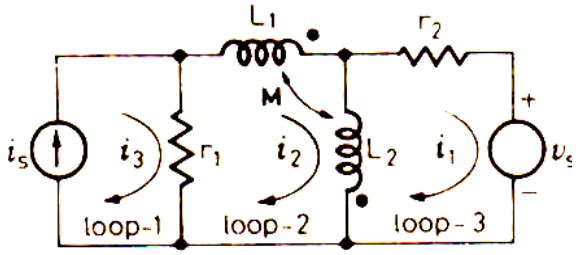


Fig.3

b) In Fig.4, find the voltage drop across capacitor and resistor. 8 Marks

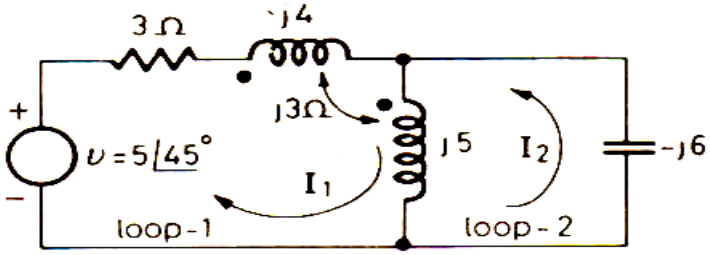


Fig.4

(OR)

8 a) Write down the mesh equations for the loops **abcd** and **pqrs** in the coupled circuit shown in Fig.5 and also draw its conductively coupled equivalent circuit. 7 Marks

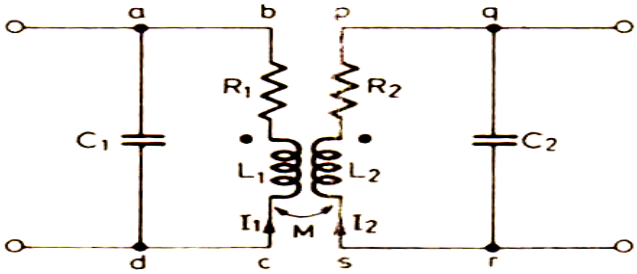


Fig.5

b) Find the instantaneous voltages v_1 and v_2 in the coupled circuit shown in Fig.6. 7 Marks

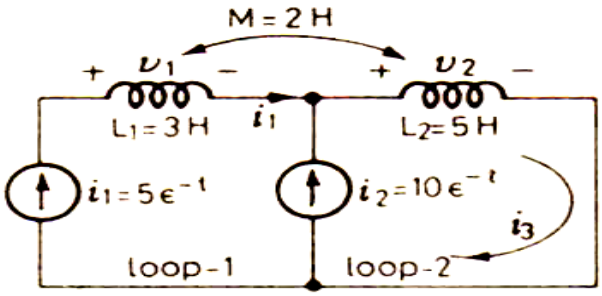


Fig.6

UNIT-V

9 a) State and Explain maximum power transfer theorem with a suitable Example. 7 Marks

b) Obtain the current in 2Ω resistor in the circuit of Fig.7 by using Thevenin's theorem. 7 Marks

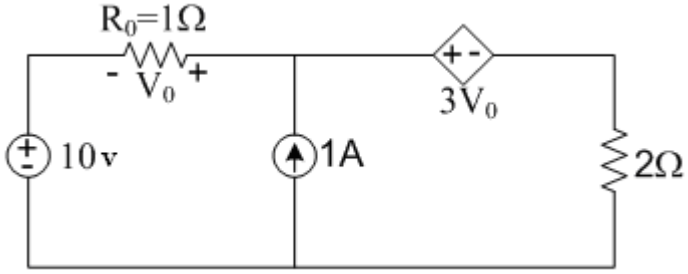


Fig.7

(OR)

10 a) State and explain Superposition theorem with a suitable example. 7 Marks

b) For the circuit shown in Fig.8, If the resistance of 5Ω branch is increased to 6Ω, Determine the compensation source and verify the results. 7 Marks

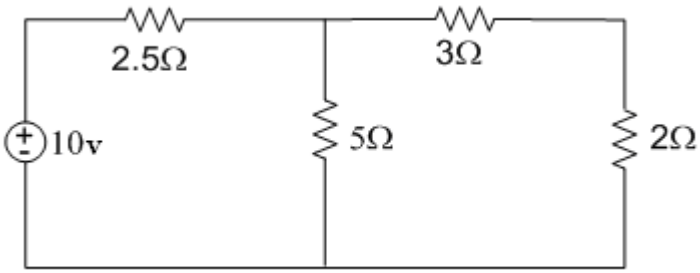


Fig.8

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define critical field resistance and determine magnetization characteristics of DC shunt generator.	8 Marks
	b)	A separately excited DC generator when running at 1200 r.p.m supplies a current of 200A at 125V to a circuit of constant resistance. What will be the current when speed drops to 1000 r.p.m with field current is un altered. R_a = 0.05Ω and total voltage drop at brushes is 12V.	6 Marks
		(OR)	
2	a)	List out the characteristics of DC motor and briefly explain them.	8 Marks
	b)	An 8-pole lap wound generator armature has 960 conductors, a flux of 40mWb and a speed of 400 r.p.m. Calculate the e.m.f. generated on open circuit. If the same armature is wave wound, at what speed must it be driven to generate 400V.	6 Marks

UNIT-II

3	a)	Derive an EMF equation of a single phase transformer with respect to phasor diagram.	8 Marks
	b)	A single phase (2000/200)V, 50Hz transformer has a net core area of 46cm^2 and a maximum density of 8 wb/m^2. Calculate the number of turns of primary and secondary windings.	6 Marks
		(OR)	
4	a)	Explain in detail about types of transformer cores.	7 Marks
	b)	Calculate the percentage voltage drop for a transformer with a percentage resistance of 2.5% and percentage reactance of 5% of rating 500kVA when it is delivering 400 kVA at 0.8 p.f. lagging.	7 Marks

UNIT-III

5	a)	Explain, what is meant by phase sequence.	4 Marks
	b)	For a balanced three phase three wire system with star connected load for which the line voltage is 230 Volts and impedance per phase is (6+J8) Ω. Find the phase voltage, phase current, line current, power factor and power consumed in each phase.	10 Marks
		(OR)	
6		Explain how to measure the power in a three phase circuit using Two Wattmeter method with the necessary derivation.	14 Marks

UNIT-IV

7	a)	Distinguish between slip ring and squirrel cage rotors.	7 Marks
	b)	Explain torque-slip characteristics of three phase induction motor.	7 Marks
		(OR)	
8		Explain in detail about the construction and principle operation of the alternator.	14 Marks

UNIT-V

9		Explain the construction and principle operation of universal motor with neat diagrams.	14 Marks
		(OR)	

10	Explain the construction and principle operation of shaded pole induction motor with neat diagrams.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following terms. 8 Marks

i) Current ii) Lumped and distributed elements
iii) Power iv) Active and passive elements

b) Obtain the currents i_1, i_2 and i_3 for the Fig.1 using KVL. 6 Marks

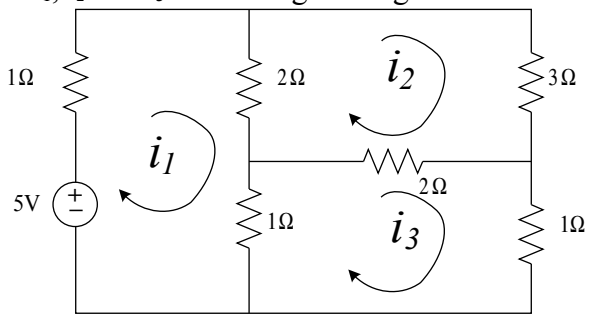

Fig. 1

(OR)

2 a) Derive the expressions of equivalent resistances of Star network for the equivalent Delta network. 7 Marks

b) A bridge network ABCD is arranged as follows: Resistance between terminals AB, BC, CD, DA and BD are 10Ω, 30Ω, 15Ω, 20Ω and 40Ω respectively. A 4V battery is connected with negligible internal resistance between terminals A and C. Determine the current through each element in the network using network reduction techniques. 7 Marks

UNIT-II

3 a) Determine the sinusoidal response of parallel RL circuit. 7 Marks

b) Why the r.m.s values of an alternating quantity is more important than its average value? Find the r.m.s value of the resultant current in a conductor which carries simultaneously sinusoidal alternating current with a maximum value of 15A and direct current of 15A, by deriving necessary expressions. 7 Marks

(OR)

4 a) Distinguish between series and Parallel Resonance circuits. 6 Marks

b) A non-alternating periodic waveform has been shown in Fig.2.Find its form factor. 8 Marks

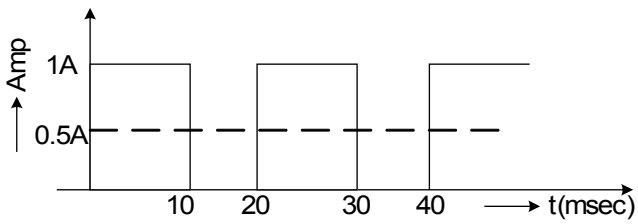

Fig.2

UNIT-III

5 a) Obtain the transient response of RC series circuit for sinusoidal excitation. 7 Marks

b) A series RC circuit has R=20Ω and C =100μF. A voltage $v = 200 \text{ Sin } 314t$ is applied at t =2.14msec. Obtain an expression for current. Find the value of current after time 1msec from the switching instant. 7 Marks

(OR)

6 Determine the current equation for the circuit shown in Fig.3, if the switch is closed when $\varphi=30^0$. 14 Marks

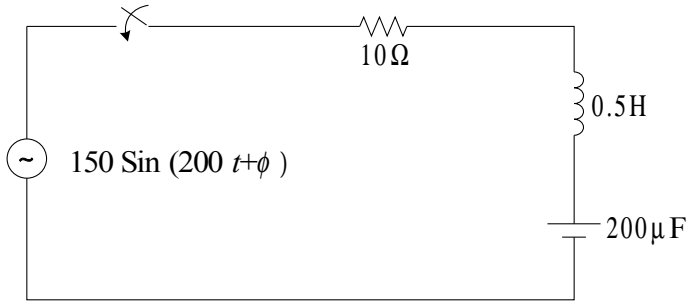

Fig. 3.

UNIT-IV

7 a) What is two port network and obtain the equations of admittance parameters of two port network. 7 Marks

b) Obtain open loop circuit parameters and loop equations of the network shown in Fig.4. 7 Marks

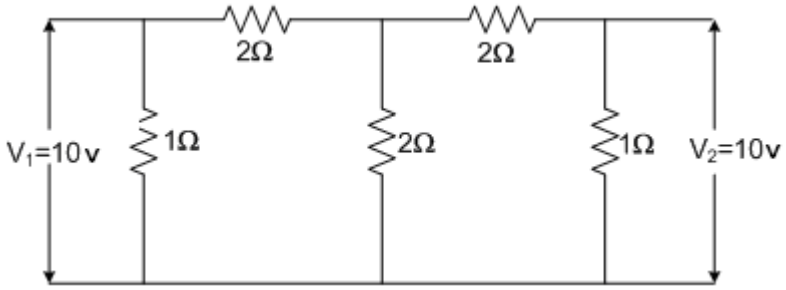

Fig.4.

(OR)

8 a) List out the classification and applications of each filter. 8 Marks

b) Obtain transmission parameters of the network shown in Fig.5. 6 Marks

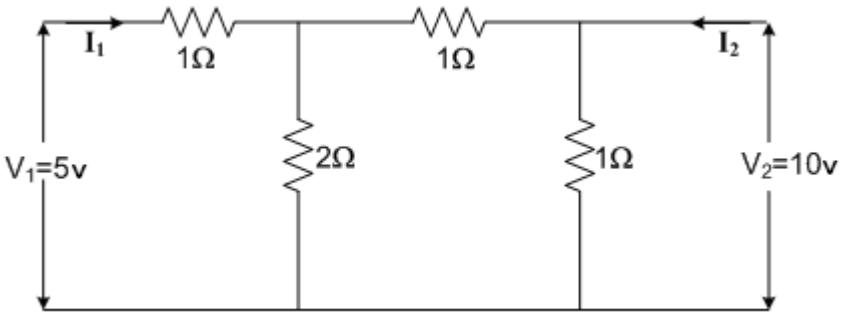

Fig.5.

UNIT-V

9 a) State and explain compensation theorem with a suitable example. 7 Marks

b) Find the voltage across 2Ω resistor in Fig.6 using Superposition theorem. 7 Marks

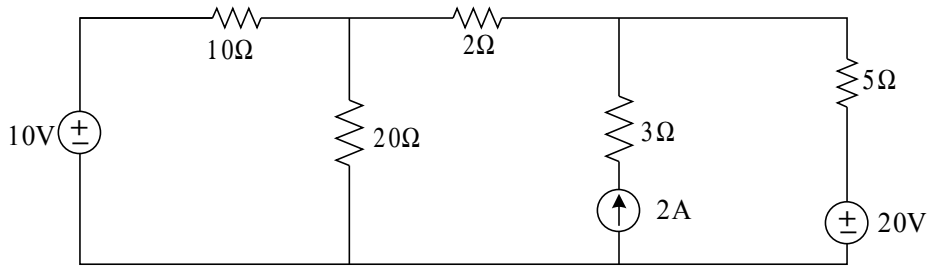

Fig. 6.

(OR)

10 a) State and explain Reciprocity theorem. 6 Marks

b) Using Compensation theorem, determine the current 'I' in the circuit shown in Fig.7. 8 Marks

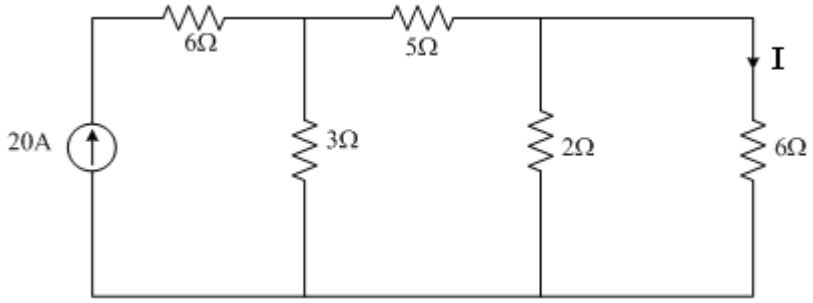

Fig.7.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

PART-A

UNIT-I

1	a)	Write a short note on capacitor and V-I relationship associated with it.	6 Marks
	b)	A series circuit having pure resistance of 40 ohms, pure inductance of 50.07mH and a capacitor is connected across a 400 V, 50 Hz ac supply. This RLC combination draws a current of 10 A. Calculate: i) Power factor of the circuit. ii) Capacitor value.	8 Marks
		(OR)	
2	a)	Derive the expressions for n capacitors connected in series.	6 Marks
	b)	Write the steps to estimate internal wiring and draw the wiring layout for small industry having lift arrangement.	8 Marks

UNIT-II

3	a)	Explain in detail Pipe Earthing.	7 Marks
	b)	Explain the constructional details of single phase transformer.	7 Marks
		(OR)	
4		What is the necessity of Earthing? Explain the types of Earthing in detail.	14 Marks

PART-B

UNIT-III

5	a)	Sketch and describe the working of Gas Welding.	7 Marks
	b)	Explain Brazing and list the applications of Brazing.	7 Marks
		(OR)	
6	a)	Explain the working principle of Two stroke engine with neat sketches.	7 Marks
	b)	List out the comparisons between Two Stroke and Four Stroke engines.	7 Marks

UNIT-IV

7		With a neat sketch explain the working of Vapour compression refrigeration system.	14 Marks
		(OR)	
8	a)	Differentiate between a Refrigerator and an Air conditioner.	7 Marks
	b)	Define the following terms i) Refrigerating effect. ii) Ice making capacity. iii) Coefficient of performance.	7 Marks

UNIT-V

9	a)	Give the classification compressors and explain the working principle of compressors.	7 Marks
	b)	Explain the need of various earth moving equipments with neat sketches.	7 Marks
		(OR)	
10	a)	Explain the working principle of Multi stage compressor with neat sketch.	7 Marks
	b)	Write short notes on the following:	7 Marks

i) Excavators ii) Power shovels

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Obtain the expressions for converting Delta connected resistive load into Star connected resistive load. 7 Marks

b) Two resistors of 4Ω and 6Ω are connected in parallel. If the total current is 30A, Find current flowing through each resistor and also find power consumed by each resistor. 7 Marks

(OR)

2 a) State and explain Ohm's law and list out its limitations. 6 Marks

b) Find the current flowing through each element and also voltage across each element for the circuit shown in Fig.2b. 8 Marks

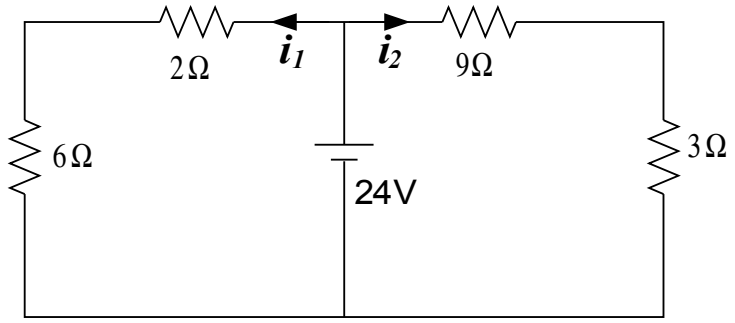

Fig.2b

UNIT-II

3 A **coil A** having a resistance of 10 ohms and inductance of 0.2 H is connected in series with another **coil B** having a resistance of 30 ohms and inductance 0.1 H. The two coils in series are fed form 200V, 50 Hz supply. Determine the voltage across each coil, power dissipated in each coil, and the power factor of the combined series circuit: Draw the phasor (vector) diagram. 14 Marks

(OR)

4 a) Define the following terms: 7 Marks
i) Cycle
ii) Amplitude
iii) R.M.S value
iv) Average value of an alternating quantity.

b) A series R-C circuit with resistance value of R=10 ohms and capacitive reactance of X_c = 10 ohms is connected to an alternating sinusoidal voltage of RMS value 150 volts. Calculate the value of current, through the circuit voltage drop a cross each element and power consumed. 7 Marks

UNIT-III

5	a)	Develop an expression for induce e.m.f in a DC machine from first principles and what is the basic nature of the induce e.m.f in a DC generator?	7 Marks
	b)	A 220V motor has an armature circuit resistance of 0.5Ω. If the full load armature current is 35A and the no load armature current is 6A. Find the change in back e.m.f from no-load to full-load.	7 Marks

(OR)

6	a)	From the fundamentals, derive the expression for the e.m.f equation of a single phase transformer.	7 Marks
	b)	A 50 Hz, 4-pole, 3-phase induction motor has a rotor current of frequency 2Hz. Determine: (i) The slip. (ii) Speed of the motor.	7 Marks

UNIT-IV

7		Explain the construction and working principle of PMMC instruments and list out its advantages.	14 Marks

(OR)

8		Discuss the rectifier type voltmeter and ammeter. List out its merits and demerits.	14 Marks

UNIT-V

9		Explain construction and principle operation of half wave rectifier with help of wave forms. Also derive an expression of average and RMS values of output voltage.	14 Marks

(OR)

10	a)	Explain the construction and operation of NPN transistor.	7 Marks
	b)	Briefly explain how a transistor acts as an amplifier.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What are the basic circuit components? With circuit symbols and equations explain each of them in detail. 14 Marks

(OR)

2 a) Derive the expression for equivalent capacitance 'C_{eq}' when three capacitances C_1, C_2, C_3 are connected in series. 8 Marks

b) A wire of length 50cm moves in a direction at right angles to its length at 40m/s in a uniform magnetic field of density 1.5wb/m^2. Calculate the electromotive force induced in the conductor when the direction of motion is 6 Marks
i) perpendicular to the field.
ii) inclined at 45 degrees to the direction of the field.

UNIT-II

3 a) What is Power factor? What is its significance? 8 Marks

b) An alternating voltage (80 + j60) V is applied to a circuit and current flowing is (- 4 + j10) A. Find: i) impedance of the circuit ii) power factor. 6 Marks

(OR)

4 A series RC circuit with R = 4.0x10$^3\Omega$ and C = 0.40 μF is connected to an AC voltage source V(t) = 100sinωt V , with ω = 200 rad/s . 14 Marks
i) What is the r.m.s current in the circuit?
ii) What is the phase between the voltage and the current?
iii) Find the power dissipated in the circuit.
iv) Find the voltage drop both across the resistor and the capacitor.

UNIT-III

5 a) Derive EMF equation of a DC generator. 6 Marks

b) A 4-pole, lap wound DC motor has 540 conductors. Its speed is found to be 1000rpm. The flux per pole is 25mWb. It is connected to 230 Volts dc supply. Armature resistance R_a is 0.8Ω. Calculate induced emf and armature current. 8 Marks

(OR)

6 a) Explain with a neat sketch, the constructional details of a DC machine. 7 Marks

b) A DC generator is found to develop an armature voltage of 200 V. If the flux is reduced by 25% and speed is increased by 40%, calculate the armature generated voltage. 7 Marks

UNIT-IV

7 a) With neat diagram, explain about the construction of a Shell type transformer. Also explain about windings used in this type of transformer. 8 Marks

b) A single phase transformer has 500 primary and 1000 secondary turns. The net cross-sectional area of the core is 50cm^2. If the primary winding is connected to a 50 Hz supply at 400V. Calculate: (i) The peak value of flux density in the core 6 Marks

(ii) The voltage induced in the secondary winding.

(OR)

8	a)	Discuss about the constructional details of Cage rotor Induction motor with neat diagram.	8 Marks
	b)	Explain the principle of operation of Stepper Motor.	6 Marks

UNIT-V

9	a)	What are the advantages and disadvantages of PMMC instruments?	7 Marks
	b)	What are digital multimeters? Discuss their use.	7 Marks

(OR)

10		Explain in detail the construction and basic principle operation of Moving-iron Instruments. Also mention its applications.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and explain about linear element, unilateral element, bilateral element, active element, passive element, and potential difference.	8 Marks
	b)	Explain the terms Electromotive force, Electrical power, Electrical energy, Current and Resistivity of an element.	6 Marks
		(OR)	
2	a)	Two resistances 14Ω and 19Ω are connected in parallel. A resistance of 12Ω is connected in series with the combination. A voltage of 120 V is applied across the entire circuit. Determine the power consumed in all the resistors.	8 Marks
	b)	Explain the concept of source transformations with suitable examples.	6 Marks

UNIT-II

3	a)	Explain with neat diagram, generation of an alternating voltage.	8 Marks
	b)	Explain the concept of phase and phase difference of an alternating quantity with illustration.	6 Marks
		(OR)	
4	a)	Find the average value and RMS value of the resultant current in a wire which carries a direct current of 5A and sinusoidal alternating current with a peak of 5A.	8 Marks
	b)	Show that in an AC circuit, current through purely resistive circuit is in phase with applied voltage.	6 Marks

UNIT-III

5	a)	Explain the constructional details of DC generator.	7 Marks
	b)	Derive the expression for emf equation of a DC generator.	7 Marks
		(OR)	
6	a)	Explain the principle of operation of DC motor.	7 Marks
	b)	How many types of DC machines are available? Give applications for each.	7 Marks

UNIT-IV

7	a)	Explain the constructional details of single phase transformer	8 Marks
	b)	Discuss the phasor diagram of single phase transformer operating on no load.	6 Marks
		(OR)	
8	a)	Explain the principle of Rotating Magnetic Field of three phase Induction Motor.	8 Marks
	b)	Discuss about the principle operation of Stepper Motor.	6 Marks

UNIT-V

9	a)	Explain the significance of Masons gain formula.	7 Marks
	b)	Mention some examples for time variant and time invariant systems.	7 Marks
		(OR)	
10	a)	Obtain the mathematical model for any physical system.	7 Marks
	b)	Explain about signal flow graphs.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate between: i) Stress and strain. ii) Normal stress and shear strain. iii) Yield stress and working stress.	6 Marks
	b)	An aluminum bar 60mm diameter when subjected to an axial tensile load 100kN elongates 0.20mm in a gauge length 300mm and the diameter is decreased by 0.012mm. Calculate the modulus of elasticity and the Poisson's ratio of the material.	8 Marks

(OR)

2	a)	Explain the Mohr's circle construction for principal stress.	5 Marks
	b)	At a point in a stressed body the principal stresses are 100MN/m^2 (tensile) and 60 MN/m^2 (compressive). Find the normal and shear stress on a plane inclined at 50^0 with the major principal stress. Also calculate the maximum shear stress at the point.	9 Marks

UNIT-II

3	a)	Define the terms Shear Force and Bending Moment at a cross-section in a beam. What is the purpose of drawing them?	4 Marks
	b)	A cantilever of length 4m carries a uniformly distributed load of 3kN/m run over the whole length and two point loads of 4kN and 2.5kN are place 1m and 2m respectively from the fixed end. Draw the shear force and bending moment diagrams.	10 Marks

(OR)

4	a)	Define point of contra flexure and show that at the point of maximum bending moment and shear force is generally zero.	4 Marks
	b)	An overhanging beam ABC is simply supported at A and B over a span of 6m and BC overhangs by 3m. If the supported span AB carries central concentrated load of 8kN and overhanging span BC carries 2kN/m completely draw Shear force and Bending Moment diagrams indicating salient points.	10 Marks

UNIT-III

5	a)	What do you mean by the terms neutral axis and neutral surface?	4 Marks
	b)	A T-shaped cross-section of a beam shown in Fig.1 is subjected to a vertical shear force of 100KN. Calculate the shear stress at the neutral axis and at the junction of the web and the flange. Moment of inertia about the horizontal neutral axis is 0.0001134 m^4.	10 Marks

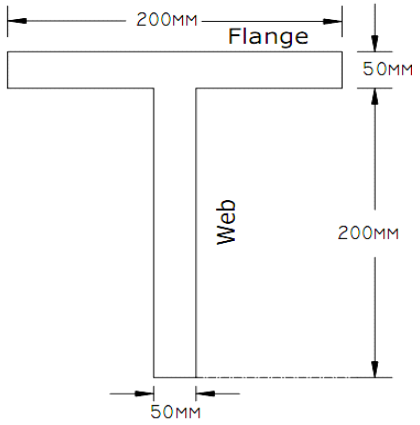

Fig.1

(OR)

6	a)	Define Torsional stiffness and Polar Modulus.	4 Marks
	b)	A hallow shaft of 75mm external diameter and 50mm internal diameter twists through an angle of 0.6 degree in a length of 1200mm when subjected to an axial twisting moment of 1051Nm. Determine the deflection at the center of the shaft due to its own weight when placed in a horizontal position on supports 1200mm apart. The shaft weights 235N. Poisson's ratio=0.3.	10 Marks

UNIT-IV

7	a)	What are the advantages of Macaulay method over the double integration method, for finding the slope and deflections of beams?	4 Marks
	b)	A beam is simply supported at its ends over a span of 10m and carries two concentrated loads of 100kN and 60kN at a distance of 2m and 5m respectively from the left support. Calculate (i) slope at the left support (ii) slope and deflection under the 100kN load. Assume EI = 36 x 10^4 kN-m^2.	10 Marks

(OR)

8		A cantilever of uniform section has a length 'l'. it is a propped at the free end and carries a point load W at a distance 'a' from the fixed end i) If the prop holds the free end at the level of fixed end, find the prop reaction. ii) If now the prop is removed what will be the deflection at the free end.	14 Marks

UNIT-V

9	a)	Show that the volumetric strain of a cylindrical shell is the sum of longitudinal strain and twice of hoop strain.	6 Marks
	b)	A closed cylindrical vessel made of steel plates 5mm thick with plane ends, carries fluid under pressure of 6N/mm^2. The diameter of the cylinder is 35cm and length is 85cm. Calculate the longitudinal and hoop stresses in the cylinder wall and determine the change in diameter, length and Volume of the cylinder. Take E=2.1x10^5N/$mm^2$and 1/m = 0.286.	8 Marks

(OR)

10	a)	Deduce the simplified expressions for the maximum values of circumferential and radial stresses in thick cylinders when acted upon by (i) internal pressure only (ii) external pressure only.	6 Marks
	b)	An 800mm long closed-end copper tube of 72mm internal diameter and 2mm thickness is filled with water under pressure. Find the change in pressure if additional volume of 4000mm^3 of water is pumped into the tube. Neglect any distortion of the end plates. Take E=102Gpa, K=2200Mpa and Poisson's ratio=0.3.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe why different crystal structures exhibit different strengths and ductilities.	7 Marks
	b)	How the grain size of metal can be measured? Explain.	7 Marks
		(OR)	
2	a)	Sketch a simple, base-centered and face-centered cubic unit cells and derive the packing factor for all cubic systems.	7 Marks
	b)	Sketch a cubic coordinate system, and show the following directions: i) [1, 2, 4] ii) [l, -2, 1] iii) [3, 2, -1]	7 Marks

UNIT-II

3	a)	What is a cooling curve? Explain the cooling curve for an ideal eutectoid system and the corresponding phase diagram.	7 Marks
	b)	What is binary isomorphous system? Explain them with neat diagram.	7 Marks
		(OR)	
4	a)	Explain eutectic and peritectic reactions with the help of phase diagram.	7 Marks
	b)	What is phase diagram? Explain the importance of Gibbs phase rule.	7 Marks

UNIT-III

5	a)	What is annealing? What are the different types of annealing process? Explain.	7 Marks
	b)	What are the different case hardening techniques? Explain the carbo-nitriding process with neat diagram.	7 Marks
		(OR)	
6	a)	Explain flame hardening process with neat diagram.	7 Marks
	b)	Why Time-Temperature-Transformation (TTT) diagrams are constructed? Explain.	7 Marks

UNIT-IV

7	a)	State the properties and applications of gray cast iron.	7 Marks
	b)	Write short notes on Titanium alloys.	7 Marks
		(OR)	
8	a)	Explain structure and properties of spheroidal cast iron.	7 Marks
	b)	Explain properties and applications of copper and its alloys.	7 Marks

UNIT-V

9	a)	Describe the atomization process of making powder with neat diagram.	7 Marks
	b)	What are the effects of sintering on the powder compact produced by pressing? Explain.	7 Marks
		(OR)	
10	a)	Distinguish between composites and alloys. Mention at least six examples of each.	7 Marks
	b)	Compare the relative advantages and limitations of metal-matrix composites,	7 Marks

and polymer-matrix composites.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

THERMODYNAMICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain thermodynamic equilibrium.	5 Marks
	b)	Differentiate between the following with suitable examples i) System and control volume. ii) Intensive and extensive properties. iii) path and point functions.	9 Marks

(OR)

2	a)	A mass of 1.5 kg of air is compressed in a quasi-static process from 0.1MPa to 0.7MPa for which pv = constant. The initial density of air is 1.16 kg/m^3. Find the work done by the piston to compress the air.	7 Marks
	b)	What are different forms of work energy? Explain each briefly.	7 Marks

UNIT-II

3	a)	"Energy is a property of a system". Prove it.	6 Marks
	b)	A blower handles 1 kg/s of air at 20°C and consumes a power of 15 kW. The inlet and outlet velocities of air are 100 m/s and 150 m/s respectively. Find the exit air temperature, assuming adiabatic conditions. Take c_p of air is 1.005kJ/kg-K.	8 Marks

(OR)

4	a)	Represent the Carnot Heat Engine cycle on a P-V diagram and explain briefly.	6 Marks
	b)	A household refrigerator is maintained at a temperature of 2°C. Every time the door is opened, warm material is placed inside, introducing an average of 420kJ, but making only a small change in the temperature of the refrigerator. The door is opened 20 times a day, and the refrigerator operates at 15% of the ideal COP. The cost of work is Rs. 2.50 per kWh. What is the monthly bill for this refrigerator? The atmosphere is at 30°C.	8 Marks

UNIT-III

5	a)	What is irreversibility? Show the gain of entropy in an irreversible process on T-S diagram in the case of steam turbine and compressor.	7 Marks
	b)	Define the term availability. Find an expression for the availability of a closed system.	7 Marks

(OR)

6	a)	A closed rigid pressure vessel has a volume of 0.7m^3 and contains 2.5kg of air at 15bar. The gas in the vessel is cooled to 800K by means of heat transfer to the surroundings at 298K and 1bar. Calculate the heat transfer, the change in availability of the air and the irreversibility of the process.	10 Marks
	b)	Explain the difference between useful work and the maximum useful work in the context of availability of a closed system.	4 Marks

UNIT-IV

7	a)	A cylinder contains steam at 1bar and temperature 150ºC. The steam is compressed reversibly and isothermally to a state where the specific volume is 0.28 m^3/kg. Find the change of internal energy, change of entropy, heat transferred and work done per kg of steam.	10 Marks
	b)	Derive the equation of state.	4 Marks

(OR)

8	a)	What are Maxwell relations? Derive them.	7 Marks
	b)	Describe with the help of a suitable diagram the Mollier chart for steam. What is the importance of this diagram in thermodynamic calculations?	7 Marks

UNIT-V

9	a)	An engine equipped with a cylinder having a bore of 15cm and a stroke of 45cm operates on an Otto cycle. If the clearance volume is 2000cm^3, compute the air standard efficiency.	7 Marks
	b)	Derive an expression for the thermal efficiency of Lenoir cycle and draw P-V and T-S diagrams.	7 Marks

(OR)

10		Derive an expression for efficiency and mean effective pressure for constant volume air cycle with P-V and T-S diagram.	14 Marks

CODE No.:14BT30304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

MANUFACTURING TECHNOLOGY-I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the advantages of casting process over other production processes?	7 Marks
	b)	What are the basic requirements of core sand? How does it differ from the moulding sand?	7 Marks
		(OR)	
2	a)	Describe with the help of a neat sketch, the working of a sweep pattern and also state its advantages.	5 Marks
	b)	What is gating ratio? Explain.	4 Marks
	c)	Discuss any four sand testing methods.	5 Marks

UNIT-II

3	a)	Describe the solidification of a pure metal with a neat sketch in moulding process.	7 Marks
	b)	"Large castings are not made by investment casting". Explain, Why?	7 Marks
		(OR)	
4	a)	Explain the construction and operation of Cupola Furnace with diagram.	7 Marks
	b)	Write a short note on "Chills".	7 Marks

UNIT-III

5	a)	Explain oxy-fuel gas cutting process with a sketch. Draw the constructional details of torch tips for gas cutting and gas welding processes.	7 Marks
	b)	Why do we need brazing and soldering instead of fusion welding process? List various advantages and disadvantages of brazing.	7 Marks
		(OR)	
6	a)	Classify the joining processes and briefly explain each of them with their applications.	7 Marks
	b)	What are the functions of welding fluxes and filler rods? Give some commonly used fluxes and filler rod materials.	7 Marks

UNIT-IV

7	a)	Explain the phenomenon of magnetic arc blow. List various factors affecting arc blow and suggest remedies to overcome it.	7 Marks
	b)	Give the characteristics of shielding gases used in TIG and MIG welding processes and list their functions.	7 Marks
		(OR)	
8	a)	Explain the SMAW process with a sketch and discuss the effect of welding parameters on the quality of the welds.	7 Marks
	b)	Compare various fusion welding processes based on operation, advantages, skill level required, welding position, current type and typical cost of equipment.	7 Marks

UNIT-V

9	a)	Explain the principle of electron beam welding. Also explain why vacuum is necessary.	7 Marks
	b)	Explain forge welding, diffusion welding and explosion processes with sketches.	7 Marks
		(OR)	
10	a)	Explain braze welding process and compare it against normal brazing process.	3 Marks
	b)	Explain the process of thermit welding using sketches. Give its applications.	4 Marks
	c)	Explain the LBM process with a sketch. Also list its advantages.	7 Marks

CODE No.:14BT30401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Roll a die once. Write the sample space. Find the following probabilities: 8 Marks
i) P (E) = p (rolling a 3 or a 5)
ii) P (E) = p (rolling a 3 or more)
iii) P (E) = p (rolling a number greater than 10)
iv) P (E) = p (rolling an even number)

b) Define probability based on set theory and fundamental axioms. 6 Marks

(OR)

2 a) Let A and B be the events that a person is left-eye dominant or right-eye dominant, respectively. When a person folds their hands, let C and D be the events that their left thump and right thump, respectively are on top. A survey in one statistics class yielded the following table: 7 Marks

	A	B
C	5	7
D	14	19

If a student is selected randomly, find the following probabilities
i) P[(A∩C)] ii) P[(A∪C)] P[(A/C)] iii) P[(B/D)]

b) Define Joint and conditional probabilities. 7 Marks

UNIT-II

3 a) What is the Gaussian random variable? Explain the other distribution and density examples. 8 Marks

b) Assume automobile arrivals at a gasoline station are Poisson and occur at an average rate of 50/h. The station has only one gasoline pump. If all the cars are assumed to require one minute to obtain fuel, what is the probability that a waiting line will occur at the pump? 6 Marks

(OR)

4 a) Explain conditional density and list the properties of conditional density. 6 Marks

b) The sample space for an experiment is **S = {0, 1, 2, 5, 6}**. List all the possible values of the following random variables; (i) **X = 2s** (ii) **X = $5s^2$ -1**. 8 Marks

UNIT-III

5 a) Explain the concept of "Expected value of a random variable" . 6 Marks

b) Explain with necessary equation about "joint density "and list all the properties of the same. 8 Marks

(OR)

6 a) Explain Central limit theorem in detail. 6 Marks

b) Discuss Moments about the Origin, Central moments, Variance and skew. 8 Marks

UNIT-IV

7	a)	Explain i) Ergodic theorem ii) Ergodic processes.	7 Marks
	b)	Prove that the autocorrelation function is maximum at the origin.	7 Marks
		(OR)	
8	a)	Derive the relation between Auto Correlation Function and PSD.	7 Marks
	b)	For a random process $\mathbf{X(t) = A\cos(\omega t + q) + B\sin\omega t}$ where A and B are two uncorrelated random variables with zero mean and equal variances and ω is a real constant. Find the ACF of X(t) and hence its PSD.	7 Marks

UNIT-V

9	a)	Define thermal noise and explain its relationship to the bandwidth and temperature.	7 Marks
	b)	An amplifier with gain = 30 dB and BN = 25 kHz is found to have T_0 = 120 K. Find T_e and Noise figure.	7 Marks
		(OR)	
10	a)	Explain the difference between correlated and uncorrelated noise.	6 Marks
	b)	Discuss and explain Noise factor and Noise figure equivalent noise temperature.	8 Marks

CODE No.:14BT30402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Mention five diode characteristic parameters usually mentioned in specification sheets and explain their significance.	4 Marks
	b)	Describe the breakdown mechanisms in Semiconductor diodes.	10 Marks
		(OR)	
2	a)	Draw the circuit diagram of simple Zener regulator and explain its working.	10 Marks
	b)	A HWR uses a diode of internal forward resistance 20Ω. It is fed by 220V source to supply current to 2k Ω load. Estimate i) the peak load current. ii) D.C load current. iii) A.C load current. iv) Voltage drop across the diode. v) Input power. vi) Percentage regulation from no load to the given load.	4 Marks

UNIT-II

3	a)	Explain what is meant by early effect in the case of transistor and what is its consequences.	4 Marks
	b)	Draw the circuit diagram of a collector to base bias circuit of CE amplifier and derive expression for S.	6 Marks
	c)	What is quiescent point? How do you determine it?	4 Marks
		(OR)	
4	a)	Explain the input and output characteristics of CE configuration of a transistor and indicate various regions.	6 Marks
	b)	Discuss about the purpose of DC and AC load lines.	4 Marks
	c)	Prove that for a CE transistor in active region $I_C = \beta I_B + (1+\beta) I_{CO}$.	4 Marks

UNIT-III

5	a)	Explain the h-parameter equivalent circuit of a transistor applicable to any configuration.	7 Marks
	b)	Derive expressions for current gain, input impedance, output impedance and voltage gain of the CC configuration using hybrid parameter equivalent circuit.	7 Marks
		(OR)	
6	a)	Analyse the CE amplifier using approximate hybrid model.	8 Marks
	b)	Write the comparisons of CE, CB, and CC configurations.	6 Marks

UNIT-IV

7	a)	Explain the construction and principle of operation of JFET.	8 Marks

	b)	Write the characteristics of MOSFET.	6 Marks

(OR)

8	a)	Explain the common source amplifier and derive expression for gain of the amplifier.	8 Marks
	b)	Describe the generalized FET amplifier.	6 Marks

UNIT-V

9	a)	With the schematic diagram of an UJT showing the inter-base resistances and the input diode, explain the working of it. Mention any three applications of UJT.	7 Marks
	b)	Explain how tailoring of doping profiles improve the Varactor diode operation. Mention any three applications of it.	7 Marks

(OR)

10	a)	How does a Tunnel diode differ from other semiconductor diodes in its fabrication? Describe with relevant theory the energy band structure and forward-reverse characteristics of a Tunnel diode.	7 Marks
	b)	Explain the working principle of SCR with the help of V-I characteristics. Mention its applications.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about the characteristics of Zener diode.	6 Marks
	b)	What are the specifications of **p-n** junction diode? Explain how reverse saturation current varies with temperature both in **Si** and **Ge** diodes.	8 Marks
		(OR)	
2	a)	Draw the block diagram of a regulated power supply and explain its operation.	7 Marks
	b)	Write the diode equation and discuss the effect of temperature on diode current.	7 Marks

UNIT-II

3	a)	Explain the working of a PNP transistor.	8 Marks
	b)	Compare CE, CB and CC configurations.	6 Marks
		(OR)	
4	a)	Draw the small signal hybrid model of CB amplifier and derive the expressions for its A_i, A_v, R_i, and R_o.	7 Marks
	b)	Draw the circuit and explain the characteristics of BJT (input and output characteristics) in CB configuration.	7 Marks

UNIT-III

5	a)	Explain in detail the working of JFET and draw its drain and transfer characteristics.	10 Marks
	b)	Compare JFET and MOSFET.	4 Marks
		(OR)	
6	a)	What are the differences between BJT and JFET?	6 Marks
	b)	Explain how FET acts as voltage variable resistor.	8 Marks

UNIT-IV

7	a)	Describe with necessary derivations, the effect of negative feedback on bandwidth.	7 Marks
	b)	The distortion in an amplifier is found to be 3% when the feedback ratio of negative feedback amplifier is 0.04. When feedback is removed, the distortion becomes 15%.Find the open loop gain and closed loop gain.	7 Marks
		(OR)	
8	a)	State and briefly explain Barkhausen criterion for oscillations.	7 Marks
	b)	In a Hartley oscillator, the value of the capacitor in the tuned circuit is 500pF and the two sections of coil have inductances 38**μ**H and 12**μ**H. Find the frequency of oscillations and the feedback factor **β**.	7 Marks

UNIT-V

9	a)	Explain the construction and working of Silicon Control Rectifier.	8 Marks
	b)	Explain Uni-Junction Transistor as Relaxation Oscillator.	6 Marks
		(OR)	
10	a)	What are the applications of Silicon Control Rectifier? Explain briefly.	6 Marks
	b)	Explain the construction and working of Schottky Barrier Diode.	8 Marks

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CODE No.:14BT30501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Write an algorithm to insert an element in a circular linked list.	14 Marks
	(OR)	
2	Write about traversing linked lists with an example and write an algorithm for traversals.	14 Marks

UNIT-II

3	List the applications of queue and implement the queue using linked list.	14 Marks
	(OR)	
4	Write an algorithm to convert infix expression to postfix.	14 Marks

UNIT-III

5	Consider a list of elements -15, -6, 0, 7, 9, 23, 54, 82, 101, 112, 125, 131, 142, 151. Trace a Binary Search algorithm for searching 151 and -14.	14 Marks
	(OR)	
6	What is AVL tree? Explain about different rotation patterns in balancing with examples.	14 Marks

UNIT-IV

7	Explain B-Trees.	14 Marks
	(OR)	
8	Explain DFS and BFS algorithms with suitable example.	14 Marks

UNIT-V

9	Explain merge sort.	14 Marks
	(OR)	
10	What is hash table and hash function? Explain different hash functions with examples.	14 Marks

CODE No.:14BT30502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

DIGITAL LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the following using BCD Arithmetic. i) $1263_{10} + 9687_{10}$ ii) $7672_{10} + 3378_{10}$	8 Marks
	b)	Convert the following: i) $997_{10} = (\ )_{16}$ ii) $257_{10} = (\ )_{8}$ iii) $654_{10} = (\ )_{2}$	6 Marks

(OR)

2	a)	Express the following functions in sum of Minterms and product of Maxterms. i) (xy + z) (y + xz) ii) B'D + A'D + BD.	6 Marks
	b)	Obtain minimal SOP expression for the complement of the given expression: F(A,B,C) = Q(1, 2, 5, 7) And draw the circuit using NOR-gates.	8 Marks

UNIT-II

3	a)	What is Karnaugh map? Explain its concept with example.	4 Marks
	b)	Simplify the following Boolean Function $F(A,B,C,D) = \Pi\,(0,2,5,6,7,9,11,14)$ using Karnaugh map.	10 Marks

(OR)

4	a)	Explain don't-care condition.	4 Marks
	b)	Implement AND, OR, NOT gates using Universal gates.	6 Marks
	c)	Describe EX-OR function with an example.	4 Marks

UNIT-III

5	a)	Implement 64 × 1 Multiplexer with four 16 × 1 and one 4 ×1 Multiplexer. (Use only Block diagram).	7 Marks
	b)	A Combinational logic circuit is defined by the following Boolean functions: F1 = ABC + AC F2 = ABC + AB F3= ABC + AB Design the circuit with a Decoder and external gates.	7 Marks

(OR)

6	a)	Realize a full sub tractor using MUX.	7 Marks
	b)	Realize a full adder using MUX.	7 Marks

UNIT-IV

7	a)	Explain different types of Shift registers.	7 Marks
	b)	Design a 4-bit Ring Counter using T- flip flops and draw the circuit diagram.	7 Marks

(OR)

8		Describe the operation of the SR Latch using NAND gate with the help of truth table, transition table and the circuit.	14 Marks

UNIT-V

9		Write short notes on the following ROM variants: i) M-ROM ii) P-ROM iii) EPROM iv) EEPROM	14 Marks

(OR)

10	a)	Write a brief notes on memory decoding.	7 Marks
	b)	Explain the functioning of any two sequential Programmable devices.	7 Marks

CODE No.:14BT31001 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

PRINCIPLES OF ELECTRICAL MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different functional elements involved in measurement system with neat diagrams.	10 Marks
	b)	What is measurement and explain its significance in various fields of engineering.	4 Marks
		(OR)	
2	a)	Describe the construction of a resistance standard with the help of neat diagrams.	7 Marks
	b)	A voltmeter and an ammeter are to be used to determine the power dissipated in a resistor. Both the instruments are guaranteed to be accurate within ±1% at full scale deflection. If the voltmeter reads 80V on its 150V range and the ammeter reads 70mA on its 100mA range, determine the limiting error for the power calculation.	7 Marks

UNIT-II

3	a)	Explain range extending methods of DC ammeters and voltmeters with suitable diagrams.	7 Marks
	b)	Describe the operating forces needed for proper operation of an analog indicating instrument.	7 Marks
		(OR)	
4	a)	Describe Multi-range ammeters and voltmeters in detail.	10 Marks
	b)	Briefly discuss about effect of temperature change in voltmeters.	4 Marks

UNIT-III

5		Describe the working of a duo-range potentiometer with its circuit diagram. Mention its advantages and disadvantages.	14 Marks
		(OR)	
6		Explain with the suitable diagrams, how AC potentiometers can be used for calibration of voltmeters and ammeters.	14 Marks

UNIT-IV

7	a)	A dynamometer type wattmeter is rated for 10A and 100V and a full-scale reading of 1KW at frequency is 50Hz.The inductance of the voltage circuit is 5mH and its resistance is 3KΩ. If the voltage drop across current coil of wattmeter is negligible, what is the error in wattmeter at the rated volt-amperes with zero power factor?	6 Marks
	b)	Explain Electrodynamometer type power factor meter with necessary diagrams.	8 Marks
		(OR)	
8	a)	Describe working and construction of Electrodynamometer type wattmeter with help of neat diagrams.	10 Marks
	b)	Explain errors associated with single phase energy meter.	4 Marks

UNIT-V

9	a)	Describe working principle of Schering bridge and derive an expression for measurement of unknown capacitor.	10 Marks
	b)	Derive the balancing condition for Kelvin bridge.	4 Marks

(OR)

10		Write short notes on	
		a) Anderson bridge	7 Marks
		b) Q-Meter	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1	a)	Derive and sketch the frequency response of a first order system.	7 Marks
	b)	Define the terms Dynamic error and Fidelity of a system.	7 Marks
		(OR)	
2	a)	List the static characteristics of a measuring system.	7 Marks
	b)	Derive and sketch the impulse response of a second order system.	7 Marks

UNIT-II

3	a)	Derive the expression for the output voltage of a resistance potential divider when connected across a meter of finite impedance. Also explain why sensitivity and linearity are two conflicting requirements in a resistance potential divider.	7 Marks
	b)	What is Magnetoresistive Effect (MRE)? Explain about different types of MRE Sensors, with necessary diagrams and compare their characteristics with Hall Effect Sensors.	7 Marks
		(OR)	
4	a)	Define Humidity, Absolute Humidity and Relative Humidity. Explain the principle, construction and working of Resistive Hygrometer with a neat diagram.	7 Marks
	b)	Explain the working principle of a Hot-wire Resistance Transducer with a neat diagram and necessary equations.	7 Marks

UNIT-III

5	a)	Mention the various physical effects employed for measuring the thickness of metal foil and how does this affect the performance of transducer.	7 Marks
	b)	Explain the working of an Eddy current sensor.	7 Marks
		(OR)	
6	a)	Explain how LVDT can be used as a device to measure force.	7 Marks
	b)	Explain the working of variable reluctance sensor.	7 Marks

UNIT-IV

7	a)	Explain the principle and working of a Thermocouple.	7 Marks
	b)	Write short notes on Pyroelectric effect and List the Pyroelectric materials.	7 Marks
		(OR)	
8	a)	Explain Ion selective electrodes.	7 Marks
	b)	Draw the equivalent circuit of a Piezoelectric sensor and explain its working.	7 Marks

UNIT-V

9	a)	List the applications of Semiconductor sensors.	7 Marks
	b)	Explain with neat diagrams the working principle of an Absolute encoder.	7 Marks
		(OR)	
10	a)	What is the principle of a Fiber optic sensor? Write short notes on the technology used.	7 Marks
	b)	Bring out the differences between fiber optic sensor and Ultrasonic sensor.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2016

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Show that $\neg (P \vee Q) \Leftrightarrow \neg P \wedge \neg Q$. 7 Marks

b) Obtain principal conjunctive normal form of $(\neg P \rightarrow R) \wedge (Q \Leftrightarrow P)$. 7 Marks

(OR)

2 a) Show that $R \rightarrow S$ is a valid conclusion from the premises $P \rightarrow (Q \rightarrow S), \neg R \vee P$ and Q. 7 Marks

b) Prove that $(\exists x)(P(x) \wedge Q(x)) \Rightarrow (\exists x) P(x) \wedge (\exists x) Q(x)$. 7 Marks

UNIT-II

3 a) Determine whether the Relation R on the set of all integers is reflexive, symmetric, antisymmetric and transitive where x,y $\in$ R iff. x=y+1. 7 Marks

b) Draw the Hasse diagram for a set A={2,3,6,12,24,36} under the partial ordering relation "divided". 7 Marks

(OR)

4 a) Let f(x)= x+2, g(x)= x-2, h(x)=3x for all x$\in$R where R is a set of real numbers then find g**o**f, f**o**h**o**g and f**o**h 7 Marks

b) Given S = {1,2,…..,10} and a relation R on S where R={(x,y)| x+y=10}. What are the properties of the relation R? 7 Marks

UNIT-III

5 a) Show that the set Z of all integers is a group under * such that $a * b = a + b - 1$. 7 Marks

b) Prove that the inverse of an element in a group is unique. 7 Marks

(OR)

6 a) Define Isomorphism of Monoids with an example. 7 Marks

b) Prove that the set of all elements of a group $(G,*)$ such that $a * x = x * a$ for every $x \in G$, is a subgroup of G. 7 Marks

UNIT-IV

7 a) In $(1 + x^5 + x^9)^{10}$ find the coefficient of x^{23} and x^{32}. 7 Marks

b) Compute the number of six letter combinations of the letter of English alphabet. If no letter is to appear in the combination more than 2 times. 7 Marks

(OR)

8 a) Solve the Recurrence Relation $a_n - 9a_{n-1} - 26a_{n-2} - 24a_{n-3} = 0$ where a_0=0, a_1 =1 and a_2=10. 7 Marks

b) How many ways can 5 day's be chosen from each of the 12 months of an ordinary year of 365 day's? 7 Marks

UNIT-V

9	a)	Define (i) Connected graph (ii) Connected component with an example for each.	7 Marks
	b)	Write a short note on (i) Euler circuit (ii) Hamiltonian circuit.	7 Marks
		(OR)	
10	a)	Define (i) Tree (ii) Binary tree with an example for each.	7 Marks
	b)	Explain Prim's algorithm with an example.	7 Marks

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

PROBABILITY AND STATISTICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Two digits are selected at random from the digits '1' through '9' .
   i) If the sum is odd, what is the probability that 2 is one of the numbers selected?
   ii) If 2 is one of the digits selected, what is the probability that the sum is odd?

b) If $f(x) = \begin{cases} \frac{1}{2}(x+1) & ,-1<x<1 \\ 0 & ,elsewhere \end{cases}$ represents the density of a random variable X, find the mean and standard deviation of X.

2. a) The mean 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) The marks obtained in Economics by 1000 students is normally distributed with mean 78% and standard deviation 11% .Determine
   i) How many students got marks above 90%?
   ii) What was the highest mark obtained by the lowest 10% of the students?

3. a) Find the co-efficient of correlation between industrial production and export using the following data and comment on the result.

Production(in corer tons)	55	56	58	59	60	60	62
Exports(in corer tons)	35	38	38	39	44	43	45

b) For a set of values of x and y, the two regression lines are **31x - 37y + 5 = 0** and **50x - 36y - 612 = 0.** Identify the regression line of y on x and that of x on y.

4. a) Write about Type-I error and Type-II error.

b) A population consists of five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size 2 that can be drawn with replacement from this population. Find
   (i) The mean of the population.
   (ii) The standard deviation of the population.

5. a) In 64 randomly selected hours of production, the mean and the standard deviation of the number of acceptance pieces produced by an automatic stamping machine are $\bar{x} = 1.038$ and s=146. At the 0.05 level of significance does this enable us to reject the null hypothesis $\mu = 1.000$ against the alternative hypothesis $\mu > 1.000$?

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) A random sample from a company's very extensive files shows that the orders for a certain kind of machinery were filled, respectively in 10,12,19,14,15,18,11 and 13 days. Use the level of significance a=0.01 to test the claim that on the average such orders are filled in 10.5 days. Assume normality.

b) A pair of dice are thrown 360 times and the frequency of each sum is indicated below.

Sum	2	3	4	5	6	7	8	9	10	11	12
Frequency	8	24	35	37	44	65	51	42	26	14	14

Would you say that the dice are fair on the basis of the chi-square test at 0.05 level of significance?

7. In a process control study 15 samples, each of size 50 was drawn. The number of defective pieces are 3, 1, 2, 5, 4, 2, 3, 2, 5, 7, 1, 4, 2, 3, 1. Find the control limits of the np-chart and comment.

8. a) For the (M/M/1) : (∞/FCFS) Queuing system, show that the steady state probability of having n customers in the system is $P_n = \rho^n(1-\rho)$. Where ρ is the traffic intensity and $n \geq 0$.

b) Assume that both arrival rate and service rate following Poisson distribution. The arrival rate of customers at a counter in a bank follows Poisson distribution with a mean of 45/hour; service rate of the clerk follows PD with a mean of 60/hour. Find the probability of having 0, 5, 10 customers in the system. Find L_s, L_q, W_s, W_q.

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find a solution of $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ *where* $u(x,0) = 6e^{-3x}$ by method of separation of variables.

b) Find the complete integral of $\mathbf{y^2 p - xy.q = x(z - 2y)}$ by Lagrange's method.

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

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

3. a) If $f(z)$ is a regular function of z, prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right)|f(z)|^2 = 4|f'(z)|^2$.

b) Determine the analytic function whose real part is $x^3 - 3xy^2 + 3x^2 - 3y^2 + 1$.

4. a) State and prove Cauchy's integral theorem.

b) Evaluate $\oint_C \frac{e^z}{(z^2+\pi^2)^2}dz$ where **C:** $|z| = 4$ by Cauchy's integral formula.

5. a) Find the Laurent's expansion of $f(z) = \frac{e^{2z}}{(z-1)^3}$ about the singularity **z=1**.

b) Discuss about Isolated singularity and Removable singularity. Also find the type of singularity of the function $f(z) = ze^{\frac{1}{z^2}}$.

6. Prove that $\int_{-\infty}^{\infty} \frac{\cos x}{(x^2+a^2)(x^2+b^2)}dx = \frac{\pi}{a^2-b^2}\left(\frac{e^{-b}}{b} - \frac{e^{-a}}{a}\right)$.

7. a) State Rouche's Theorem and apply it to determine the number of roots of the equation $z^8 - 4z^5 + z^2 - 1 = 0$ that lie inside the circle **|z|=1**.

b) State and prove fundamental theorem of algebra.

8. a) Prove that $w = \frac{1+iz}{i+z}$ maps the part of the real axis between *z=1* and *z = -1* on the semi-circle in *w*-plane.

b) Find the image of the circle **| z – 2| = 3** under the bilinear transformation $w = \frac{z}{z+1}$.

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

MECHANICS OF SOLIDS

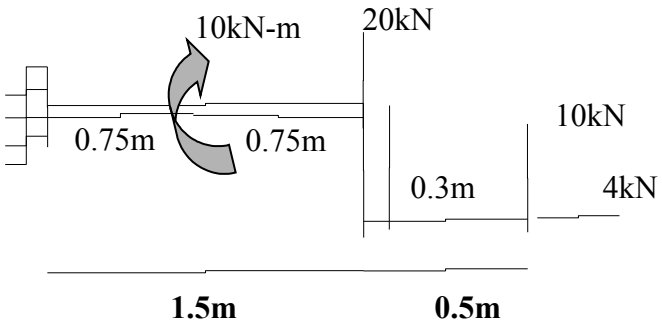
[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following:
i) Elastic and Plastic properties ii) Working Stress iii) Poisson's ratio
b) Derive the relation between various elastic moduli.

2. a) Obtain the relationship between shear force and bending moment.
b) Draw the SFD and BMD for the following beam shown in Fig.



3. A simply supported steel beam of span 6m has I-section. The depth of the section is 350mm. The top flange is 200mm wide and 12mm thick and the bottom flange is 150mm wide and 10mm thick. The web is 8mm thick. If the maximum permissible flexural stress is 165N/mm^2, find the safe uniformly distributed load that the section can carry.

4. a) Sketch the variation of shear stress across the depth of a triangular section of height "h" and base width "b", subjected to a shear force V.
b) Sketch the variation of shear stress across the depth of an I section of flange 100mm x 10mm, web thickness 8mm, overall depth 200mm, subjected to a SF of 30kN.

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

6. An open coiled steel helical spring has 10 coils of 75mm mean diameter and the diameter of the wire is 12mm. The angle of the helix is 22^0. Determine the load that would cause a deflection of 25mm in the spring and the corresponding bending and shear stresses developed in the spring wire.

7. a) Derive an expression for the increase in the internal volume of a thin cylinder subjected to internal fluid pressure.

b) A copper tube of 60mm inner diameter, 1200mm long and 1.2mm thick has closed ends subjected to an internal pressure of 2MPa. Neglecting any distortion in the end plates, determine the increase in the length, diameter and volume of the cylinder. E_C = 100GPa, μ_C = 0.3.

8. A boiler is subjected to an internal steam pressure of 2 N/mm². The thickness of boiler plate is 2.6cm and permissible tensile stress is 120 N/mm². Find out the maximum diameter, when efficiency of longitudinal joint is 90% and that of circumferential joint is 40%.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

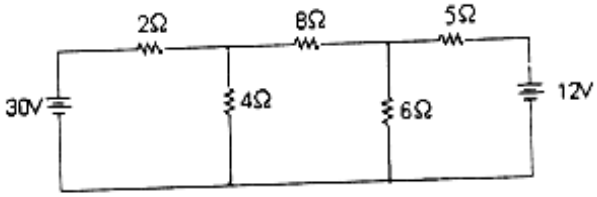
[Civil Engineering]

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

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

PART - A

1. a) State and explain Ohm's Laws.
b) Determine the current through all the elements of the circuit shown in below figure by using Kirchoff's laws.



2. a) Explain the principle of operation of DC generator. Derive its EMF equation.
b) Mention different types of DC generators and draw their electrical representation.

3. a) What different losses that occur in transformer? Which losses vary with load? How?
b) Derive the condition for maximum efficiency of a transformer.

4. a) Discuss how torque is produced in 3-phase induction motor. Draw torque-slip characteristics.
b) What is the effect of increase of load on the terminal voltage of alternator? Explain.

PART - B

5. a) Classify the welding process and explain the basic principle of arc welding.
b) Explain TIG welding process with the neat sketch.

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

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

8. a) Explain the working principle of a single stage reciprocating air compressor.
b) Write short note on the following:
i) Excavator.
ii) Belt Conveyors.

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

FLUID MECHANICS-I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain capillarity and surface tension with neat sketches.
b) A rectangular plate of size 25cm x 50cm weighing 25 kgf slides down a 30^0 inclined surface at a uniform velocity of 2m/s. If the uniform 2mm gap between the plate and the inclined surface is filled with oil, determine the viscosity of oil.

2. a) Explain how you would find the resultant pressure on a curved surface immersed I 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) State law of conservation of mass and derive corresponding mathematical expression for a two dimensional steady incompressible flow in Cartesian coordinates.
b) An airplane is observed to travel due north at a speed of 240kmph in a 80kmph wind from north-west. What is the apparent wind velocity observed by the pilot? What is apparent wind direction?

4. Show that in case of a forced vortex flow, the rise of liquid level at the ends is equal to the fall of liquid level at the axis of rotation.

5. a) What is a venturimeter? Derive an expression for the discharge through the venturimeter. How do you account for the field conditions?
b) A 300mm diameter pipe carries water under a head of 20m with a velocity of 3.5m/s. If the axis of the pipe turns through 45^0, find the magnitude and direction of resultant force at the bend.

6. a) Differentiate between linear momentum and angular momentum and state angular momentum principle.
b) A stream function in 2-D flow is $\Psi = 2xy$. Show that the flow is irrotational and determine the corresponding velocity potential $\emptyset$.

7. a) Show that the velocity distribution in a viscous flow through a pipe resembles letter 'D'.
b) Differentiate between hydrodynamically smooth and rough boundaries.

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

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the phenomenon of capillarity. Obtain an expression for capillary rise of a liquid.
b) An inverted differential manometer containing an oil of specific gravity 0.9 is connected to find the difference of pressures at two points of a pipe containing water. If the manometer reading is 400mm, find the difference of pressures.

2. a) Explain the terms: (i) Streamline (ii) Path line and (iii) Streak line.
b) Derive the continuity equation in Cartesian co-ordinates.

3. a) Explain the terms : (i) Total energy line and (ii) Hydraulic gradient line.
b) A horizontal venturimeter with inlet diameter 200mm and throat diameter 100mm is used to measure the rate of flow of water. The reading of the differential manometer connected to the inlet is 180mm of mercury. If the co-efficient of discharge is 0.98, determine the rate of flow.

4. a) A nozzle of 60mm diameter delivers a stream of water at 24m/s perpendicular to a plate that moves away from the jet at 6m/s. Find
(i) the force on the plate (ii) the work done (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) What are the functions of a draft tube?
b) Design a Pelton wheel for a head of 80m and speed 300 r.p.m. The Pelton wheel develops 103kW. Take C_v= 0.98, speed ratio = 0.45 and overall efficiency = 0.80.

7. a) Define the three ' Unit quantities' with reference to a hydraulic turbine. Derive expressions for these terms.
b) Explain the performance characteristic curves of hydraulic turbines.

8. a) A centrifugal pump is discharging 0.03 m^3/s of water against a total head of 20m. The diameter of the impeller is 400mm and it is rotating at 1500 r.p.m. Calculate the head, discharge and ratio of powers of a geometrically similar pump of diameter 250mm when it is running at 3000 r.p.m.
b) What are air vessels and what is their function in reciprocating pumps?

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ELECTRICAL CIRCUITS

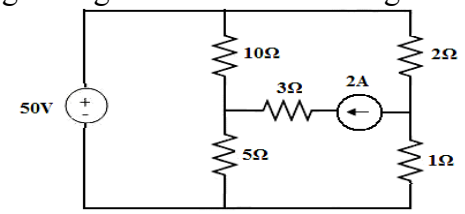
[Electrical and Electronics Engineering]

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

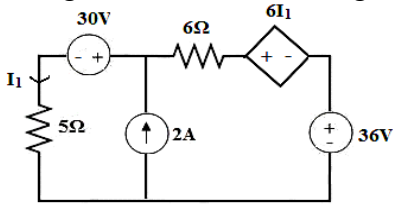
Answer any FIVE questions
All questions carry equal marks

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

2. a) Determine the current flowing through the 5Ω resistor using mesh analysis.



b) Determine the current flowing through the 5Ω resistor using nodal analysis.



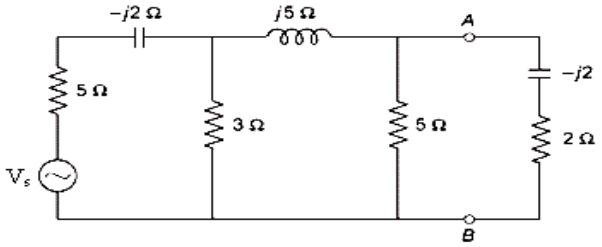
3. a) Derive the expression for RMS value of alternating current wave $\mathbf{I = I_m \, Sin \, \omega t}$.
b) A sinusoidal alternating current of frequency 25Hz has a maximum value of 100A. How long will it take for the current to attain 20A.

4. a) Show that the resonant frequency is the geometric mean of two half power frequencies.
b) A parallel circuit consists of two branches Z_1 and Z_2 and is connected to a supply of 220V, 50Hz. Branch 1 consists of a resistance of 10Ω in series with an inductance of 0.1H. Branch 2 consists of a resistance of 5Ω in series with a capacitance of 50μF. Find the total current drawn from the supply. What is the overall power factor of the combination?

5. a) Show that two wattmeters are enough to measure the power in a three phase system and derive the expression for power factor in terms of two wattmeter readings.
b) Three loads (4+j8)Ω, (3+j4)Ω and (15+j20)Ω are connected in star across a three phase, 4 wire, 400 volts, CBA system. Determine the line currents, current in the neutral wire and the total power.

6. a) Define coefficient of coupling K and derive the relation between self inductances L_1, L_2, mutual inductance M and coefficient of coupling K.
b) A coil of 100 turns is wound uniformly over a insulator ring with a mean circumference of 2m and a uniform sectional area of 0.025cm^2 and $\mu_0=4\pi \times 10^{-7}$. If the coil is carrying a current of 2A, calculate (i) the m.m.f of the circuit (ii) magnetic field intensity and (iii) flux density and (iv) the total flux.

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



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

CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the principle of energy conversion. Why do all practical energy conversion devices make use of the magnetic field as a coupling medium rather than an electric field?
b) Derive an expression for the force developed in a permanent magnet system.

2. Describe the constructional details of dc machine with necessary diagrams.

3. a) Explain the process of building up of voltage in a dc shunt generator and give the conditions of self build up voltage.
b) A long compound generator delivers a full load current of 450A at 250 volts. Armature, series field and shunt field resistances are 0.03ohms, 0.02ohms and 50ohms respectively. Calculate the generated emf and the power developed in the armature.

4. a) Explain the various methods of improving commutation.
b) A 6-pole lap-wound dc generator has 320 conductors. The compensating winding carries full armature current. Calculate the number of turns per pole required for providing compensation. Assume the ratio of pole arc to pole pitch as 0.7.

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) Draw speed torque characteristics of a dc shunt, series, compound motors and explain the causes for their shape.
b) Determine developed torque and shaft toque of a 220V, 4-pole series motor with 800 conductors wave connected supplying a load of 802kW by taking 45A from the mains. The flux per pole is 0.025 webers and its armature circuit resistance is 0.6ohms.

7. a) Explain ward-Leonard method of speed control in dc motors.
b) A 250V, dc shunt motor on no-load runs at a speed of 1000 r.p.m and takes a current of 5A. The armature and shunt field resistance are 0.2Ω and 250Ω 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. With the help of neat circuit diagram, explain Swinburne's test and derive the relations for efficiency (both for generator and motor). Also state the merits and demerits of this method.

CODE No.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain Ohm's law.
b) A circuit consisting of three resistances12Ω,18Ω and 36Ω respectively joined in parallel is connected in series with a fourth resistance across a supply of 60V. It is found that the power drop in the 12Ω resistance is 36W. Determine the value of fourth resistance and total power dissipated in the group.

2. a) Explain the mesh analysis.
b) Define the following terms:
i) Node
ii) Branch
iii) Path
iv) Loop

3. a) Define
i) Instantaneous value (ii) Peak Value (iii) Average value
b) A circuit takes a current of $I = 20\sin\left(314t - \frac{\pi}{6}\right)$ amperes when the voltage is $V=100\sin 314t$. Calculate the impedance, phase angle, resistance and inductance of the circuit.

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

5. a) Derive the e.m.f equation of a d.c generator.
b) Explain the applications of various d.c motors with valid reasons.

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 stepper motor.

8. Explain the principle of operation of a digital multi meter, with the help of a neat sketch.

CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Kirchoff's laws with one example each.
b) Derive the equations for equivalent resistances for star/delta and delta/star transformations.

2. a) Define the following terms referred to electrical network:
(i) Node (ii) Loop (iii) Branch (iv) Path
b) State and prove superposition theorem with the help of an example.

3. a) Prove that the average power in a resister is P = VI. Sketch the waveforms.
b) A series combination of R and C in series with a resistance of 15 ohms. When a source of 120 volts at 60 Hz is applied to the complete circuit, the effective voltage across the RC combination and the pure resistor are 87.3 and 63.6 volts respectively. Find **R** and **C**.

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

5. Explain OC and SC tests on single phase transformers.

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

7. a) Write merits and demerits of open loop and closed loop control systems.
b) Write briefly about linear and non linear control systems with examples.

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

CODE No.:10BT30223

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

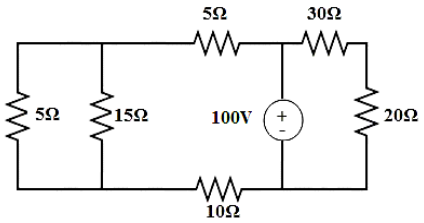
CIRCUIT THEORY

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

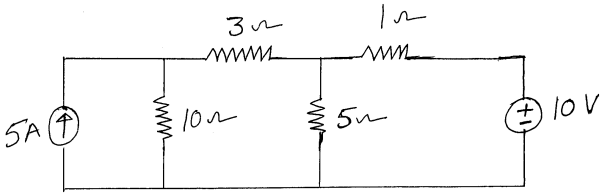
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

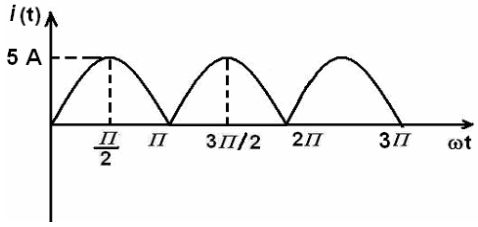
1. a) Explain the terms: Active elements and Passive elements.
b) Find the current in each branch of the circuit shown below using current division method.



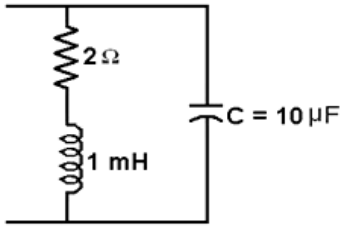
2. a) Explain the concept of Nodal and Mesh analysis.
b) Write node voltage equations and determine the currents in each branch for the network shown below.



3. a) Define RMS value, Average value, Form factor and Peak factor of an alternating quantity.
b) Find the average value and RMS value of the full wave rectified sine wave shown in figure.

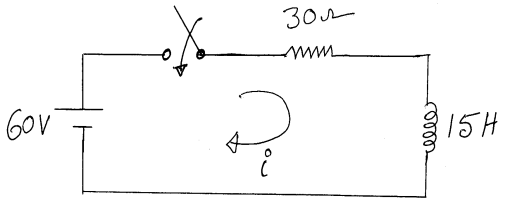


4. a) Explain Reactance, Impedance, Suceptance and Admittance.
b) In a parallel resonance circuit shown in figure, find the resonance frequency and bandwidth.



5. a) Show that for a series RLC circuit $f_r = \sqrt{f_1 f_2}$, where f_r is 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.

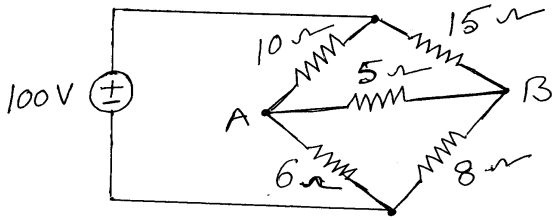


6. a) Explain concept of self and mutual inductance and write about dot rule.

b) Two coils connected in series have an equivalent inductance of 0.4H when connected in aiding and the equivalent inductance 0.2H when connected in opposition. Calculate the mutual inductance of the coils.

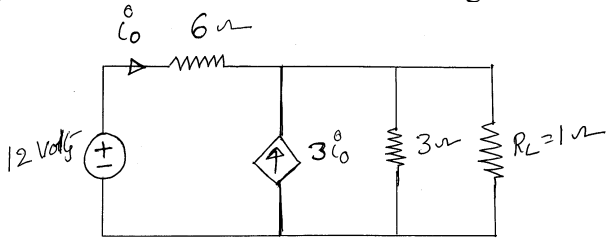
7. a) State and explain superposition theorem.

b) Use Thevinin's theorem to find the current through 5Ω resistor in below figure.



8. a) State and explain reciprocity theorem.

b) Find the current through R_L in the circuit shown below using Norton's theorem.



CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

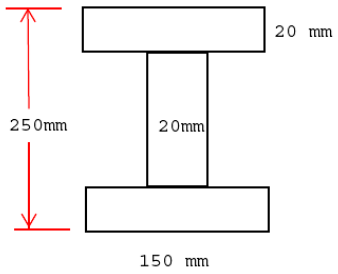
Answer any FIVE questions
All questions carry equal marks

1. An aluminium solid cylinder of 7.5cm diameter fits loosely inside a steel tube having 10cm external diameter and 8cm internal diameter. The steel tube is 0.02cm longer than aluminium cylinder and is 250cm long before the load is applied. Calculate the safe load which can be placed on a rigid flat plate on the top of the steel tube. Safe stress for steel is 95MPa and for aluminium 65MPa, E_s=210GPa, E_{Al}= 70GPa.

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

3. a) Derive the bending equation from first principles.
b) State the assumptions involved in the theory of simple bending.

4. An I section shown in figure is used as a beam. Find the percentage of shear force resisted by web if the beam is subjected to a shear force F.



5. A shaft transmits 300 kW power at 120 r.p.m. Determine:
i) The necessary diameter of solid circular shaft.
ii) The necessary diameter of hollow circular section, the inside diameter being 2/3 of the external diameter. The allowable shear stress is 70 N/mm^2. Taking the density of material is 77 kN/m^3; calculate the percentage saving in the material if hollow shaft is used.

6. A cantilever of 4m span length carries a load 40kN at its free end. If the deflection at the free end is not to exceed 8mm, what must be the moment of inertia of the cantilever section?

7. A thin cylindrical shell with following dimensions is filled with a liquid at atmospheric pressure: length = 1.2m, external diameter = 20cm, thickness of metal = 8mm. Find the value of the pressure exerted by the liquid on the walls of the cylinder and the hoop stress induced if an additional volume of 25cm^3 of liquid is pumped into the cylinder Take E = 2.1 x 10^5 N/mm^2 and 1/m = 0.33.

8. A steel tube of 200mm external diameter is to be shrunk onto another steel tube of 60mm internal diameter. The diameter at the junction after shrinking is 120mm. Before shrinking on the difference of diameters at the junction is 0.08mm. Calculate the radial pressure at the junction and the hoop stresses developed in the two tubes after shrinking on. E = 2 x 10^5 N/mm^2.

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Show different Lattice structures with diagrams.

2. a) What are Interstestial solid solution rules?
b) What is difference between an ordinary alloy and electron compound?

3. a) What is an invariant reaction? List and explain three reactions present in the Fe-Fe_3C equilibrium diagram.
b) Explain peritectoid reaction.

4. a) Draw a neat microstructure and give some properties of the following:
i) White Cast Iron ii) Gray Cast Iron
b) Give a detail classification of steel. Draw structure and give some properties of plain carbon steel.

5. a) Define the term heat treatment and explain various stages in a heat treatment cycle.
b) "Normalized steels are stronger than annealed steels". Explain.

6. Give the structures and properties of Titanium and its alloy.

7. What is the difference between crystalline and non-crystalline ceramics? Explain with an example.

8. Discuss the various methods of producing metal powders and write the applications of powder metallurgy.

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different types of systems? Give examples for each. Hydraulic pump, Air compressor, Steam turbines are examples for which type of systems?
b) What are the different types of properties? Give examples for each. Density is an example for which property?

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

3. a) Derive the equivalence of clausius and Kelvin plank statements.
b) A heat engine is used to drive a heat pump. The heat transfers from the heat pump and heat engines are used to heat the water circulating through the radiators of a building. The efficiency of the heat engine is 27% and the COP of the heat pump is 4. Evaluate the ratio of the heat transfer to the circulating water to the heat transfer to the heat engine.

4. a) What is meant by availability? Give expression for availabilities of a closed system and a steady flow open systems.
b) An adiabatic vessel contains 2kg of water at25^0C. By paddle wheel work transfer, the temperature of water is increased to 30^0C. Find the entropy change of the universe.

5. a) Why do isotherms on Mollier diagram become horizontal in the superheated region at low pressures? Explain the importance of Triple point.
b) 10 kg of water at 45^0C is heated at a constant pressure of 10 bar until it becomes superheated vapour at 300^0C. Find the change in enthalpy, entropy, internal energy, specific volume.

6. a) What is a polytropic process? What are the relations among $\boldsymbol{p}$, $\boldsymbol{v}$ and $\boldsymbol{T}$ of an ideal gas in a polytropic process?
b) One kg of a air in a closed system, initially at 5^0C and occupying 0.28m^3 volume, undergoes a constant pressure heating process to 110^0C. There is no work other than $\boldsymbol{pdv}$ work. Find (i) the work done during the process, (ii) the heat transferred and (iii) the entropy changes of the gas.

7. a) State and prove Dalton's law of partial pressures.
b) Discuss about Gravimetric Analysis of mixtures.

8. a) Establish the relationship between specific humidity, relative humidity and degree of saturation, relative humidity.
b) A psychrometer reads 40^0C DBT, 36^0C WBT. Find the humidity ratio, relative humidity, DPT, specific volume, enthalpy of air.

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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) With circuit and necessary waveforms, explain the operation of centered tapped FWR.
b) Derive the expression for ripple factor for the circuit FWR with inductor filter.

3. a) Explain how the transistor acts as amplifier.
b) Find the collector current for a transistor when both emitter and collector junctions are reverse biased. Assume $I_{CO} = 5\mu A$, $I_{EO} = 3.5\mu A$ and $\alpha = 0.98$.
c) What are the differences between PN junction diode and Zener Diode?

4. a) Explain diode compensation circuit for variations in V_{BE} for self bias circuit.
b) Derive an expression for stability factor S in self bias circuit.

5. a) What are the advantages of h-parameter?
b) A CE amplifier has $R_c=10K\Omega$, $R_e=2k\Omega$, $h_{ie}=2\Omega$, $h_{fe}=60\mu$mhos and $h_{re}=1x10^{-4}$. Calculate A_I and A_V.

6. a) With neat structure, explain the principle of operation of depletion MOSFET.
b) Explain drain characteristics of JFET.

7. a) Derive an expression for voltage gain, input impedance and output impedance of CS amplifier at low frequencies.
b) Discuss the concept of biasing of MOSFET's (Both Depletion and Enhancement)

8. Explain the principle of operation and V-I characteristics of SCR. Also state few applications of SCR.

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SIGNALS AND SYSTEMS

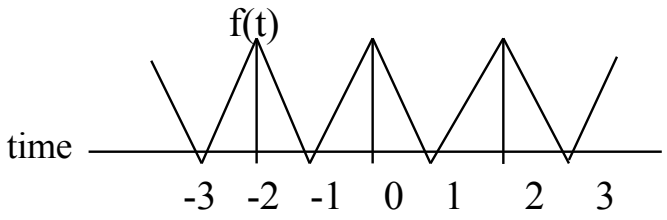
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the even and odd components of (i) **x (t) = cos t + sin t** (ii) **x(t)= e ^{j2t}**
b) Test whether the signal is periodic or not. If so find the fundamental period
(i) **x(t)= e ^{j10t}** (ii) **x(t)= cos(π/3 t) + sin (π/5 t)** (iii) **cos(t + π/4).**

2. Find the exponential Fourier series and plot the magnitude and phase spectrum for the triangular waveform shown in figure



3. State and prove:
(i) Modulation theorem of Fourier transform.
(ii) Duality property of Fourier transform.

4. a) Define correlation of signals. What is its significance? Give the relation between auto correlation and convolution of signals.
b) Find the Fourier transform of the signal $g(t) = e^{-4t^2}$ using suitable properties.

5. a) State and prove the properties of autocorrelation function.
b) Derive the relation between autocorrelation and energy spectral density of a signal.

6. a) State the properties of the ROC of Laplace Transform.
b) Determine **x(t)** and **ROC** for the function

$$X(s) = \frac{(s+1)^2}{s^2 - s + 1}; \mathrm{Re}\{S\} > 1/2$$

7. a) Explain, why over sampling is restored to in certain applications. How does it help?
b) What is aliasing and anti aliasing? What are the causes to it and how it can be eliminated?

8. a) Explain the relationship between Laplace, Fourier and Z- transform.
b) Determine Z- transform f the signal **X[n] = -a^{n} u[-n-1]** and plot the ROC.

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CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different breakdown mechanisms in PN junction diodes.
b) Write the diode current equation and explain.

2. a) Draw the circuit diagram of full wave rectifier and explain the operation with waveforms.
b) Derive an expression for ripple factor of a full wave rectifier with L - filter.

3. a) With neat sketch, explain the different current components of transistor.
b) Explain output characteristics transistor CB configuration.

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

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) Draw the structure and explain the static drain and gate characteristics of n-channel JFET.
b) What are different types of FET biasing? Explain in brief.

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

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

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DIGITAL LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Solve for x
i) $(257)_8 = (x)_2$ ii) $(21.625)_{10} = (x)_8$ iii) $(BC.2)_{16} = (x)_8$ iv) $(33)_{10} = (201)_x$
b) Express the decimal digits 0-9 in BCD, 2421, 84-2-1 and Excess-3.

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) What are SOP and POS forms of Boolean expression.
b) Simplify the Boolean expression using k-map **$f(A,B,C,D) = \pi (1,2,3,8,9,10,11,14) + \sum d (7,15)$**.

4. a) Draw and explain the operation of binary adder and subtractor circuit.
b) Explain the operation of an encoder and write its HDL code.

5. a) Define excitation table. Explain D-flip flop and obtain the state equation, state diagram, state table and excitation table of the same.
b) Explain the operation of a JK flip flop and give the advantages of JK flip flop.

6. a) Explain HDL for registers and counters.
b) With a neat sketch, explain the operation of 4-bit bidirectional shift register.

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.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Show that **(∃x)M(x)** follows logically from the [premises **(x)(H(x)->M(x)** and **(∃x)H(x)**.
b) If the universe of discourse is the set **{a, b, c}** eliminate the quantities in the formula: **(x)R(x) Λ(x)S(x)**

3. a) Let R be the set of all real numbers . Let **f: R→R** and **g: R→R** be the functions defined by **f(x) = x^2 -2** and **g(x) = x +4** respectively. Find **(fog)** and **(gof)**. State whether f and g are injective.
b) Draw Hasse diagram of **{1, 2, 3, 6, 12}** under the partial ordering relation 'divided'.

4. (a) Let X be a set containing n elements, let $\mathbf{X}^*$ denote the free semigroup generated by X, and let $\langle S, \oplus \rangle$ be any other semigroup generated by any n generators ; then there exists a homomorphism **g:** $\mathbf{X}^* \rightarrow S$.
b) The order of a subgroup of a finite group divides the order of the group.

5. a) Use mathematical induction to prove that $\mathbf{2^n < n!}$ for every positive integer **n** with $\mathbf{n \leq 4}$.
b) In how many ways can we distribute 7 apples and 6 oranges among 4 children so that each child gets at least 1 apple?

6. a) Solve the recurrence relation $\mathbf{a_n + a_{n-1} - 8a_{n-2} - 12a_{n-3} = 0}$, $\mathbf{n \geq 3}$ with $\mathbf{a_0 = 1}$, $\mathbf{a_1 = 5}$, $\mathbf{a_2 = 1}$.
b) Solve the relation $\mathbf{a_n = a_{n-1} + n^2}$, $\mathbf{n \geq 1}$, $\mathbf{a_0 = 1}$ by the method of generating function.

7. a) State the properties of the following graphs :
i) Reflexive ii) symmetric iii) transitive iv) antisymmetric
b) If G is a connected plane graph then show that **| V | - | E |+ | R | = 2**.

8. a) Explain Breadth first search and Depth first search algorithm for a spanning tree.
b) Explain Kruskal's algorithm for finding minimal spanning tree.

CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DATA STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. Give an algorithm which uses a stack to reverse the given string. Show working of your algorithm to reverse the string "India".

4. A program, Prog1, written by one of the programmer in an IT organization uses an implementation of the sequence ADT (data structure like an array, linked list) as its main component. It performs atRank, insertAtRank and remove operations in some unspecified order. It is known that Prog1 performs $\mathbf{n^4}$ atRank operations, $\mathbf{5n^2}$ insertAtRank operations, and $\mathbf{7n^3}$ remove operations. Which implementation of the sequence ADT should the programmer use in the interest of efficiency: the array-based one or the one that uses a doubly-linked list?
Note: atRank(5) operation will return 5^{th} element in the sequence ADT
inserAtRank(8, x) operation will insert x in the 8^{th}
delete(x) operation will delete x if it exists in the sequence ADT.

5. a) Construct AVL tree for the following elements.
6 15 45 35 25 4 5
b) Give the ADT for the AVL tree.

6. Explain about the following operations for B-tree with suitable example.
i) Traversals.
ii) Search.
iii) Simplified B-tree.

7. a) Give Prim's minimum cost spanning tree algorithm. Show its working with a simple illustration.
b) Give an algorithm to do breadth first traversal of a graph. Show its working with an example.

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

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between a open system and an closed system?
b) Define Enthaphy and Entropy.

2. a) Compare and contrast between any two thermodynamic air cycles.
b) Describe the working principle of Joule cycle.

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

4. a) What are the various methods to produce refrigerating effects? Describe any two.
b) Define:
i) Dry bulb temperature.
ii) Due point temperature.
iii) Relative humidity.

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

6. a) Briefly explain about the stream line, streak line and path line.
b) Starting from fundamentals, derive the Bernoulli's equation.

7. What are the methods of dimensional analysis? Describe the Rayleigh's method for dimensional analysis.

8. a) Explain the working principle of a reciprocating pump with a neat sketch.
b) Classify the hydraulic turbines.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers.
   i) $26153.7406)_8$ to binary
   ii) Convert $(2AC5.D)_{16}$ to binary and then to octal.
   b) 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
   ABC + A'B'C + A'BC +ABC' + A'B'C' = A'B' + B(A + C).

3. a) Simplify the following Boolean function for minimal POS form using K-map.
   F(W,X,Y,Z) = π(4,5,6,7,8,12) + d(1,2,3,9,11,14)
   b) Simplify the following Boolean expressions using K-map and implement them using NAND gates:
   F (W, X, Y, Z) = W'X'Y'Z' + WXY'Z' + W'X'YZ + WXYZ.

4. a) Draw and explain the operation of a 2-bit comparator.
   b) Realize the following using MUX.
   F(P,Q,R,S) = Σm (0,1,3,4,8,9,15)

5. a) Using PLA logic, implement a BCD to excess 3 code converter. Draw its truth table and logic diagram.
   b) Discuss about capabilities and limitations of threshold gates.

6. a) Draw a 3 bit Jhonson counter and explain.
   b) Design a 3 bit asynchronous UP/DOWN counter.

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

8. a) How do you indicate Moore outputs and mealy outputs in an ASM block?
   b) Draw the ASM chart for binary multiplier and explain with an example.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

PROBABILITY AND STATISTICS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Box A contains 5 red and 3 white marbles and box B contains 2 red and 6 white marbles. If a marble is drawn from each box, what is the probability that they are both of same color.
b) For the continuous probability function $\mathbf{f(x)=kx^2e^{-x}}$ when $x \geq 0$, find (i) $\boldsymbol{k}$ (ii) mean (iii) variance.

2. a) If a Poisson distribution is such that $P(X = 1)\frac{3}{2} = P(X = 3)$
find (i) $P(X \geq 1)$ (ii) $P(X \leq 3)$ (iii) $P(2 \leq X \leq 5)$
b) Define Normal Distribution and find its mean and variance.

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

4. a) Explain sampling distribution and standard error of the statistic.
b) A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative.

5. a) In a sample of 1000 persons in Delhi, 540 were found to eat rice as food while others eat wheat. Test the hypothesis that both rice and wheat are popular in Delhi. (use $\alpha = 0.05$)
b) The means of two random samples of sizes 1000 and 2000 are 67.5 and 68.0 respectively. Test whether these two samples have come from the same population with standard deviation 2.5.

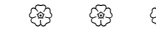
6. a) From a random sample of 9 bulbs of brand A the mean life is found to be 600 hours with a standard deviation of 121 hours. From a brand B with a sample of 8 bulbs the corresponding values are 640 and 144. The test whether the difference in the mean life of bulbs is significant at 5% level. ($\mathbf{t_{0.025} = 2.131}$)
b) The results of an experiment with 3 materials A, B and C after subjected to high temperature has led to either having crumbles or being intact. The results are shown below (in suitable units).

	A	B	C
Crumbles	41	27	22
Intact	79	53	78

At 0.05 level of significance, test whether the result is the same for all the three materials. ($\boldsymbol{\chi^2 = 5.991}$)

7. Write the benefits and limitations of statistical quality control.

8. Cars arrive at a petrol bunk at the rate of 20 cars per hour on an average. The average time required for filling each car is 2 minutes per car. What is the traffic intensity? Determine the proportion of time the server is idle. On an average how long a car has to wait before taken to service?



CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

2. a) The plane $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$ meets the axis in A, B and C.

Apply Dirichlet's integral to find the volume of the tetrahedran OABC. Also find its mass if the density at any point is *kxyz*.

b) Prove that

(i) $\int J_a(x)dx = c - J_2(x) - \frac{2}{x}J_1(x)$

(ii) $\int J_0^2(x)dx = \frac{1}{2}x^2(J_0^2(x) + J_1^2(x))$

3. a) If f(z) = u + ***i*** v is analytic function then show that u(x,y) = c and v(x,y) = k form an orthogonal system, where c and k are constants.

b) Find an analytical function f(z) = u + iv, if $u + v = \frac{2.\sin 2x}{e^{2y} - e^{-2y} - 2.\cos 2x}$.

4. a) Find the value of $\int_0^{1+i} (x - y + ix^2)dz$ along real axes from $z = 0$ to $z = 1$ and then along a line parallel to the imaginary axis from $z = 1$ to $z = 1 + i$.

b) State Cauchy integral formula. Use it to find the value of $\int_C \frac{e^{2z}}{(z+1)^4} dz$, where $C : |z| = 2$.

5. a) Find the Laurent's expansion of $f(z) = \frac{7z - 2}{z(z+1)(z-2)}$ in the region $1 < z + 1 < 3$.

b) Discuss about types of singularities of an analytic function. Also find the nature and location of the singularities of the function $f(z) = ze^{\frac{1}{z^2}}$.

6. a) Evaluate $\oint_C \frac{e^z}{\cos \pi z} dz, C : |z| = 1$.

b) By integrating around a unit circle, evaluate $\int_0^{2\pi} \frac{\cos 3\theta}{5 - 4\cos\theta} d\theta$.

7. a) Show that the equation $z^4 + 4(1+i)z + 1 = 0$ has one root in each quadrant.

b) Show that every polynomial of degree n in a complex plane has n zeros.

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

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

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the Rank of the matrix $\begin{bmatrix} 1 & 3 & 4 & 3 \\ 3 & 9 & 12 & 3 \\ 1 & 3 & 4 & 1 \end{bmatrix}$

b) Solve the following equations by Gauss elimination method:
$2x + 2y + z12;\ 3x + 2y + 2z + 8;\ 5x + 10y - 8z = 10$

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

b) Using Cayley-Hamilton theorem, find the inverse of $A = \begin{bmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{bmatrix}$.

3. a) Find a real root of the equation $\mathbf{3x = \cos x + 1}$ by Newton Raphson method.

b) Fit a parabola $Y = a + bx + cx^2$ to the following data:

x:	-3	-2	-1	0	1	2	3
y:	1.1	1.3	1.6	2.0	2.7	3.4	4.1

4. a) Prove the following with the usual notations

i) $\Delta = \frac{1}{2}\delta^2 + \delta\sqrt{1 + \frac{\delta^2}{4}} = 0$

ii) $\Delta^3 y_2 = \nabla^3 y_5$.

b) Apply Lagrange's formula to obtain u_{10} given that $u_5 = 12$, $u_6 = 13$, $u_9 = 14$ and $u_{11} = 16$.

5. a) The population of a certain town is shown below:

Year	1951	1961	1971	1981	1991
Population (thousands)	19.96	39.65	58.81	77.21	94.61

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

b) A river is 80ft. wide, the depth 'd' in feet at a distance 'x' ft. from one end of the bank is given below:

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

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

6. a) Using modified Euler's method find y(0.1) and y(0.2) given that $y' = x + y, y(0) = 1$

b) Find y(0.1) and y(0.2) using Runge kutta fourth order method given that $y' = \frac{y^2 - x^2}{y^2 + x^2}, y(0) = 1$.

7. a) Find the partial differential equation of all planes which are at a constant distance a from the origin.

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

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

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

CODE No.:10BT30101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A Flat bar of aluminum alloy 25mm wide and 5mm thick is placed between two steel bars each 25mm wide and 10mm thick to form a composite bar of size 25mm x 25mm.The three bars are fastened together at a temperature of 15ºC. Find the stress in each bar when the temperature of the whole assembly is raised to 55ºC. Take $\alpha_{al}=20x10^{-6}/^0C$ and $\alpha_s=12x10^{-6}/^0C$

b) Determine the strain energy stored in 2.0m long prismatic member of cross sectional area 1200mm^2 subjected to load of 20N, applied (i) gradually, (ii) suddenly, and (iii) falling vertically from a height of 0.2m. Take E=200GPa.

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

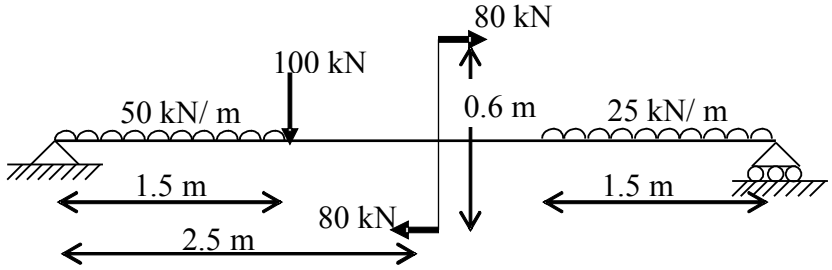


Fig. 1

3. a) State the assumptions made in the simple theory of bending.

b) Determine the allowable superimposed uniformly distributed load on a 4m span simply supported beam with symmetrical I section consisting of 150 mm x 20 mm flanges and 20 mm x 150 mm web, if the allowable bending stress is 150 MPa and the unit weight of beam material is 78.5 kN/m^3. Find the percentage of bending moment resisted by web and flanges.

4. A square footing 1.75m x 1.75m supports a vertical point of 200KN located at the quarter point of one diagonal. Neglect the self weight of the footing, Calculate the normal stresses at the four outside corners on a horizontal section of the footing. Also find the position of neutral axis.

5. a) Derive torsion equation.

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

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/mm^2 and 65 N/mm^2 respectively. Also determine the deflection 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 5MPa. Sketch the variation of radial stress and hoop stress across the thickness of the cylinder.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

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) What are the various types of cables? Explain.
b) Three equal resistances of value R ohms are connected in a delta (mesh) fashion. This is to be replaced by an equivalent star connected resistance R1, R2 and R3. What are the values of R1, R2 and R3 in the terms of R.

2. Discuss the reasons for the drop in terminal voltage of DC generator when it is loaded. Also draw the load characteristics of DC shunt generator.

3. a) Derive e.m.f equation of transformer.
b) Derive an expression for voltage regulation of transformer when the parameters of equivalent circuit are known.

4. a) Discuss how torque is produced in 3-phase induction motor. Draw torque -slip characteristics.
b) What is the effect of increase of load on the terminal voltage of alternator? Explain.

PART - B

5. a) Describe TIG welding process in detail and compare TIG and MIG welding.
b) Compare Brazing and Soldering and Welding.

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

7. a) With neat sketch explain the working of vapour compression refrigerator
b) Define:
i) Relative Humidity
ii) Dry bulb temperature
iii) Wet bulb temperature

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

CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch and describe a line ranger. How it is used in the field?
b) What are different tape corrections and how are they applied?

2. a) How would you set up plane table at a station? Explain the various steps of setting.
b) Explain the tracing paper method of solving the Three Point problem.
What is the practical utility of the solution to Three Point problem in the field?

3. 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 different methods in the computation of areas of figures?
b) A series of offsets were taken from a chain line to a curved boundary line at intervals of 15 m in the following order.
0, 2.65, 3.80, 3.70, 4.65, 3.60, 4.95, 5.85 m.
Compute the area between the chain line and curved boundary using
i) Trapezoidal rule ii) Simpsons rule.

5. In a Theodolite survey the following details were noted and some of the observations were found to be missing:

Line	Length(m)	WCB
AB	480	60^0
BC	1180	115^0
CD	?	$235^0 40'$
DA	1205	?

Find the missing data.

6. a) Explain the principle of Stadia method of tachometric surveying.
b) A tachometer was set up at a station A and the readings on a vertically held staff at B were 2.255, 2.605 and 2.955 m, the line of sight being at an inclination of + 8° 24′. Another observation on the vertically held staff at B.M. gave the readings 1.640, 1.920 and 2.200 m, the inclination of the line of sight being + 1° 6′. Calculate the horizontal distance between A and B, and the elevation of B if the R.L. of B.M. is 418.685 m. The constants of the instrument were 100 and 0.3.

7. a) Enumerate the types of curves. What is Degree of a curve and give its relationship with the radius of the curve.
b) What are the various methods of setting of simple circular curves? Explain any one of them.

8. a) Describe the basic principle of electronic distance measurement.
b) Explain the instrumental errors in EDM.

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CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

FLUID MECHANICS-I

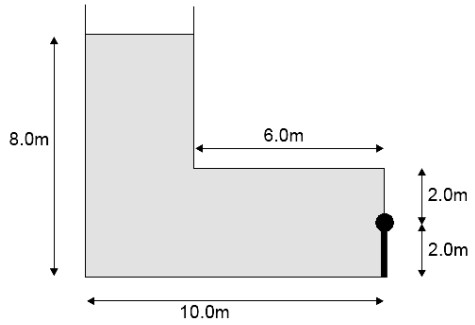
[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between cohesion and adhesion?
b) State and explain Newton's law of viscosity.

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



3. a) Define and distinguish between streamline , pathline and streakline. For what type of flow these lines are identical ?
b) A 40cm diameter pipe , conveying water, branches into two pipes of diameters 30cm and 20cm respectively. If the average velocity in the 40cm diameter pipe is 3m/s, find the discharge in this pipe. Also determine the velocity in 20cm pipe if the average velocity in 30cm diameter pipe is 2m/s.

4. a) State Bernoulli's theorem. Mention the assumptions made. How it is modified while applying in practice? List out its engineering applications.
b) A pipe 300m long has a slope of 1 in 100 and tapers from 1.0m diameter at the higher end to 0.5m at the lower end. Quantity of water flowing is 90 litres/s. If the pressure at the higher end is 70 KN/m^2 , find the pressure at the lower end.

5. a) Derive the formulae for calculating loss of head due to
i) Sudden enlargement and ii) Sudden contraction
b) Two pipes of lengths 2500m each and diameters 80cm and 60cm respectively, are connected in parallel. The co-efficient of friction for each pipe is 0.006. The total flow is equal to 250litres/s. Find the rate of flow in each pipe.

6. a) Explain the classification of orifices and mouth pieces.
b) A rectangular channel 2.0m wide has a discharge of 0.25m^3/s , which is measured by a right - angled V-notch. Find the position of the apex of the notch from the bed of the channel if the maximum depth of water is not to exceed 1.3m . Assume co-efficient of discharge as 0.62.

7. a) Explain Reynolds Experiment. Define and explain the significance of Reynolds number.
b) For the laminar flow through a circular pipe, prove that
i. the shear stress distribution across the section of the pipe is linear and
ii. the velocity variation is parabolic.

8. a) State Buckingham's Pi-theorem. Why is it superior to Rayleigh's method of dimensional analysis.
b) Water is flowing through a pipe of diameter 30 cm at a velocity of 4 m/s. Find the velocity of oil flowing in another pipe of diameter 10 cm, if the condition of dynamic similarity is satisfied between the two pipes. The viscosity of water and oil are given as 0.01 poise and 0.025 poise. Sp.gr of oil is 0.8.

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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 November - 2016

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Newton's law of viscosity and give units for dynamic and kinematic viscosity.
b) Determine the minimum size of glass tubing that can be used to measure water level, if the capillary rise in the tube is not to exceed 0.25 mm. Take surface tension of water in contact with air as 0.0735 N/m.

2. a) Define the following:
i) Steady flow ii) Non-Uniform flow
iii) Laminar flow and iv) Two-dimensional flow.
b) A pipe of 1m diameter carrying 2.5m^3 /s of water, is deflected through a 90^0 bend. The ends of the bend are anchored by the rods at right angles to the bend (one tie rod at each end). Find the tension in each rod. Also determine the resultant dynamic thrust on the bend and the direction of this thrust.

3. a) A venturimeter is used to measure the flow of petrol in a pipeline which is inclined at 45^o 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 jet of water having a velocity of 40 m/s strikes a curved vane, which is moving with a velocity of 20 m/s. The jet makes an angle of 30^0 with the direction of motion of vane at inlet and leaves at an angle of 90^0 to the direction of motion of vane at outlet. Draw the velocity triangles at inlet an outlet and determine the vane angles at inlet and outlet so that the water enters and leaves the vane without shock.

b) Derive the expression for the force exerted by a jet of water on an inclined fixed plate in the direction of the jet.

5. a) What are the types of power plants? Explain the working of a pumped storage plant.
b) Explain the following terms :
(i) Gross head (ii) Net head (iii) Hydraulic efficiency and (iv) Overall efficiency of a turbine.

6. a) What are the functions of spiral casing, guide vanes and draft tube in a reaction turbine?
b) An inward flow reaction turbine has a wheel 60 cm in diameter and 5 cm wide at the outer rim, the inner diameter being 0.65 times the outer diameter. The blade angles at inlet and outlet are 75^o and 14^o respectively. The velocity of flow is uniform throughout the wheel. 8% of the circumferential area of the runner is blocked by the blade thickness. If the head of the turbine is 55 m, the hydraulic efficiency 88% and overall efficiency 81%, determine the speed and output of the turbine and discharge it would require. Assume radial flow at the outlet.

7. a) Define the three ' Unit quantities' with reference to a hydraulic turbine. Derive expressions for these terms.
b) Explain the performance characteristic curves of hydraulic turbines.

8. a) How are pumps classified?
b) A double acting reciprocating pump having piston area 0.1m^2 has a stroke 0.30m long. The pump is discharging 2.4m^3 of water per minute at 45r.p.m through a height of 10m. Find the ship of the pump and the power required to drive the pump.

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

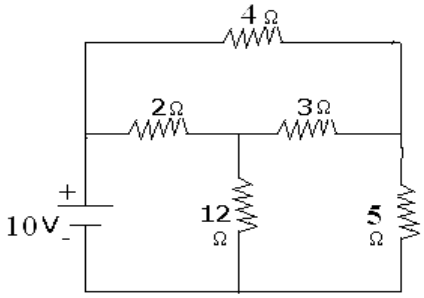
ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

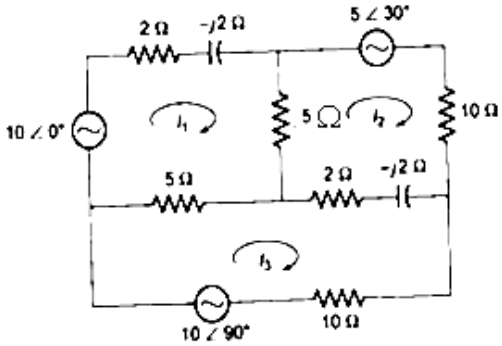
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain active elements in detail.
b) Find the current supplied by 10V battery by using Star - Delta transformation for the given network.

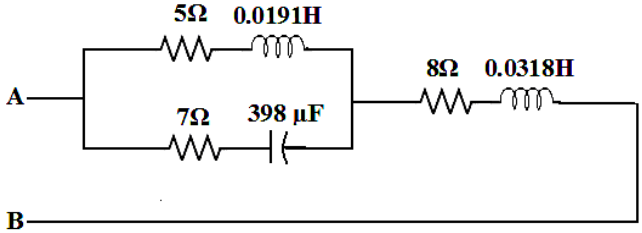


2. Find the mesh currents in the circuit shown in figure below.



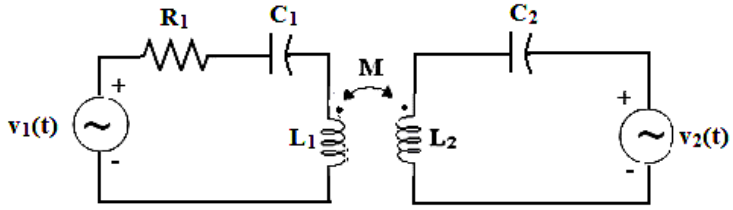
3. a) Derive the expression for RMS value of alternating current wave $I = I_m \sin \omega t$.
b) A sinusoidal alternating current of frequency 25Hz has a maximum value of 100A. How long will it take for the current to attain 20A.

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 50Hz voltage must be applied across A and B to have 10A current in the capacitor.

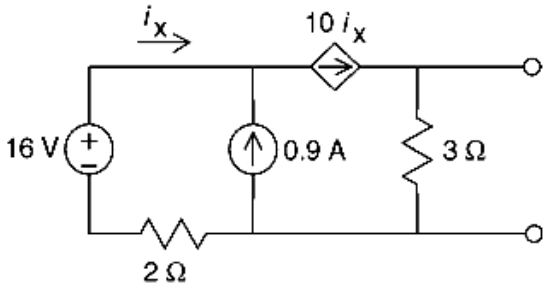


5. a) Explain the power measurement by three phase circuit by using two wattmeter method with neat circuit diagram
b) The unbalanced star connected load has balance voltages of 200V and the load impedances are $\mathbf{Z_a = (1+j4)}$ ohms, $\mathbf{Z_b = (3-j4)}$ ohms and $\mathbf{Z_c = (6+j10)}$ ohms. Calculate the line currents and the neutral current? Assume ACB sequence.

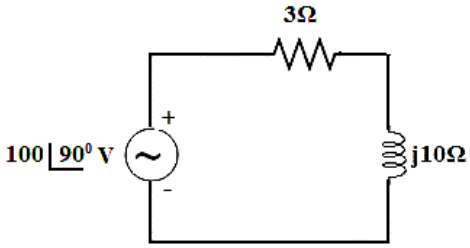
6. a) Compare the magnetic circuit with electric circuit.
b) Write the loop equations for the circuit shown below.



7. a) State and explain the Maximum power transfer theorem.
b) For the network shown below, find the Thevenin's voltage, Nortons's current and Thevenin's resistance.



8. a) State and explain Reciprocity theorem.
b) In the circuit shown below, find the change in current using Compensation theorem when the j10Ω reactance is changed to j5Ω.



CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show how mechanical output can be determined in the multiple excited nonlinear systems.
b) What are the advantages of analyzing energy conversion devices by field energy concept?

2. a) Explain hysteresis and eddy current losses and how they are minimized.
b) The hysteresis and eddy current losses for a given specimen of magnetic material is found to be 2000W at 50Hz. Keeping the flux density constant, the frequency of the supply is raised to 75 Hz resulting in a core loss of 3200W.compute separately hysteresis and eddy current losses at both the frequencies.

3. a) Explain, what do you mean by critical field resistance and critical speed with respect to DC generator. Also explain its significance.
b) In a 120V compound generator, the resistance of armature, shunt and series windings are 0.06 Ω, 25 Ω and 0.04 Ω respectively. The load current is 100A at 120V. Find the induced emf and armature current when the machine is connected is (i) long shunt (ii) short shunt.

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

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

6. a) Draw speed torque characteristics of a DC shunt, series, compound motors and explain the causes for their shape.
b) Determine developed torque and shaft toque of a 220V,4-pole series motor with 800 conductors wave connected supplying a load of 802 kW by taking 45A from the mains. The flux per pole is 0.025 webers and its armature circuit resistance is 0.6ohms.

7. Explain the working of a 3-point starter with neat diagram.

8. a) Explain briefly Hopkinson's test for determining the efficiency of a DC machine.
b) A 200V, 14.92 kW DC shunt motor when tested by Swinburne's method gave the following results:
Running light: $I_a = 6.5A, I_f = 2.5A$
With armature cocked: $I_a = 70A,$
Potential across brushes = 3V. Estimate efficiency of machine working as generator at full load.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

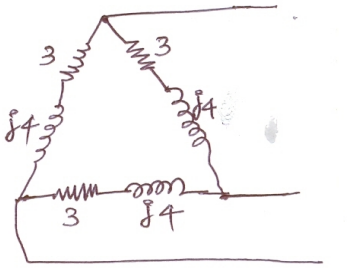
Answer any FIVE questions
All questions carry equal marks

1. a) Define e.m.f. and electric power.
b) Three resistances of values 6, 10 and 16 Ω respectively are connected in parallel. The current flow in the circuit is 20A. Determine the current in each resistance.

2. a) Explain the mesh analysis.
b) Define the following terms
i) Node
ii) Branch
iii) Path
iv) Loop

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 $\boldsymbol{I} = 20\sin\left(314t - \frac{\pi}{6}\right)$ amperes when the voltage is $V=100\sin 314t$. Calculate the impedance, phase angle, resistance and inductance of the circuit.

4. a) What do you mean by three phase balanced and unbalanced loads?
b) In the circuit shown below obtain line and phase voltages and currents.



5. a) Derive the e.m.f equation of a DC generator.
b) Explain the applications of various DC motors with valid reasons.

6. a) Write the principle of operation of a transformer.
b) Give the differences between Slip-ring and Squirrel-Cage Induction motor. State their applications.

7. a) Explain about capacitor star induction motor.
b) Write the working principle of stepper motors.

8. With neat sketch explain about PMMC instrument.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

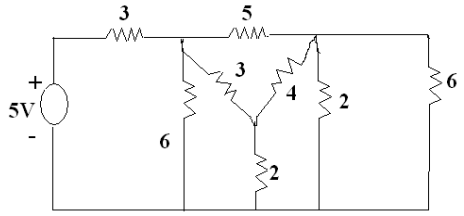
FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State Ohms law. What are its limitations?
b) Determine the equivalent resistance from the given circuit. All values are in ohms



2. Explain the procedural steps for solving with Thevenin's theorem.

3. A current of 5A flows through a non-inductive resistance in series with a choking coil when supplied at 250V, 50 Hz. If the voltage across the resistance is 125V and across the coil is 200V, calculate:
i) Impedance of the circuit, reactance and resistance of the coil.
ii) The power absorbed by the coil.
iii) The total power.

4. a) Write the types of D.C. generators and motors and their applications.
b) The power input to a 230 Volts D.C. shunt motor is 8.477 KW. The field resistance is 230Ω and armature resistance is 0.28 ohm. Find the input current, armature current and back e.m.f.

5. a) Explain the procedure how the open circuit and short circuit tests are conducted on single phase transformer.
b) A 50 KVA 1-Φ transformer has 2300V/230V rating; the iron loss equal to 412W. It has primary and secondary winding resistances of 2Ω and 0.02Ω respectively. Calculate the efficiency at half load when the power factor is 0.8.

6. a) Explain the principle of servo-controlled voltage stabiliser.
b) How the range of a moving coil instrument could be extended when it is used as (i) ammeter (ii) voltmeter

7. a) Explain open lop and closed loop control systems with examples.
b) Discuss the effect of feedback in control systems. Mention its merits and demerits.

8. a) Explain the concept of Transfer function.
b) Write the methods for finding Transfer function from given mechanical system.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

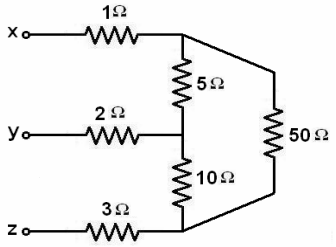
CIRCUIT THEORY

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

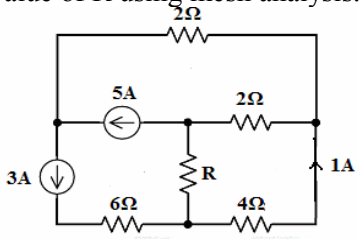
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

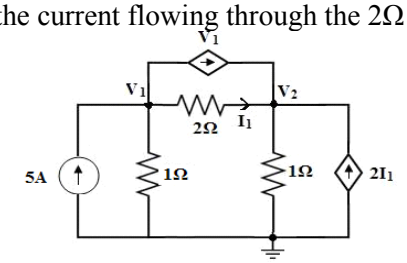
1. a) Explain Kirchoff's laws with an example.
b) Determine the voltage appearing across terminals y-z, if a d.c. voltage of 100 V is applied across x-y terminals in the figure below.



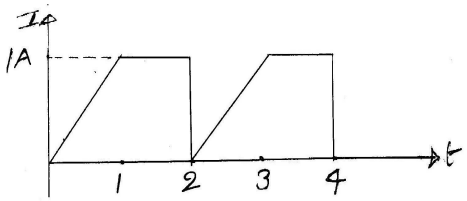
2. a) The circuit shown below, find the value of R using mesh analysis.



b) In the circuit shown below, find the current flowing through the 2Ω resistor using nodal analysis.

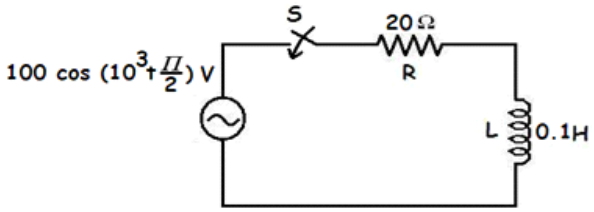


3. a) Define the following terms
i) Waveform ii) Cycle iii) Time period
iv) Frequency v) Instantaneous value vi) Peak value
b) Find the average, RMS value and form factor of the current waveform shown below

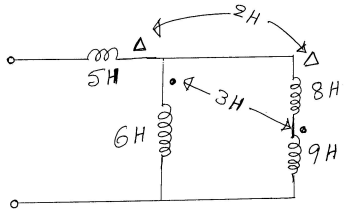


4. Explain the following terms
i) Impedance ii) Admittance iii) Active Power
iv) Power factor v) Power triangle

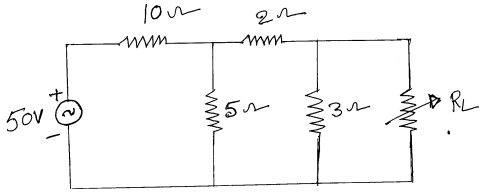
5. a) Find the expressions for i(t) for an R-C series circuit with sinusoidal excitation.
b) In the circuit shown in figure .determine the complete solution for the current, when the switch S is closed at t = 0, applied voltage v (t) = 100 cos (10^3t + π/2)



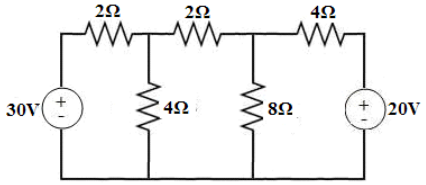
6. a) Derive an expression for equivalent inductance of two coupled coils connected in parallel.
b) Determine the equivalent inductance of inductive network with coupled coils shown below



7. a) State and explain Norton's theorem.
b) Determine the maximum power delivered to the load in the circuit shown below



8. a) State and explain Reciprocity theorem.
b) Verify the Telligen's theorem for the circuit shown below.



CODE No.:10BT30224

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out and define the electrical parameters used in electrical circuit.
b) Show that the rate at which energy is stored by the inductor equal its reactive power requirements.
c) An impedance (5+j12) ohms is connected across a 26 Volts rms voltage. Determine and compare the power in the circuit using the formulae i) $P = \mathbf{V}^2 / R$ ii) $P = I^2R$.

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

3. a) Define the regulation of a transformer? Explain how it can be determined.
b) A single phase transformer has 400 primary and 1000 secondary turns. The net cross sectional area of the core is $60cm^2$. If the primary winding be connected to 50Hz supply at 520V,
Calculate:
i) The peak value of flux density in the core
ii) The voltage induced in the secondary winding

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

5. a) Explain the formation of depletion region in an open-circuited p-n junction with neat sketches.
b) A p-n junction diode has a reverse saturation current of 30 μA at a temperature of 125^0C. At the same temperature find the dynamic resistance for 0.2V bias in forward and reverse direction.

6. a) Discuss about necessary conditions for oscillators.
b) Explain how a transistor acts as an amplifier.

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

8. a) Draw the schematic diagram of a CRT and explain about various sections and materials used.
b) In a CRT, the electrons emitted are accelerated by a potential of 500V. The length of the deflecting plates is 1.3 cm. Distance between the deflecting plates is 0.5 cm. The distance between the Centre of the deflecting plates and screen is 20 cm. Determine the value of electrostatic deflection sensitivity.

CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. A simply supported beam of 10m Length carries a uniformly distributed load throughout the beam length. The supports of the beam are 6m apart. Determine the position of the supports with respect to the ends so that the bending moment of the beam is least possible.

3. a) Derive the bending equation from first principles.
b) State the assumptions involved in the theory of simple bending.

4. A beam of I-section is having overall depth as 500 mm and overall width as 190 mm. The thickness of flanges is 25 mm whereas the thickness of the web is 15 mm. The moment of Inertia about neutral axis is given as 6.45 x 10^8 mm^4. If the section carries a shear force of 40 kN, calculate the maximum shear stress. Also sketch the shear stress distribution across the section.

5. A shaft transmits 300 kW power at 120 r.p.m. Determine
i) The necessary diameter of diameter of solid circular shaft.
ii) The necessary diameter of hollow circular section, the inside diameter being 2/3 of the external diameter. The allowable shear stress is 70 N/mm^2. Taking the density of material is 77 kN/m^3; calculate the % saving in the material if hollow shaft is used.

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

7. a) Derive a formula for hoop stress in thin spherical shell subjected to internal pressure.
b) A spherical vessel 3 meters diameter is subjected to an internal pressure of 2 N/mm^2. Find thickness of the plate required, if maximum stress is not exceed 80 N/mm^2. Take efficiency of the joint as 75%.

8. A compound cylinder is made by shrinking a cylinder of external diameter 200 mm and internal diameter of 160 mm over another cylinder of external diameter 160 mm and internal diameter 120 mm. The radial pressure at the junction after shrinking is 8 N/mm^2. Find the final stresses set up across the section when the compound cylinder is subjected to an internal fluid pressure of 60 N/mm^2.

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CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with suitable examples crystalline and non-crystalline solids.
b) Write a short note on screw dislocation.

2. a) What are Interstestial solid solution rules?
b) What is difference between an ordinary alloy and electron compound?

3. a) Explain with neat sketch the experimental method for construction of equilibrium diagram for binary phase.
b) How do you measure the solidus and liquidus phase by using Lever rule? Explain.

4. a) Write a short note on hadified manganese steel.
b) Why are graphite flakes in gray iron very often surrounded by ferrite areas?

5. a) Explain tempering process.
b) Explain cryogenic treatment of alloys in detail.

6. a) Explain why titanium alloys are used in turbines.
b) List any four applications of aluminum alloys.

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

8. What is powder metallurgy? List the steps involved in powder metallurgy also give advantages, disadvantages and applications.

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate between Microscopic and Macroscopic approaches in Thermodynamics.
b) Differentiate between thermal and thermodynamic equilibrium. From conceptual point of view, how does work transfer and heat transfer differ?

2. a) Derive the steady flow energy equation for a steam boiler and steam nozzle?
b) Steam flows steadily into a condenser and at entry it has an enthalpy of 2050KJ/kg and its velocity is 500m/s. The condensate has an enthalpy of 200KJ/kg and leaves at 10m/s velocity. The exit from the condenser is inline with the inlet. Determine the Heat transfer to cooling water per unit mass of steam condensed.

3. a) Define and prove Carnot's theorem.
b) A heat engine receives half of its heat supply at 1000K and half at 500K, while rejecting heat to a sink at 300K. Calculate the maximum efficiency of the engine.

4. a) Why second law is called law of Degradation of energy? What is the available energy refereed to a cycle?
b) 2Kg of water at 80^0C is adiabatically mixed with 3kg of water at 30^0C at a constant atmosphere of 1bar. Find the increase in the entropy of the water due to the mixing process.

5. a) Write short notes on: i) Degree of superheating ii) Degree of subcooling
b) Steam at 0.75MPa, 240^0C and flowing at the rate of 1.1kg/sec passes into a pipe carrying wet steam at 0.75MPa, 0.9 dry. After adiabatic mixing the flow rate is 2.2kg/sec. Determine, the condition of the steam after mixing. If the mixture now expands through a frictionless nozzle in a isentropic process to a pressure of 0.42MPa. Determine the velocity of the steam leaving the nozzle. Neglect the velocity of the steam in the pipeline.

6. a) Derive the equations for work transfer during adiabatic process and isothermal process.
b) 60 liters of an ideal gas at 290K and 1bar is compressed adiabatically to 10bar. It is then cooled at constant volume from where it is started.
Evaluate:
i) Pressure at the end of constant volume cooling
ii) Change in internal energy during constant volume process
iii) Net work done and net heat transfer during the cycle?

7. Derive expressions for following Mixture properties in terms of their individual component properties: Entropy, Enthalpy, Internal energy and Specific heats.

8. Define the following: i) DBT ii) WBT iii) DPT iv) Relative humidity
v) Specific Humidity vi) Degree of saturation
vii) Adiabatic saturation

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CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

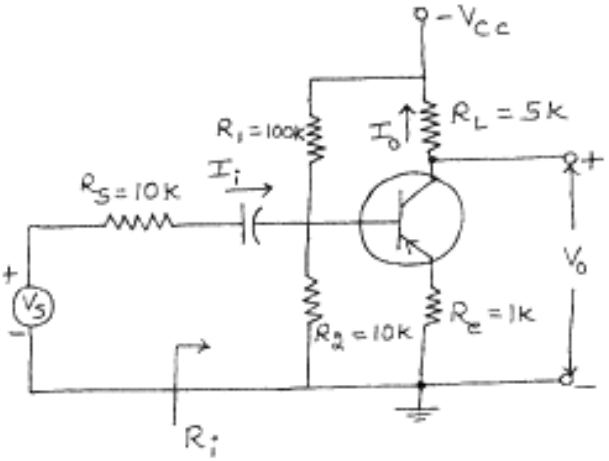
1. a) Explain the formation of PN junction diode qualitatively.
b) A silicon diode at Room temperature conducts 5 mA at 0.7 Volts. If the voltage increases to 0.8 Volts. Find forward and reverse saturation currents.
c) Explain Avalanche Break down Mechanism.

2. a) Derive the 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 characteristics transistor CB configuration.
b) A transistor with $\alpha = 0.97$ has a reverse saturation current of 1 μA 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 μA.

4. a) Explain thermal runaway and thermal resistance.
b) Explain the bias compensation using sensistors.

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, $h_{fe} = 50$, $h_{re} = 2.5 \times 10^{-4}$ and $h_{oe} = 24$ μA/V



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

7. a) Derive an expression for voltage gain, input Impedance and output impedance of CG amplifier at low frequencies.
b) In an N - channel JFET based voltage divider common drain configuration, determine the value of resistor R_S so as to have the operating point as $I_{DQ} = 5$ mA, $V_{DSQ} = 10$ V. Given that $V_{DD} = 28$ V, $R_1 = 1$ M ohms, $R_2 = 0.5$ M ohms, saturation drain current of the FFET is 10 mA and gate source pinch off voltage is '-5V'.

8. Explain the principle of operation and V-I characteristics of SCR. Also state any two applications of SCR.

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CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

PROBABILITY THEORY AND STOCHASTIC PROCESS

[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.

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) 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 X for which $p(X \leq t)>1/2$

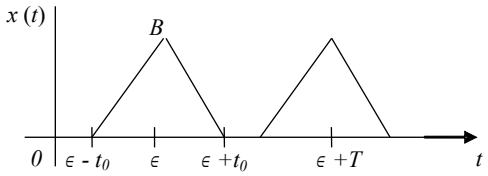
b) State the properties of the probability density function.

3. a) State and prove properties of characteristic function of a random variable X.
b) Let X be random variable defined by the the density function
$f_X(x) = (5/4)(1-x^4)$ for 0<x<=1 and 0 elsewhere. Find E[X], $E[X^2]$ and variance.

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

5. a) Two random variables having joint characteristic function $\varnothing_{XY}(w_1,w_2)= \exp(-2\omega^2_1-8\omega^2_2)$. Find moment's m_{10}, m_{01}, m_{11}?
b) Gaussian random variables X and Y have first and second order moments m_{10} = -1.1, m_{20}=1.16, m_{01}=1.5, m_{02} = 2.89, R_{XY} = -1.724. Find C_{XY} and ρ.

6. A random process $X(t)$ has periodic sample functions as show in figure; where B, T and $4t_0 \leq T$ are constants but $\in$ is a random variable uniformly distributed on the interval (0, T). Find first order density function and distribution function of $X(t)$.



7. a) Define cross correlation function of two random processes X(t) and Y(t) and state the properties of cross correlation function.

b) Let two random processes X(t) and Y(t) be defined by

$X(t) = A \cos \omega_0 t + B \sin \omega_0 t$

$Y(t) = B \cos \omega_0 t - A \sin \omega_0 t$

Where A and B are random variables and ω_0 is a constant. Assume A and B are uncorrelated, zero mean random variables with same variance. Find the cross correlation function $R_{XY}(t, t+\tau)$.

8. A random process is given by $X(t) = A\cos(\Omega t + \theta)$ where A is a real constant, Ω is a random variable with density function $f_{\Omega}(\Omega)$ and θ is a random variable uniformly distributed over the interval $(0, 2\pi)$ independent of Ω. Show that the power spectrum of $X(t)$ is

$S_{xx}(\omega) = \frac{\pi A^2}{2}[f_{\Omega}(\omega) + f_{\Omega}(-\omega)]$ and also find P_{YY}.

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SIGNALS AND SYSTEMS

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

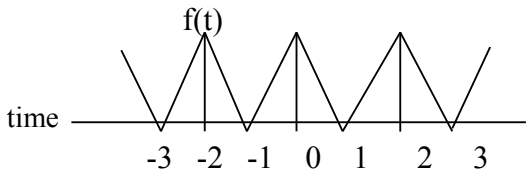
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Evaluate the integral $\int_0^{\alpha} e^{-\alpha t^2}\delta(t-10)dt$

b) What is a signum function and sketch the signal.
f(t) = 3u(t) + t u(t) − (t − 1)u(t − 1) − 5u(t − 2).

2. Find the exponential Fourier series and plot the magnitude and phase spectrum for the triangular waveform shown in figure



3. a) Find the Fourier transform of **x(t) = A sin ($2\pi f_c t$) u(t)** .
b) State and prove the multiplication in time domain property of Fourier transform.

4. Transfer function of a LPF is given by

H (w) = 1, $|w| < w_c$
0, $|w| > w_c$

Show that its impulse response is non-causal.
What do you do to make it causal? What is its Physical significance?

5. a) State and prove the properties of autocorrelation function.
b) Derive the relation between autocorrelation and energy spectral density of a signal.

6. a) State the properties of the ROC of Laplace .Transform

b) Determine x(t) and ROC for the function : $X(s)\frac{(s+1)^2}{s^2-s+1}; \mathrm{Re}\{S\} > 1/2$

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

8. a) Explain the relationship between Laplace, Fourier and Z- transform.
b) Determine Z-transform f the signal x[n] = $-a^n$ u[-n-1] and plot the ROC.

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CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different breakdown mechanisms in PN junction diodes.
b) Write the diode current equation and explain.

2. a) A half wave rectifier has a load of 3.5 kΩ. If the diode resistance and transformer secondary resistance together have 800Ω and the input voltage has a signal voltage of 240 volts, calculate i) Peak, average and R M S values of current.
ii) DC power output.
iii) AC power input.
iv) Efficiency of the rectifier.
b) Write a short note on Zener diode as a shunt voltage regulator.

3. a) Define α, β and derive the relation between them.
b) Compare CB, CE and CC configurations.

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

5. a) Draw the input and output characteristics of transistor CE-configuration. From these determine the h-parameters of the transistor.
b) For common collector transistor amplifier h_{ic} = 1.1 KΩ, h_{rc} = 1, h_{fc} = -51, h_{oc} = 25 μA/V. Calculate A_I, A_V, R_i and R_o if R_S = R_L = 10 KΩ.

6. a) Discuss the relationship between FET parameters.
b) Discuss voltage divider biasing of JFET.

7. a) What is Feedback in amplifiers? Explain.
b) Draw the circuit diagram of BJT RC Phase shift oscillator and derive the expression for frequency of oscillations.

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

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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 November - 2016

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) 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) Simplify the following Boolean function using K-Map
$f(w, x, y, z) = \sum m(1, 2, 3, 5, 9, 12, 14, 15) + \sum d(4, 8, 11)$.
b) Implement the following function using gates
$f(A, B, C) = \sum (0, 1, 3, 7) + \sum d(2, 5)$.

4. a) Realize a 4:16 decoder using 3:8 decoder.
b) Draw and explain the operation of BCD adder.

5. a) Explain about the realization of SR flip-flop, JK flip-flop using D flip-flop.
b) Explain about analysis of clocked sequential circuits in detail.

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

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

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

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show that $((P \vee Q) \wedge \neg(\neg P \wedge (\neg Q \vee \neg R))) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$ is a tautology.
b) Obtain the principal disjunctive normal form of the formula. $P \rightarrow (P \wedge (Q \rightarrow P))$.

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

3. a) Draw the Hasse diagram of the set {2, 4, 8, 16}under the partial ordering relation "divides", and indicate those which are totally ordered.
b) Show that $f\langle x, y\rangle = x^y$ is a primitive recursive function.

4. a) Consider the semi group (R^+, X) and $(R, +)$ where R^+ is the set of all positive real numbers with usual meanings of +, X . Let the function $f : R^+ \rightarrow R$ be defined by f(x)= log x for any $x \in R^+$. Is f an isomorphism ? Justify.
b) Let f be a homomorphism from a group G_1 to the group G_2 then show that
i) if e_1 is the identity in G_1 and e_2 is the identity in G_2 then $f(e_1) = e_2$
ii) $f(a^{-1}) = [f(a)]^{-1}$ for all $a \in G_1$.

5. a) Prove that $1^2 + 2^2 + \ldots + n^2 = n(n+1)(2n+1)/6$ whenever **n** is a positive integer
b) How many ways are there for 10 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) Solve the recurrence relation $a_n + a_{n-1} - 8a_{n-2} - 12a_{n-3} = 0$, $n \geq 3$ with $a_0 = 1$, $a_1 = 5$, $a_2 = 1$.
b) Solve the relation $a_n = a_{n-1} + n^2$, $n \geq 1$, $a_0 = 1$ by the method of generating function.

7. a) Show that a tree with n vertices has exactly (n-1) edges.
b) Show that K_n has a Hamilton circuit whenever $n \geq 3$.

8. a) Explain Breadth first search and Depth first search algorithm for a spanning tree.
b) Explain Kruskal's algorithm for finding minimal spanning tree.

CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

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 k^{th} largest integers among 'n' integers. Using the same algorithm find the 5^{th} largest element in the following data: 5, 1, 23, 5, 21, 28, 44, 6, 26, and 36.

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?

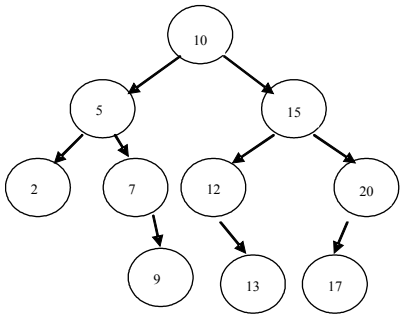
3. Give an algorithm to convert a decimal number to binary number which uses a stack. Show working of your algorithm in order to convert the decimal number 513 into its equivalent binary form.

4. A program, Prog1, written by one of the programmer in an IT organization uses an implementation of the sequence ADT (data structure like an array, linked list) as its main component. It performs atRank, insertAtRank and remove operations in some unspecified order. It is known that Prog1 performs n^2 atRank operations, 2n insertAtRank operations, and n remove operations. Which implementation of the sequence ADT should the programmer use in the interest of efficiency: the array-based one or the one that uses a doubly-linked list?

Note: atRank(5) operation will return 5^{th} element in the sequence ADT
inserAtRank(8, x) operation will insert x in the 8^{th}
delete(x) operation will delete x if it exists in the sequence ADT.

5. a) Give the binary tree that results when the following letters are inserted into a binary search tree: ILOVECPROGRAMS

b) Given a Binary Tree show the result of deleting 2, 5, 20, 10 after every delete the resultant tree will be the input for next delete



6. Explain about insertion and deletion operation for B-tree with appropriate example.

7. Give the algorithm for each of the following
a) Minimum spanning tree
b) Shortest path

8. a) What is linear probing and where is it applicable in Hashing? Explain its significance.
b) Perform the insertion operation for Open Addressing Hashing using linear probing technique for the following list: 6, 12, 34, 29, 28, 11, 23, 7, 0, 33, 30, 45.

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CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Enumerate the different thermodynamic processes and systems.
b) Explain the Zeroeth law of thermodynamics with examples.

2. a) Explain the classification of thermodynamic cycles.
b) Explain the classification of air compressors with neat sketches.

3. a) Derive an expression for efficiency and heat rate of a Rankine Cycle with neat sketches.
b) Draw Pressure *vs.* Volume, Enthalpy and Entropy and Temperature *vs.* Entropy diagrams for Rankine cycle.

4. a) What is COP?
b) Define (i) Ton of refrigeration (ii) Refrigeration effect
c) Enumerate the three modes by which heat can be transferred from one place to another. Which is the slowest of all?

5. a) Define density, Specific Volume, weight density and Specific gravity.
b) Explain how small pressure difference reading can be amplified by using a micro manometer or inclined tube manometer.

6. Write a short note on
i) Stream lines ii) Streak lines iii) Flow nets
iv) Stream function v) Velocity potential function.

7. a) What is dimensional analysis? Explain the methods of determination of dimensionless groups.
b) Explain the term dimensional homogeneity.

8. a) Explain the working principle of a reciprocating pump with a neat sketch.
b) Classify the hydraulic turbines.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers.
   i) $(26153.7406)_8$ to binary.
   ii) $(153.513)_{10}$ to octal.
   iii) Convert $(9B2.1A)_{16}$ to decimal
   b) Using 10's complement, subtract 72532-3250.

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

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) Draw and explain the operation of a 2-bit comparator.
   b) Realize the following using MUX.
   F(P,Q,R,S) = Σm (0,1,3,4,8,9,15)

5. Derive the ROM programming table for the combinational circuit that squares a 4-bit number. Minimize the number of product terms.

6. a) Draw the circuit of an Master-Slave JK Flip-Flop and explain its operation and also explain how race around condition is eliminated in this flip-Flop.
   b) Draw and explain the operation of an 4-bit bidirectional shift register and also list out the applications of an shift register.

7. a) Explain the capabilities and limitations of Finite state machines.
   b) Explain about mealy and moore models.

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

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is control system? Explain with two examples.
b) What are the differences between open-loop and closed-loop control systems?

2. Derive the Transfer Function for AC servomotor.

3. a) Derive the expression for time response of a 2nd order system when subjected to unit step input. And also derive the expression for rise time, peak time, peak overshoot and settling time.
b) The open loop transfer function of a unity feedback control system is given by $G(s) = \frac{25}{s(s+5)}$. Calculate the natural frequency, damped frequency, rise time, peak time, peak overshoot and settling time when subjected to unit step input.

4. a) A feedback system has open loop transfer function of $G(s) = \frac{ke^{-s}}{s(s^2 + 5s + 9)}$.
Determine the maximum value of K for stability of closed loop system.
b) Define the terms:
i) Absolute stability ii) Marginal stability iii) Conditional stability

5. a) Explain the concept of phase margin and gain margin.
b) Sketch the Bode plot for the following open loop transfer function.
$G(s)H(s) = \frac{40(1+s)}{(1+5s)(s^2+2s+1)}$

6. a) Define phase cross over frequency and gain margin.
b) Develop the Polar plot of the system given as, and determine whether their plots cross real axis, $G(s) = \frac{1}{(1+s)(1+4s)}$.

7. What is the significance of lead-lag compensation and obtain is transfer function.

8. a) Explain controllability and observability.
b) Find the state transition matrix if $A = \begin{bmatrix} 0 & 1 \\ -4 & 0 \end{bmatrix}; B = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$.

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a doglegged stair case in a room with clear dimensions 2.5m X 5.2m and the storey height is 3.2m. Adopt the live load is 3 kN/m^2. Use M 20 Concrete and Fe 415 steel. Draw the reinforcement details.

2. Design and detail a reinforced concrete combines rectangular footing for two columns which are situated 3.5m apart. The overall sizes of the columns are 500mm square and 600mm square and the axial loads are 1200kN and 1800kN respectively. The space available for the footing is restricted to 2.50m in width. SBC of soil is 150 KN/ m^2. Use M20 concrete.

3. Design a pile cap on a group of four friction piles each of 300mm diameter for supporting a 450mm square reinforced concrete column carrying an axial load of 1200kN at service conditions. The materials to be used are the concrete of grade M20 and Fe 415 grade steel.

4. Design a cantilever retaining wall to retain earth with a backfill sloped 20^0 to the horizontal. The top of the wall is 5.5m above the ground level. Assume the depth of the foundation as 1.2m below ground level with a S.B.C of 120 kN/m^2. The unit weight of backfill is 18 kN/m^3 and an angle of shearing resistance of 35^0. Assume the coefficient of friction between soil and concrete as 0.55. Adopt M20 grade concrete and Fe 415 grade steel.

5. Design a roof dome top ring beam of an over head tank of capacity 600 kL.
The materials used are M20 concrete and HYSD steel. Sketch the details of reinforcement.

6. Design a rectangular tank resting on ground with internal dimensions as 7m x 5.5m x 2.75m high. Take the free board as 300mm. Use M20 grade concrete and Fe 415 grade steel.

7. Design the cylindrical wall and bottom slab of a circular elevated water tank of diameter 10m and total height 4m which is to be supported by ring beam of 7.5m diameter. The ring beam is to be supported by six columns equally placed. Use M20 grade concrete and Fe 415 grade steel.

8. a) Explain the basic principles of prestressing.
b) A rectangular prestressed concrete beam 230mm x 400mm is prestresssed with a force of 750 kN applied at an eccentricity of 100mm from the C.G.of the section. The span of the beam is 10 m. The beam carries an imposed load of 25 KN/m. Find the initial and final stresses at the top and the bottom of the section. Assume the losses 15%.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the free-body diagrams of IC engine mechanism with constrained forces.
b) The connecting rod of an IC engine is 450mm long and has a mass of 2 kg. The center of mass of the rod is 300mm from the small end and its radius of gyration about an axis through this center is 175mm. The mass of the piston and the gudgen pin is 2.5kg and the stroke is 300mm. The cylinder diameter is 115mm. Determine the magnitude and the direction of the torque applied on the crank shaft when the crank is 40° and the piston is moving away from the inner dead centre under an effective gas pressure of 2 N/mm^2. The engine speed is 1000 r.p.m.

2. a) Explain axis of spin, couple and precession.
b) The mass of a turbine rotor of a ship is 8 tonnes and has a radius of gyration 0.6m. It rotates at 1800 r.p.m clockwise when looking from the stern. Determine the gyroscopic effects in the following cases:
i) If the ship traveling at 100km/hr steers to the left in a curve of 75m radius.
ii) If the ship is pitching and the bow is descending with maximum velocity. The pitching is simple harmonic, the periodic time being 20 seconds and the total angular movement between the extreme positions is 10°.
iii) If the ship is rolling and at a certain instant has an angular velocity of 0.03 rad/s clockwise when looking from stern.
In each case, explain clearly how you determine the direction in which the ship tends to move as a result of the gyroscopic action.

3. a) Explain Prony brake with sketch.
b) In a band block brake, the band is lined with 14 blocks, each of which subtends an angle of 20° at the drum center. One end of band is attached to the fulcrum of the brake lever and the other to a pin 150mm from the fulcrum. Find the force required at the end of the lever 1m long from the fulcrum to give a torque of 4 kN-m. The diameter of the brake drum is 1m and the coefficient of friction between the blocks and the drum is 0.25.

4. The cranks of a three-cylinder single-acting engine are set equally at 120^0. The engine speed is 540 rpm. The turning-moment diagram for each cylinder is a triangle for the power stroke with a maximum torque of 100 Nm at 60^0 after dead-centre of the corresponding crank. On the return stroke, the torque is sensibly zero. Determine the
i) Power developed
ii) Coefficient of fluctuation of energy
iii) Coefficient of fluctuation of speed if the flywheel has a mass of 7.5kg with a radius of gyration of 65mm
iv) Maximum angular acceleration of the flywheel.

5. a) Classify governors with respect to their controlling forces.
b) A Porter governor has each of its arms of 175mm length pivoted on the axis of the governor. The radii of rotation of the balls at the minimum and maximum speeds are 105mm and 140mm respectively. The mass of the sleeve is 20kg and of each ball is 5kg. Determine the range of speed when the friction at the sleeve is 15N.

6. a) Find the magnitudes of the unbalanced primary and secondary forces in V-engines. Deduce the expressions when the lines of stroke of the two cylinders are at 60° to each other.
b) Explain the concept of balancing of multiple rotating masses lying in a single plane.

7. a) Define the terms: damping coefficient, critical damping coefficient and damping factor.
b) A gun barrel weighs 300kg and has a recoil spring of stiffness 250N/mm. The barrel recoils 0.8m on firing. Determine the critical recoil velocity of the gun, critical damping coefficient of the dashpot engaged at the end of the recoil stroke.

8. a) Discuss in detail, multi-degree-of-freedom systems.
b) Write short notes on 'measuring instruments'.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List ideal characteristics of an op-amp and compare with that of a practical op-amp such as 741. Draw op-amp equivalent circuit.
b) Define and mention the techniques used to measure the following parameters:
i) Input offset voltage.
ii) Slew-rate.

2. a) Draw and explain the instrumentation amplifier circuit using op-amp and discuss its applications.
b) Draw the circuit diagram of an astable multivibrator using op-amp and explain its operation with relevant waveforms.

3. a) Sketch the functional block diagram of IC555 timer.
b) Write the applications of 555 timer.

4. a) Explain how to estimate sinking current for low output and sourcing current for high output of CMOS gate.
b) Write a detailed note on CMOS logic families.

5. a) Explain the several factors to consider in TTL/CMOS interfacing.
b) Draw the circuit of ECL logic OR/NOR gate and explain its function.

6. a) Explain about VHDL program structure.
b) Give the description on libraries and packages.

7. a) Design a logic circuit to detect the prime number of a 5-bit input. Write the structural VHDL program for the design.
b) Realize the following expression using 74X151 IC.
$f(X) = \overline{A}BC + A\overline{B}C + AB\overline{C}$

8. a) Design an 8-bit serial-in and parallel-out shift register with flip flops. Explain the operation with the help of timing waveforms.
b) Write VHDL data flow program for the above shift register.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the 8085compatible flags of 8086 processors .Discuss the design of each flag.
b) Discuss the addressing modes provided by 8086 and explain with examples.

2. a) What are the LOOP instructions of 8086? Explain the use of DF flag in the execution of string instructions.
b) Distinguish between packed BCD and unpacked BCD. Develop an assembly language program to multiply two BCD numbers of 2-digits each.

3. With neat sketches, explain the read and write cycles timing diagrams of 8086 in maximum mode.

4. a) Explain the control word format of 8255 in I/O and BSR mode.
b) Interface the typical 12-bit DAC with 8255 and write a program to generate a triangular waveform of period 20ms. The CPU runs at 6MHz clock frequency.

5. a) Explain about the Interrupt structure of 8086 and Vector Interrupt table.
b) Explain the initialization of 8259 interrupt controller.

6. a) Draw the circuit of RS-232 to TTL conversion and explain this interface.
b) What do you mean by I/O mapped I/O? Draw the interfacing of 8251 with 8086 in I/O mapped I/O mode.

7. a) Write briefly about the basic features of RISC processors.
b) Explain the use of the following registers of 80386:
i) Segment descriptor register.
ii) Control register.
iii) Debug and test register.
iv) System address register.

8. a) Discuss the advantages of microcontroller based systems over microprocessor based systems.
b) Explain the function of watchdog timer.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Test for consistency and then solve the system of equations 7 Marks
x + 2y - z = 3 , 3x - y + 2z = 1, 2x - 2y + 3z = 2 , x - y + z = -1.

b) State Cayley - Hamilton theorem and using it find the inverse of the 7 Marks
matrix $\begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 2 \\ 1 & 2 & 0 \end{bmatrix}$

(OR)

2 a) Find the values of 'a' and 'b' for which the equations **x + ay + z = 3 ,** 7 Marks
x + 2 y + 2z = b, x + 5y + 3z = 9 will have (i) unique solution
(ii) infinite number of solutions (iii) no solution.

b) Find the eigen values and the corresponding eigen vectors of the 7 Marks
matrix $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$

UNIT-II

3 a) Using Lagrange's interpolation formula, find the value of '*y*' when *x* = 5 if the 7 Marks
following values of x and *y* given.

x :	0	2	3	6
y :	648	704	729	792

b) Using Regula-falsi method, find the real root of the equation $xe^x - 2 = 0$, correct 7 Marks
to three decimal places.

(OR)

4 a) The following table gives corresponding values of *x* and *y*. Construct the 7 Marks
difference table and then express *y* as a function of *x*.

x :	0	1	2	3	4
y :	3	6	11	18	27

b) By the method of least squares, fit a parabola $y = a + bx + cx^2$ to the following 7 Marks
data.

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

UNIT-III

5 a) Evaluate the first two derivatives of y at x = 1.1 from the following data. 7 Marks

x	1.0	1.2	1.4	1.6	1.8	2.0
y	0	0.128	0.544	.296	2.432	4.0

b) Using Euler's method, solve for 'y' at x = 0.1 from $\frac{dy}{dx} = x + y + xy,\ y(0) = 1$ 7 Marks
taking step size h =0.025.

(OR)

6 a) Evaluate $\int_0^z e^{-x^z}\,dx$ using Simpson's 1/3 rule taking h= 0.25. 7 Marks

b) Using Modified Euler's method, determine y(0.04) taking h = 0.02 given that $= x^2 + y,\ y(0) = 1.$ 7 Marks

UNIT-IV

7 a) Find the Fourier series to represent the function $f(x)$ given by 7 Marks

$$f(x) = \begin{cases} -k & for\ -\pi < x < 0 \\ k & for\ 0 < x < \pi \end{cases}$$

Hence deduce that **1 - 1/3 + 1/5 - 1/7 + ------- = π/4.**

b) Use Fourier cosine integral, show that $\int_0^\infty \frac{\cos \omega x}{1+\omega^2} d\omega = \frac{\pi}{2} e^{-x} (x > 0).$ 7 Marks

(OR)

8 a) Obtain the half –range sine and cosine series for $\mathbf{e^x}$ in (0, π). 7 Marks

b) Find the Fourier integral representation of $f(x) = \begin{cases} 1 - x^2 & for\ |x| \le 1 \\ 0 & for\ |x| > 1 \end{cases}$ 7 Marks

UNIT-V

9 a) Form the partial differential equation arising from $\mathbf{f(xy + z^2, x + y + z) = 0}$. 7 Marks

b) A tightly stretched string with fixed end points x = 0 and x = 10 is initially in a position given by **y = b sin 3πx/10**. If it is released from rest from this position, find the displacement y(x, t). 7 Marks

(OR)

10 A bar of 10cms. long with insulated sides has its ends A and B maintained at temperatures 50^0 C and 100^0 C respectively, until steady state condition prevail. The temperature of A is suddenly raised to 90^0C and at the same time that of B is lowered to 60^0C. Find the temperature distribution in the bar at time 't'. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Show that $\int_0^{\infty} \frac{x^{m-1}+x^{n-1}}{(1+x)^{m+n}}dx = 2\beta(m,n)$. 7 Marks

b) Prove that $J_n'(x) = \frac{1}{2}[J_{n-1}(x) - J_{n+1}(x)$. 7 Marks

(OR)

2 a) Show that $\beta(m,n) = 2\int_0^{\frac{\pi}{2}} Sin^{2m-1}\theta\, Cos^{2n-1}\theta\, d\theta$ and deduce 7 Marks

$$\int_0^{\pi/2} Cos^n\theta\, d\theta = \frac{\Gamma(n+1/2.\Gamma(\pi)}{2\Gamma(n+2/2)}.$$

b) Prove that $2J_0''(x) = J_2(x) - J_0(x)$. 7 Marks

UNIT-II

3 a) Show that $\left(\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\right)\log|f'(z)| = 0$, where $f(z)$ is analytic function. 7 Marks

b) Find the an analytic function ***f (z) = u + iv,*** given that 7 Marks
u - v = (x - y)(x² + 4xy + y²).

(OR)

4 a) Show that the function $f(z) = \sqrt{|xy|}$ is not analytic at the origin, although C-R equations are satisfied at that point. 7 Marks

b) Find the analytic function ***f (z) = u + iv*** if ***u = a(1 + cosθ).*** 7 Marks

UNIT-III

5 a) Evaluate $\int_0^{1+i} (x - y + ix^2)dz$ a long the imaginary axis from **z = 0 to z= i** 7 Marks
and then along a line parallel to real axis from **z = i to z = l + i**.

b) Evaluate $\oint_c \frac{3z^2+z}{z^2-1}dz$ where c is the circle **|z- 1|=1** using Cauchy's 7 Marks
integral formula.

(OR)

6 a) Evaluate $\oint_c \frac{3z^2+7z+1}{(z+1)}dz$ where c is the circle |Z+i| = 1. 7 Marks

b) Expand $f(z) = \frac{(z-2)(z+2)}{(z+1)(z+4)}$ is the region 7 Marks

i) $|z| < 1$ ii) $|z| > 4$ iii) $1<|z|<4$.

UNIT-IV

7 a) Determine the poles and corresponding residues for the function $f(z)= \frac{z^2}{(z-1)(z-2)^2}$. 7 Marks

b) By the method of residues, evaluate $\int_0^{2\pi} \frac{d\theta}{1-2a\sin\theta+a^2}$, $0 <a<1$. 7 Marks

(OR)

8 a) Calculate the value of $\oint_c \frac{z-3}{z^2+2z+5}\,dz$ where c is the circle **|z+1+i |=2**. 7 Marks

b) Evaluate $\int_0^{\infty} \frac{dx}{(x^2+1)^2}$. 7 Marks

UNIT-V

9 a) Under the Transformation $W = \frac{1}{z}$ find the image of **|z-2i|=2**. 7 Marks

b) Find the Bilinear Transformation which maps the points z = 1, i, - 1 in to the points w =i 0 – i. 7 Marks

(OR)

10 a) For the conformal Transformation $\mathbf{w = z^2}$, show that 7 Marks

i) The coefficient of magnification at **z= 1+i** is $\mathbf{2\sqrt{2}}$

ii) The angle of rotation at **z = 1+ i** is $\frac{\pi}{4}$

b) Discuss the Transformation **w= cos hz**. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

PROBABILITY AND STATISTICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) State and prove the Baye's theorem. 7 Marks

b) In a class 2% of boys and 3% of girls are having blue eyes. There are 30% girls in the class. If a student is selected and found that having blue eyes, what is the probability that the student is a girl? 7 Marks

(OR)

2 a) Define random variable, probability mass function, probability density function and Mathematical Expectation for continuous random variable. 7 Marks

b) Find the expectation of a number (1 or 2 or 3 or 4 or 5 or 6) when a die is thrown. 7 Marks

UNIT-II

3 a) If a Poisson distribution is such that $\frac{3}{2}P(x=1) = P(x=3)$, find 7 Marks

i) **P(x ≥1)** ii) **P(x ≤ 3)** iii) **P(2 ≤ x ≤ 5)**

b) In a sample of 1000 cases, the mean of a certain test is 14 and standard deviation is 2.5. Assuming the distribution to be normal, find 7 Marks

i) How many students score between 12 and 15?

ii) How many students score above 18?

(OR)

4 a) Fit a binomial distribution for the following data and calculate the expected frequencies. 7 Marks

x	0	1	2	3	4	5
f(x)	38	144	342	287	164	25

b) Find the mean and standard deviation of a normal distribution in which 31% of items are under 45 and 8% are over 64. 7 Marks

UNIT-III

5 a) The following data shows the values of sample mean ($\overline{X}$) and range (R) for 10 samples for 6 each. Calculate the values for central line and the control limits for Mean-Chart and Range-Chart. Sketch the control charts and comment on the state of control. 7 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean $\overline{X}$	43	49	37	44	45	37	51	46	43	47
Range R	5	6	5	7	7	4	8	6	4	6

b) A random sample of 5 college students is selected and their grades in Mathematics and Statistics are given in the following table. Calculate the co-efficient of correlation. 7 Marks

	1	2	3	4	5

Mathematics	85	60	73	40	90
Statistics	93	75	65	50	80

(OR)

6 a) The number of defective bulbs in 20 samples, containing 1000 items are 125, 130, 116, 141, 125, 122, 180, 106, 137, 145, 156, 102, 116, 164, 126, 109, 133, 180, 126, 189. Calculate the values for central line and the control limits for P-Chart. 7 Marks

b) Find if there is any significant correlation between the heights and weights given below. 7 Marks

Height in inches	57	59	62	63	64	65	55	58	57
Weight in lbs	113	117	126	126	130	129	111	116	112

UNIT-IV

7 a) In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers? 7 Marks

b) The mean yield of wheat from a district A was 210 pounds with S. D. 10 pounds per acre from a sample of 100 plots. In another district the mean yield was 220 pounds with S. D. 12 pounds from a sample of 150 plots. Assuming that the S. D. of yield in the entire state was 11 pounds, test whether there is any significant difference between the mean yield of crops in the two districts. 7 Marks

(OR)

8 a) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38. Also calculate 95% confidence interval for the population. 7 Marks

b) A manufacturer of electronic equipment subjects samples of two completing brands of transistors to an accelerated performance test. If 45 of 180 transistors of the first kind and 34 of 120 transistors of the second kind fail the test, what can he conclude at the level of significance a = 0.05 about the difference between the corresponding sample proportions? 7 Marks

UNIT-V

9 a) A random sample of 10 boys had the IQs 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Does this data support the assumption of population IQ of 100.
(Tabulated value 2.262 at 5% L.O.S) 7 Marks

b) Two independent random sample each of 8 individuals provide the following data. Estimate the variance ration and test the significance. 7 Marks

Sample –I	63	64	65	65	66	66	67	68
Sample-II	69	66	67	67	66	68	69	69

(Tabulated each 3.80 at 5% L.O.S)

(OR)

10 a) Two Horses A and B were tested according to the time (in seconds) to run a particular track with the following results. 7 Marks

Horse(A)	28	30	32	33	33	29	34
Horse(B)	29	30	30	24	27	29	-

Test whether the two Horses have the same running capacity.
(Tabulated value 2.20 at 5% L.O.S).

b) Fit a Poisson distribution to the following data and test – the goodness of fit at 5% leave of significance. 7 Marks

X	0	1	2	3	4	5	6	7
F	305	366	210	80	28	9	2	1

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ENVIRONMENTAL SCIENCES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the importance of environmental studies in understanding the global environmental issues faced by the humankind.	7 Marks
	b)	Discussing the importance of forests. Explain the consequences of deforestation.	7 Marks
		(OR)	
2		Differentiate between renewable and non-renewable resources. With help of one example each, explain the environmental issues related with those energy resources.	14 Marks

UNIT-II

3	a)	Explain the structure and function of the ecosystem. With help of a forest ecosystem, explain the various components of the ecosystem and their importance.	7 Marks
	b)	What do you mean by food chains and food webs? Explain the importance of these in maintaining the ecosystem balance.	7 Marks
		(OR)	
4	a)	Explain the importance of biodiversity. Discuss how human beings are responsible for loss of biodiversity.	7 Marks
	b)	Differentiate between threatened and endangered species. Explain measures taken for conservation of endangered species.	7 Marks

UNIT-III

5		Explain the types, sources and control method of air pollution with neat sketches.	14 Marks
		(OR)	
6		Explain the Disaster Management with latest case study for every Disaster.	14 Marks

UNIT-IV

7	a)	Define Sustainable Development and how can we achieve it.	7 Marks
	b)	Explain the Air Pollution Act.	7 Marks
		(OR)	
8	a)	Explain about the Waste land reclamation methods.	7 Marks
	b)	What is Nuclear Holocaust and explain the Water Act?	7 Marks

UNIT-V

9		Taking population growth trends into consideration, explain the reasons for growth of population. Also highlight the methods adopted for controlling growth of population.	14 Marks
		(OR)	
10		Write notes on i) Environment and human health. ii) Role of information technology in addressing environmental problems.	14 Marks

CODE No.:14BT30101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the role of physical geology, petrology and structural geology in civil Engineering works.	14 Marks
		(OR)	
2		Explain the physical, chemical and biological weathering and its effects.	14 Marks

UNIT-II

3		Give a comparative account of different methods of study of minerals.	14 Marks
		(OR)	
4		Explain the origin of Igneous rocks and Sedimentary rocks.	14 Marks

UNIT-III

5		Describe the folds basing on the position of fold axis and their behavior with depth.	14 Marks
		(OR)	
6		Explain Electrical Resistivity method.	14 Marks

UNIT-IV

7		Write the hydraulic properties of rocks and geological controls on ground water movement.	14 Marks
		(OR)	
8	a)	Write the causes of earthquakes.	7 Marks
	b)	Describe seismic waves.	7 Marks

UNIT-V

9		What is meant by reservoir silting? Explain the methods to control reservoir silting.	14 Marks
		(OR)	
10		Write the comparative study of tunneling operation in igneous, sedimentary and metamorphic rocks.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

MECHANICS OF SOLIDS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive an expression for the elongation of a axially loaded bar for the following conditions: 14 Marks

i) Tapering bar having diameter D_1 at one end and D_2 at the other end.

ii) Rectangular tapering bar having depth D_1 at one end and D_2 at the other end with constant width B.

(OR)

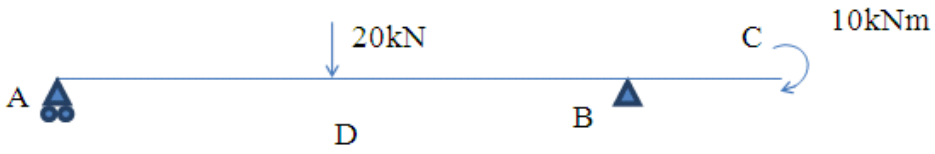
2 Derive expression for the elongation of the following bars under its own weight. Density of the material is γ. 14 Marks

i) Prismatic bar.

ii) Conical bar fixed at base.

UNIT-II

3 Sketch the shear force and bending moment diagrams showing the salient values for the loaded beam shown in the figure below; AD=5m; DB=4m and BC=2m. 14 Marks



(OR)

4 What is point of contraflexure? Locate the same for an overhanging beam of simply supported span of 10m with two sides overhanging portions of 2.5m each subjected to a UDL of 3kN/m and end concentrated loads of 5kN. Draw the BMD and SFD. 14 Marks

UNIT-III

5 Determine the allowable superimposed uniformly distributed load on a 4m span simply supported beam with symmetrical **I** section consisting of 150mm**x**20mm flanges and 20mm **x** 50mm web, if the allowable bending stress is 150MPa and the unit weight of beam material is 78.5kN/m^3. Find the percentage of bending moment resisted by web and flanges. 14 Marks

(OR)

6 Sketch the variation of shear stress across the depth of a **H** section of 200mm **x** 10mm verticals and 200mm **x** 10mm horizontal. Flexural shear force action on the section is 100kN. 14 Marks

UNIT-IV

7 A steel shaft ABCD having a total length of 2400mm is contributed by three different sections as follows. The portion AB is hollow having outside and inside diameters 80mm and 50mm respectively, BC is solid and 80mm diameter. CD is also solid and 70mm in diameter. If the angle of twist is same for each section, determine the length of each portion and the total angle of twist. Maximum permissible shear stress is 50MPa and shear modulus $0.82\mathbf{x}10^5$MPa. 14 Marks

(OR)

8 a) Define the term pure torsion. Find suitable expression to determine the angle of twist of any cross section of a circular shaft subjected to an external torque. 7 Marks

b) A hollow shaft is of 120mm external diameter and diameter ratio 0.6. If the maximum shear stress in the shaft is limited to 100MPa and allowable twist is 1° per metre length, find the maximum power that can be transmitted to the shaft, if it is to rotate at 100 r.p.m.Take C = 8 **x** 10^4 MPa. 7 Marks

UNIT-V

9 a) Prove that in the case of a thin cylindrical shell subjected to an internal fluid pressure, the volumetric strain is equal to twice the circumferential strain plus the longitudinal strain. 7 Marks

b) A spherical shell of 1.2m internal diameter is subjected to an internal pressure of $3N/mm^2$.Find the thickness of the shell if permissible stress is $120N/mm^2$. Also determine the change in volume. Take E = 2 **x** $10^5 N/mm^2$ and $\mu = 0.3$. 7 Marks

(OR)

10 Determine the maximum stress induced in a cylindrical steel strut of length 1.4m and diameter 40mm. The strut is hinged at both its ends and subjected to an axial thrust of 30kN at its ends and a transverse point load of 2kN at the centre. Take E = 2.08 **x** 10^5 N/mm^2. 14 Marks

CODE No.:14BT30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a clamp? Explain the burning of bricks in a clamp with the help of neat sketch.	7 Marks
	b)	With a neat sketch, explain any method of burning of bricks in an intermittent kiln.	7 Marks

(OR)

2		Explain the various types of following tiles: i) Roofing tiles. ii) Flooring and wall tiles.	14 Marks

UNIT-II

3	a)	What are the main characteristics of building limes and enumerate the classification of lime?	7 Marks
	b)	Describe the structural properties and advantages of using aluminium as building material.	7 Marks

(OR)

4	a)	Describe briefly how lime is manufactured. Distinguish between quick, fat and hydraulic lime.	7 Marks
	b)	Describe the uses of : (i) Gypsum (ii) Copper (iii) Glass	7 Marks

UNIT-III

5	a)	List the various tests conducted on cement. Explain briefly the initial and final setting times of cement.	7 Marks
	b)	Define workability. What are the effects of time and temperature on workability? Discuss briefly.	7 Marks

(OR)

6	a)	Differentiate between: i) Dry process and wet process of cement manufacture. ii) Setting and hardening of cement.	7 Marks
	b)	What is water to cement ratio? Explain its importance in concrete and how is the water to cement ratio related to cement paste structure.	7 Marks

UNIT-IV

7		Explain the Schmidts Rebound Hammer test with the help of neat sketch.	14 Marks

(OR)

8		Explain the various techniques of measuring pulse velocity through concrete with the help of neat sketches.	14 Marks

UNIT-V

9 a) What is shrinkage of concrete? Describe briefly the types of shrinkages. 7 Marks

b) Define modulus of elasticity. How the modulus of elasticity is related to strength. 7 Marks

(OR)

10 Design a concrete mix to be used in structural elements by IS method for following requirements. 14 Marks

i) Characteristic compressive strength at 28 days, f_{ck}	30 N/mm^2
ii) Maximum size of aggregate	20 mm
iii) Shape of coarse aggregate	Angular
iv) Degree of workability desired, compacting factor	0.90
v) Type of exposure	Severe
Test data for concrete making materials	
Specific gravity of cement	3.15
Specific gravity of coarse aggregate	2.74
Specific gravity of fine aggregate	2.74
Water absorption (air dry to saturated surface dry)	
Coarse aggregate, percent	0.5%
Fine aggregate	1.0%
Surface moisture	
Coarse aggregate	Nil
Fine aggregate	2.0%

vi) Compressive Strength of cement at 28 days satisfies the requirement of IS:269-1989

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

FLUID MECHANICS-I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the terms: 14 Marks

(i) Dynamic viscosity.
(ii) Kinematic viscosity.

Give their dimensions. Calculate the density, specific weight and weight of one litre of petrol of specific gravity 0.7.

(OR)

2 Differentiate between: 14 Marks

(i) Absolute and gauge pressure
(ii) Simple manometer and differential manometer.

A rectangular plane surface is 2m wide and 3m deep. It lies in vertical plane in water. Determine the total pressure and position of centre of pressure on the plane surface when its upper edge is horizontal and coincides with the water surface.

UNIT-II

3 In a two-dimensional incompressible flow, the fluid velocity components are given by **u = x-4y** and **v = -y-4x**. Show that velocity potential exists and determine its form. Find also the stream function. 14 Marks

(OR)

4 A 45° reducing bend is connected in a pipe line, the diameters at the inlet and outlet of the bend being 600mm and 300mm respectively. Find the force exerted by water on the bend if the intensity of pressure at inlet to bend is 8.829 N/cm^2 and rate of flow of water is 600 litres/s. 14 Marks

UNIT-III

5 Derive the Darcy-Weisbach equation for the loss of head due to friction in pipes. 14 Marks

An oil of **sp. gr. 0.8** is flowing through a horizontal venturimeter with inlet diameter 20cm and throat diameter 10cm. The oil-mercury differential manometer shows a reading of 25cm. Calculate the discharge of oil through the horizontal venturimeter. Take **C_d=0.98.**

(OR)

6 Define the coefficients of discharge, velocity and contraction. Derive the relationship between them. 14 Marks

Water flows over a rectangular weir 1m wide at a depth of 150mm and afterwards passes through a triangular right-angled weir. Taking **C_d** for the rectangular and triangular weir as 0.62 and 0.59 respectively, find the depth over the triangular weir.

UNIT-IV

7 Air owes over a smooth plate with a velocity of 8m/s. The length of the plate is 1.5m and width 1m. If the laminar boundary exists up to a value of Reynold number = 5×10^5, find the maximum distance from the leading edge up to which laminar boundary layer exists. Find the maximum thickness of laminar boundary layer if the velocity profile is given by $u/U = (y/\delta - (y/\delta)^2)$. Take Kinematic viscosity for air = 0.15 stokes. — 14 Marks

(OR)

8 a) Explain the phenomenon of boundary layer separation and its influence on the drag of an immersed body. — 6 Marks

b) In a at plate of 2m length and 1m wide, experiments were conducted in a wind tunnel with a wind speed of 50Km/hr. The plate is kept at such an angle that the coefficients of drag and lift are 0.18 and 0.9 respectively. Determine drag force, lift force, resultant force and power exerted by the air stream on the plate. Take density of air as 1.15Kg/m3. — 8 Marks

UNIT-V

9 a) Define Reynold's Model Law. — 4 Marks

b) A pipe of diameter 1.5m is required to transport an oil of specific gravity 0.90 and viscosity 3×10^{-2} poise at the rate of 3000 litre/s. Test were conducted on a 15cm diameter pipe using water at 200^0C . Find the velocity and rate of flow in the model. Viscosity of water at 200^0C = 0.01 poise. — 10 Marks

(OR)

10 a) What is the significance of non- dimensional numbers: Reynolds's number, Froude number and Mach number in the theory of similarity? — 7 Marks

b) What is dimensional analysis? How is this analysis related to the theory of similarity? — 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define electric field intensity. Explain in detail the different ways of obtaining elastic field.	7 Marks
	b)	Derive the expression for energy density in electric field.	7 Marks
		(OR)	
2	a)	State and explain Gauss law.	7 Marks
	b)	Two dipoles with dipole moments -5a_Z Rc/m and 9a_Z Rc/m are located at points (0, 0, -2) and (0, 0, 3) respectively. Find the potential at the origin.	7 Marks

UNIT-II

3	a)	State and prove Ohm's law in point form.	7 Marks
	b)	What is the electric field at (0,0,5) m due to a pure dipole 20 a_z nC-m at Origin?	7 Marks
		(OR)	
4	a)	What are the properties of conductors and dielectrics? Explain.	7 Marks
	b)	What is the law of refraction of dielectrics? Explain in detail.	7 Marks

UNIT-III

5	a)	State and prove Biot-Savort's law.	7 Marks
	b)	Find the magnetic field intensity at point P(2,2,3) caused by a current filament of 25A in the a_z direction and extending from Z = 0 to Z = 6.	7 Marks
		(OR)	
6	a)	Write Maxwell's fourth equation in integral form and explain.	7 Marks
	b)	Obtain the expression for magnetic field intensity due to a infinitely long co-axial transmission line by applying Ampere's circuital law.	7 Marks

UNIT-IV

7	a)	Define magnetization. Obtain the expression for magnetic flux density in terms of magnetization.	7 Marks
	b)	Derive the boundary conditions at the interface of two different magnetic materials.	7 Marks
		(OR)	
8	a)	What is the difference between solenoid and toroid? Determine the self inductance of solenoid.	7 Marks
	b)	Differentiate between self and mutual inductance. Derive the expression for magnetic energy density.	7 Marks

UNIT-V

9	a)	Explain the difference between induced, transformer and motional EMF.	7 Marks
	b)	Write the point form of Maxwell's equations. Explain their significance.	7 Marks
		(OR)	
10	a)	Define displacement current. Derive the expression for displacement current density.	7 Marks
	b)	Write the integral form of Maxwell's equations. Explain their significance.	7 Marks

CODE No.:14BT30202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the principle of energy conversion of electromechanical system. 7 Marks

b) Explain the mechanical energy and work done in singly excited system when actual displacement occurs. 7 Marks

(OR)

2 a) Write in brief about the multiple-excited magnetic field system. 7 Marks

b) For a singly excited system, derive the expression for magnetic field energy stored. 7 Marks

UNIT-II

3 Briefly discuss about the armature reaction and its effects on the operation of DC Machines. How the armature reaction is minimized? 14 Marks

(OR)

4 a) Explain the principle of operation of DC generator. Why is a commutator and brush arrangement necessary for the operation of a DC generator? 7 Marks

b) A 4 pole, long-shunt lap-wound generator supplies 25kW at a terminal voltage of 500V. The armature resistance is 0.03 ohm, series field resistance is 0.04 ohm and shunt field resistance is 200 ohm. The brush drop may be taken as 1.0V. Determine the e.m.f. generated. Calculate also the number of conductors if the speed is 1200 r.p.m. and flux per pole is 0.02 weber. Neglect armature reaction. 7 Marks

UNIT-III

5 a) Explain the following characteristics of shunt wound DC generators. 7 Marks

i) Magnetization characteristics.
ii) External and internal characteristics.

b) The open-circuit characteristics of a separately excited DC generator driven at 1000 r.p.m. is as follows: 7 Marks

Field current, A	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6
e.m.f., V	30.0	55.0	75.0	90.0	100.0	110.0	115.0	120.0

If the machine is connected as a shunt generator and driven at 1000 r.p.m. and has a field resistance of 100 ohm, find:

i) Open circuit voltage and exciting current.
ii) The critical resistance.
iii) Resistance to induce 115V on open circuit.

(OR)

6 a) Why the parallel operation of series generators is unstable? What remedial measures are taken for its successful operation? 7 Marks

b) A shunt generator has an induced voltage of 254V. When the machine is laded, the terminal voltage drops down to 240V. Neglecting armature reaction, determine the load current, if the armature resistance is 0.04 ohm and the field circuit resistance is 24 ohm. 7 Marks

UNIT-IV

7	a)	Differentiate between generator action and motor action of a DC machine.	7 Marks
	b)	The armature winding of a 4-pole, 250V DC shunt motor is lap connected. There are 120 slots, each slot containing 8 conductors. The flux per pole is 20mWb and current taken by the motor is 25A. The resistance of armature and field circuit are 0.1 and 125 ohm respectively. If the rotational losses amount to be 810W, find i) gross torque ii)useful torque and iii) efficiency.	7 Marks

(OR)

8	a)	Draw and explain the different characteristics of a DC series motor.	7 Marks
	b)	A 220V shunt motor has an armature resistance of 0.2 ohm and field resistance of 110 ohm. The motor draws 5A at 1500 r.p.m at no load. Calculate the speed and shaft torque, if the motor draws 25A at rated voltage.	7 Marks

UNIT-V

9	a)	Describe the Hopkinson's test for obtaining the efficiency of two similar shunt motors.	7 Marks
	b)	Two shunt machines loaded for the Hopkinson's test take 15A at 200V from the supply. The motor current is 100A and the shunt currents are 3A and 2.5A. If the armature resistance of each machine is 0.05 ohm, calculate the efficiency of each machine for this particular load condition.	7 Marks

(OR)

10	a)	Explain the method of determination of the efficiency of DC series machine by Field's test.	7 Marks
	b)	In a brake test the effective load on the branch pulley was 38.1kg, the effective diameter of the pulley 63.5cm and speed 12 r.p.s. The motor took 49A at 220V. Calculate the output power and the efficiency at this load.	7 Marks

CODE No.:14BT30203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ELECTRIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Obtain the expressions for converting Delta connected resistive network into Star connected resistive network. 7 Marks

b) A Wheatstone bridge ABCD is arranged as follows, **AB=10Ω, BC=30Ω, CD=15Ω** and **DA=20Ω.** A 2V battery of internal resistance 2Ω is connected between A and C with A positive. A galvanometer of resistance 40Ω is connected between B and D. Find the magnitude and direction of galvanometer current. 7 Marks

(OR)

2 a) State and explain Ohm's law and list out its limitations. 6 Marks

b) Find current through the resistor $\mathbf{r_2}$ by nodal analysis for the circuit shown in Fig.1. 8 Marks

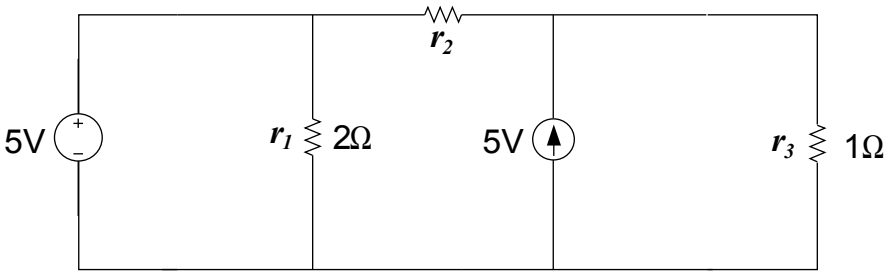

Fig.1

UNIT-II

3 a) A current source i(t) is applied to a series LCR circuit shown in Fig.2. Find voltage across each element. 7 Marks

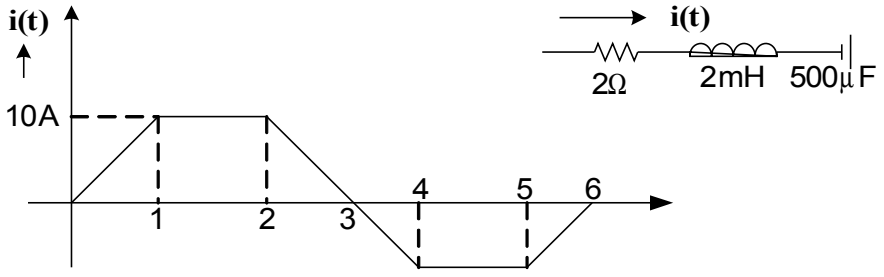

Fig.2

b) The Q factor of a RLC circuit is 5 at its resonance frequency of 1kHz. Assuming the power dissipation of 250W when the current drawn is 1A, find the circuit parameters and bandwidth of the circuit. 7 Marks

(OR)

4 a) Derive the resonant frequency of parallel combination of series RC and RL circuits. 8 Marks

b) Distinguish between series and parallel resonance. 6 Marks

UNIT-III

5 A symmetrical 3-phase, 3-wire, 440V supply is connected to a star connected load. The impedances in each branch are: $\mathbf{Z_1=(2+j3)\Omega}$, $\mathbf{Z_2=(1-j2)\Omega}$, $\mathbf{Z_3=(3+j4)\ \Omega}$. Find its equivalent delta connected load, phase and line currents and the total power consumed in the circuits. 14 Marks

(OR)

6 a) A three phase balanced system supplies 110V to a delta connected load whose phase impedances are equal to **(3.54+j3.54)Ω.** Determine the line currents and draw its phasor diagram. 8 Marks

b) Three identical resistances are connected star fashion against a balanced three phase supply. If one of the resistance is removed, then how much power is to be reduced? 6 Marks

UNIT-IV

7 a) State and explain Faraday's law of Electromagnetic Induction. 6 Marks

b) Two coils A and B are wound on same ferromagnetic core. There are 300 turns on A and 2800 turns on B. A current of 4A through coil A produces a flux of 800μWb in the core. If this current is reversed in 20ms, find the average e.m.f induced in coils A and B. 8 Marks

(OR)

8 a) A steel ring of 25cm mean diameter and of circular section of 3cm in diameter has an air gap of 1.5mm length. It is wound uniformly with 700 turns of wire carrying a current of 2A. Calculate. 10 Marks

i) Magneto motive force. ii) Flux density.

iii) Magnetic flux . iv) Relative permeability of steel ring.

b) Explain about series connection of coupled coils. 4 Marks

UNIT-V

9 a) State and explain Milliman's theorem with a suitable example. 7 Marks

b) Find the current 'I' in the circuit shown in Fig.3 using superposition theorem. 7 Marks

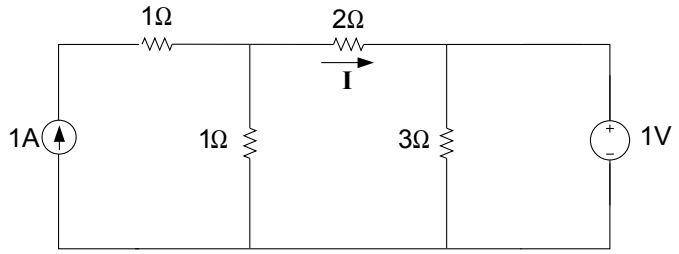

Fig.3

(OR)

10 a) State and explain Reciprocity theorem with a suitable example. 7 Marks

b) Find norton's equivalent to the right of the terminal x-y for the circuit shown in Fig.4. 7 Marks

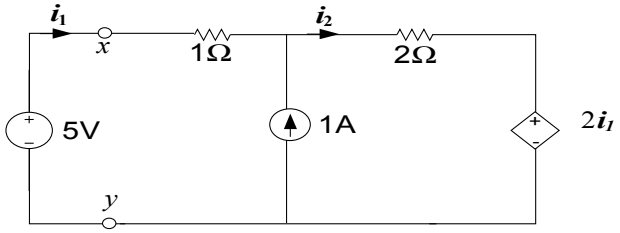

Fig.4

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out the classification of DC generators and explain them briefly.	8 Marks
	b)	A 30kW, 300V DC shunt generator has armature and field resistances of 0.05Ω and 100Ω respectively. Calculate the total power developed by the armature when, it delivers full load output.	6 Marks
		(OR)	
2	a)	Derive the torque equation of a DC motor.	7 Marks
	b)	A shunt motor operating on 230V takes 1_a=6A at no load and runs at 1200 r.p.m. Take R_a = 0.25Ω find the speed and electromagnetic torque when the armature takes 36A with the same flux.	7 Marks

UNIT-II

3	a)	Explain how to draw the equivalent circuit of a single phase transformer.	8 Marks
	b)	Explain the various types of losses in a single phase transformer.	6 Marks
		(OR)	
4	a)	Explain the construction and working principle of a single phase transformer.	8 Marks
	b)	The maximum flux density in the core of a 250/3000V, 50Hz single phase transformer is 1.2Wb/m^2. If the EMF per turn is 8 Volts, determine: i) Primary and secondary turns ii) Area of the core	6 Marks

UNIT-III

5	a)	Explain what is meant by phase sequence.	4 Marks
	b)	For a balanced three phase three wire system with star connected load for which the line voltage is 230 Volts and impedance per phase is (6+j8) Ω. Find the phase voltage, phase current, line current, power factor and power consumed in each phase.	10 Marks
		(OR)	
6		Explain how to measure the power in a three phase circuit using Two Wattmeter method with the necessary derivation.	14 Marks

UNIT-IV

7	a)	Describe the principle and operation of 3-φ induction motor.	7 Marks
	b)	Derive an EMF equation of an alternator.	7 Marks
		(OR)	
8	a)	Explain the effects of slip on rotor circuit of three phase induction motor.	7 Marks
	b)	Derive the condition for maximum torque of three phase induction motor.	7 Marks

UNIT-V

9	a)	"Single phase Induction motor is not self starting". Why?	7 Marks
	b)	Explain the construction and the principle of operation of shaded pole induction motor.	7 Marks
		(OR)	
10	a)	Explain the principle of operation of split phase induction motor.	7 Marks
	b)	Explain the principle of operation of capacitor induction motor.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following terms. 8 Marks
i) Voltage ii) Power
iii) Linear and non-linear elements iv) Active and Passive elements.

b) Obtain the current $\mathbf{i_1}$ for the Fig.1 using KVL. 6 Marks

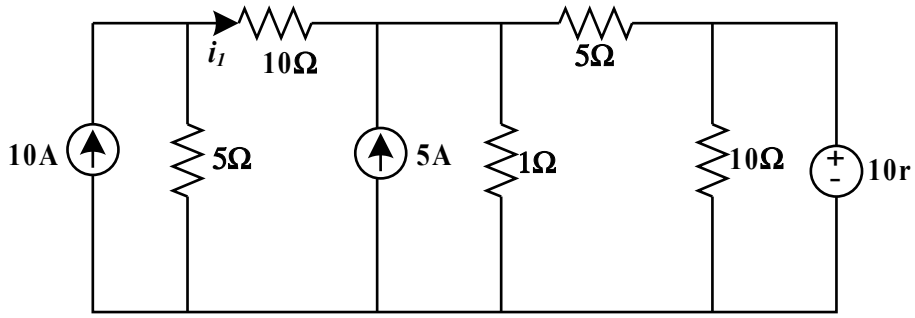

Fig.1

(OR)

2 a) Four equal resistances are available in a circuit. Derive the ratio of the equivalent resistances when they are connected in parallel and the ratio of the current through each element. 7 Marks

b) In the circuit shown in Fig. 2 find current 'I' in 10Ω and voltage across 2Ω resistor V_s. 7 Marks

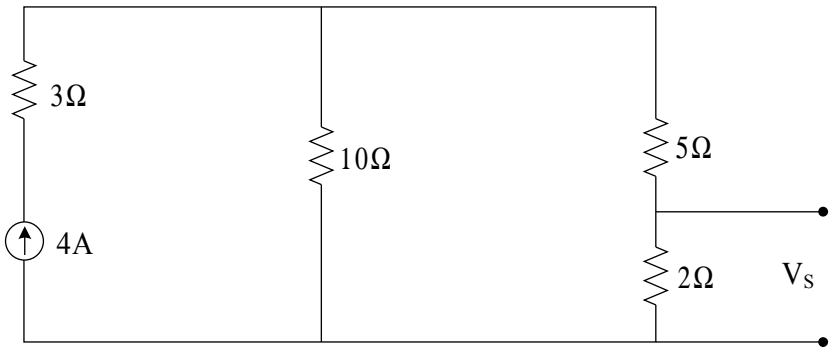

Fig. 2.

UNIT-II

3 a) Obtain the fundamental sinusoidal response of a series RL circuit. 7 Marks

b) What is locus diagram? Draw and explain current locus diagram for a series RC circuit with fixed resistance by deriving necessary expressions. 7 Marks

(OR)

4 Derive the expressions of resonant frequency, quality factor and bandwidth of a series RLC resonance circuit with help of phasor diagrams. 14 Marks

UNIT-III

5 a) Derive the expressions of transient response of RL series circuit with DC excitation. 7 Marks

b) Determine the voltage at the terminals of a coil having **R=10Ω** and **L=15mH** at the instant when the current is 10A and increasing at the rate of 5A/sec. Also find the stored energy in the inductor. 7 Marks

(OR)

6 Derive the expressions of transient response of RC series circuit with sinusoidal excitation using Laplace transform approach. 14 Marks

UNIT-IV

7 a) Derive the relations of Y-parameters in terms of Z-parameters. 7 Marks

b) Explain about cascade connection of two port networks. 7 Marks

(OR)

8 Define image impedance. Derive the expressions of image impedances of the basic T-Network. 14 Marks

UNIT-V

9 a) State and explain compensation theorem with a suitable example. 7 Marks

b) Find the voltage across 2Ω resistor in Fig.3 using superposition theorem. 7 Marks

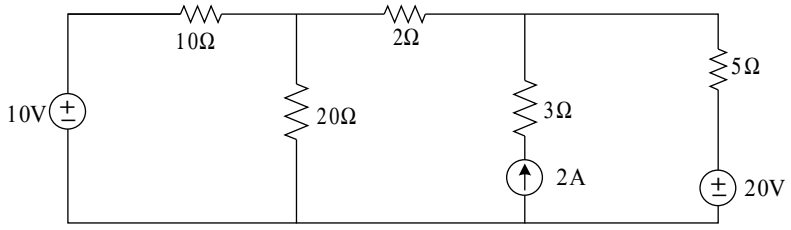

Fig. 3

(OR)

10 a) State and explain reciprocity theorem. 6 Marks

b) Find the current 'I' in the circuit shown in Fig.4 using superposition theorem. 8 Marks

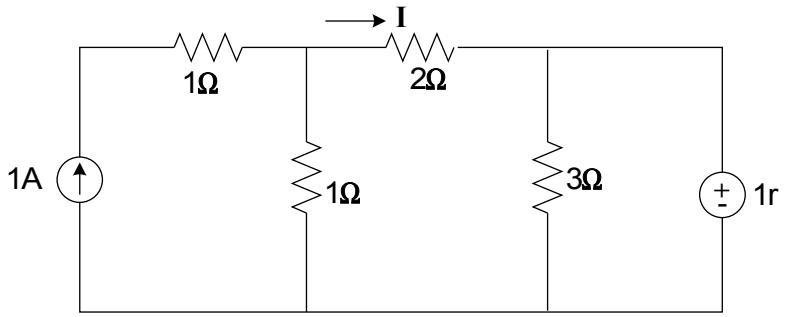

Fig.4

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

PART-A

UNIT-I

1	a)	What are the passive and active elements? Explain the volt-current relationship of passive elements with examples.	7 Marks
	b)	A resistance R is connected in series with a parallel circuit comprising two resistances of 12 and 8 ohms. The total power dissipated in the circuit is 700 watts when the applied voltage is 200 V. Calculate the value of R.	7 Marks
		(OR)	
2	a)	Explain Kirchoff's laws with an example.	7 Marks
	b)	Obtain equivalent Delta when three equal resistances are connected in Star.	7 Marks

UNIT-II

3	a)	Explain the principle of operation of three phase induction motor.	7 Marks
	b)	Explain the operation of incandescent lamp with suitable diagram.	7 Marks
		(OR)	
4		List out types of earthing and explain them in detail. Also explain its importance.	14 Marks

PART-B

UNIT-III

5	a)	Sketch and describe the working of Arc welding.	7 Marks
	b)	List the applications of soldering and discuss any two soldering methods.	7 Marks
		(OR)	
6	a)	Explain the working principle of Four stroke engines with neat sketches.	7 Marks
	b)	Differentiate between SI and CI Engines.	7 Marks

UNIT-IV

7	a)	Explain the working principle of Vapor Compression refrigeration system with a neat sketch.	7 Marks
	b)	Define refrigerant. Name any eight refrigerants commonly used in Vapor Compression refrigeration system.	7 Marks
		(OR)	
8	a)	List out the important components require for an air conditioning system. Also draw the schematic diagram for basic air conditioning system.	7 Marks
	b)	Explain the Year round air - conditioning system with a neat sketch.	7 Marks

UNIT-V

9	a)	Give the classification of compressors and explain its working principle.	7 Marks
	b)	Explain the need of various earth moving equipments with neat sketches.	7 Marks
		(OR)	
10	a)	Explain the working principle of multi stage compressor with neat sketch.	7 Marks
	b)	Write short notes on the following: i) Excavators ii) Power shovels	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 a) Derive the expressions for energy stored in an inductor and capacitor. 6 Marks

b) Briefly explain about active and passive elements, lumped and distributed elements. 8 Marks

(OR)

2 a) Three equal resistances are available. Derive the ratio of the equivalent resistances when they are connected in parallel and also the ratio of the current through each element when they are connected in parallel. 8 Marks

b) A resistor of 50Ω has a potential difference of 100V across it for 1 hour. Calculate power and energy consumed by resistor. 6 Marks

UNIT-II

3 a) Define the following: 7 Marks

i) Alternating Quantity
ii) R.M.S Value
iii) Average value
iv) Form factor

b) A choke coil of resistance 8 ohms and inductance of 0.5H is connected in series with a capacitor of capacitive 125×10^{-6} Farads across a 230V, 50Hz supply, calculate 7 Marks

i) Inductive reactance.
ii) Current.
iii) Voltage across the coil and across the capacitor.
iv) Power factor.

(OR)

4 a) An impedance of (10+ j15)Ω is connected in parallel with an impedance of (6-j8)Ω. The total current is 20A. Calculate the power from the supply. 7 Marks

b) A coil of resistance 15Ω and inductance 0.6H is connected in parallel with a non-inductive resistor of 20Ω. Find the following: 7 Marks

i) The current in each branch.
ii) The total current supplied.
iii) The power factor of the whole circuit.

Take the applied voltage as 200V, 50Hz.

UNIT-III

5 a) Derive the torque equation of a DC motor. 7 Marks

b) Explain the construction and working principle of transformer. 7 Marks

(OR)

6 a) Explain the construction and working principle of three phase induction motor. 10 Marks

b) List out the applications of DC motors. 4 Marks

UNIT-IV

7	a)	Explain the construction and working principle of dynamometer type wattmeter.	8 Marks
	b)	List out the functions of digital multi meter.	6 Marks

(OR)

8	a)	Briefly explain about rectifier type instrument with neat diagram.	7 Marks
	b)	Briefly explain about electronic voltmeters and ammeters.	7 Marks

UNIT-V

9		What is rectifier? Explain construction and operation of half wave rectifier with help of wave forms and also derive its ripple factor and regulation.	14 Marks

(OR)

10	a)	Briefly explain the necessity of biasing of transistor and also describe the single stage CE amplifier.	8 Marks
	b)	What is an oscillator? Explain about crystal oscillator.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What are the basic circuit components? With circuit symbols and equations explain each of them in detail. 14 Marks

(OR)

2 a) Derive the expression for equivalent capacitance **'C_{eq}'** when three capacitances C_1, C_2, C_3 are connected in series. 8 Marks

b) A wire of length 50cm moves in a direction at right angles to its length at 40m/s in a uniform magnetic field of density 1.5Wb/m^2. Calculate the electromotive force induced in the conductor when the direction of motion is 6 Marks

i) perpendicular to the field.
ii) inclined at 45 degrees to the direction of the field.

UNIT-II

3 a) Define power factor. Also explain the concept of Power Triangle. 8 Marks

b) A square coil of 20cm side and with 500 turns is rotated at a uniform speed of 1000 r.p.m, about an axis at right angles to a uniform magnetic field having a flux density of 0.2Wb/m^2 .Calculate the instantaneous value of the induced electromotive force when the plane of the coil is 6 Marks

i) at Right angles to the field.
ii) at 45 degrees to the field.
iii) in the plane of the field.

(OR)

4 a) Write the expressions for voltages and currents in a three-phase star connected power supply. Also draw the phasor diagram. 8 Marks

b) What are the advantages of poly phase systems over single phase systems? 6 Marks

UNIT-III

5 a) What is back EMF? Explain the significance of back EMF. 7 Marks

b) A 4-pole, lap wound, d.c machine has total number of 800 armature conductors and produces 0.03 Wb flux per pole when field is excited. If the machine is driven by a prime mover at 1000 r.p.m., calculate the generated EMF across the armature. 7 Marks

(OR)

6 A 10kW, 250V, DC shunt motor with an armature resistance of 0.8Ω and a field resistance of 275Ω takes 3.91A, when running at no-load at rated voltage and rated speed. Calculate the machine efficiency as a generator when delivering an output of 10kW at rated voltage and speed; and as a motor drawing an input of 10kW. 14 Marks

UNIT-IV

7	a)	With neat diagram, explain about the construction of a core type transformer. Also explain about windings used in this type of transformer.	8 Marks
	b)	Discuss about the various types of core losses that occur in transformers.	6 Marks

(OR)

8	a)	With neat sketch, explain about the constructional details of wound rotor induction motor.	8 Marks
	b)	Draw the connection diagram of split-phase induction motor and also explain the principle of operation.	6 Marks

UNIT-V

9		What is the function of damping system in a measuring instrument? With necessary diagrams, discuss about various methods of damping available.	14 Marks

(OR)

10	a)	Explain about the construction and operation of repulsion type moving iron instruments.	8 Marks
	b)	Write short notes on digital multi meters.	6 Marks

CODE No.:14BT30236 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the terms: Electrical network, Electrical circuit, Branch, Node, Mesh and Voltage.	6 Marks
	b)	Derive the relationship to express three star connected resistances into equivalent delta.	8 Marks

(OR)

2	a)	Two storage batteries A and B are connected in parallel to supply a load of 0.28Ω .The open circuit e.m.f of A is 11.2V and that of B is 12.1 V. The internal resistances are 0.058Ω and 0.056Ω respectively. Determine current supplied to load.	8 Marks
	b)	Define the terms Resistance, Inductance, and Capacitance and explain their respective voltage equations.	6 Marks

UNIT-II

3	a)	Define the terms amplitude, frequency, RMS value and average value of an alternating quantity with illustration.	6 Marks
	b)	Show that in an AC circuit, current through purely inductive circuit lags the applied voltage by 90^0.	8 Marks

(OR)

4	a)	The current in series circuit R=4Ω and L= 31mH lags the applied voltage by 80^0. Determine the source frequency and impedance of the circuit.	6 Marks
	b)	Derive the expression for the average value of pure sinusoidal voltage.	8 Marks

UNIT-III

5	a)	Derive the mathematical expression for generated e.m.f of a DC generator.	8 Marks
	b)	In a particular DC machine if P=8, Z=400, N=300 r.p.m and Φ=100 mWb. Calculate generated e.m.f for wave winding.	6 Marks

(OR)

6	a)	Explain different types of DC Motor.	8 Marks
	b)	From the first principles, calculate the torque developed by a 4 pole dc motor having 1150 lap connected conductors, the armature current is 19A and the flux per pole is 25mWb.	6 Marks

UNIT-IV

7	a)	Explain the principle and operation of single phase transformer.	8 Marks
	b)	Draw the phasor diagram for the single phase transformer operating on no-load.	6 Marks

(OR)

8	a)	Explain the principle of operation of three phase induction motor.	8 Marks
	b)	Discuss about the principle operation of AC servomotor.	6 Marks

UNIT-V

9	a)	Differentiate between time variant and time invariant control systems.	7 Marks
	b)	Mention some examples for linear and nonlinear systems.	7 Marks
		(OR)	
10	a)	Obtain the mathematical model for any physical system.	7 Marks
	b)	By means of an example, explain the block diagram reduction technique.	7 Marks

CODE No.:14BT30301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the terms: i) Normal stress ii) Tangential stress iii) Ductility iv) Brittleness	6 Marks
	b)	A flat steel plate is of trapezoidal form has a uniform thickness (t). It's width at one end is **'a'** and at the other end is **'b'** and its length is **'L'**. Determine its elongation under an axial pull **'P'**.	8 Marks
		(OR)	
2		Draw the Mohr's stress circle for direct stresses of 65MN/m^2 (tensile) and 35MN/m^2 (compressive). Find the magnitude and direction of the resultant stress on planes makes angles of 20^0 and 65^0 with the plane of the first principal stress. Also find the normal and tangential stresses on these planes. Compare them with the analytical method.	14 Marks

UNIT-II

3	a)	Derive the relations among loading, shear force and bending moment in a beam.	6 Marks
	b)	A cantilever beam of length 3m carries an uniformly distributed load of 4kN/m over a length of 1.8m from its fixed end and a point load 7kN at its free end. Draw the SF and BM diagrams.	8 Marks
		(OR)	
4	a)	How are the distributions of the loading, the shear force and bending moment related to each other? Are there any pre-conditions for the relationship?	4 Marks
	b)	What are the singularity functions commonly used for BM and SF?	3 Marks
	c)	Sketch a simply supported beam with some transverse and inclined loading. Draw the SF and BM diagrams for the same.	7 Marks

UNIT-III

5		A beam of square section has side **'a'**. If the permissible bending stress is **'f'** find the moment of resistance when the beam section is placed such that: i) two sides are horizontal ii) one diagonal is vertical. Also find the ratio of the moments of resistance of the section in the two positions.	14 Marks
		(OR)	
6	a)	Prove that the maximum shear stress for a rectangular section is 1.5 times the average shear stress.	4 Marks
	b)	The shear force acting on a section of beam is 10kN. The section of the beam is T-shaped of dimensions 20cm × 20cm × 5cm. The moment of inertia about the horizontal neutral axis is 11340cm^4. Calculate the shear stress at the neutral axis and at the junction of flange and web.	10 Marks

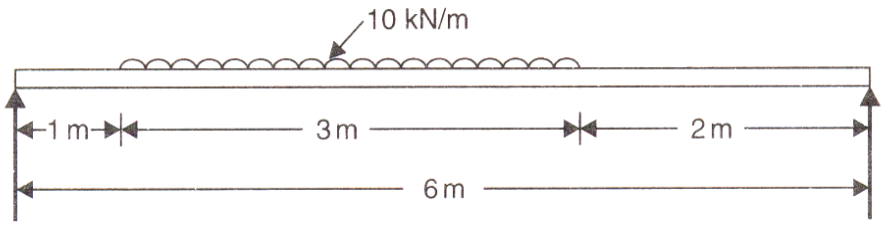
UNIT-IV

7 A beam AB of length 8m is simply supported at its ends and carries two point loads of 50kN and 40kN at a distance of 2m and 5m respectively from left support A. Determine deflection under each load, maximum deflection and the position at which maximum deflection occurs. Take E = 2×10^5 N/mm^2 and I = 8.5×10^6mm^4. **14 Marks**

(OR)

8 a) Derive the slope and deflection through double integration method for cantilever beam concentrated load at free end. **6 Marks**

b) A beam of length of 6m is simply supported at its ends. It carries a uniformly distributed load of 10kN/m as shown in figure. Determine the deflection of the beam at its mid-point, the position and the maximum deflection. Take EI=4.5×10^8N/mm^2. **8 Marks**



UNIT-V

9 a) A pressure vessel, which is made of steel is 2m long, it is closed at both the ends and has on external diameter of 450mm and is 10mm thick. Find the increase of the external diameter and the increase of length which charged to an internal pressure of 1MPa. Take E = 20×10^6 N/cm^2 and $\mu = 0.25$. **7 Marks**

b) Show that when a thin-walled spherical vessel of diameter **d** and thickness **t** is subjected to an internal fluid pressure **p**, the increase in volume is equal to $\{\Pi pd^4 / 8tE^*(1-(1/m)\}$. To what depth would a copper float, 25.4cm diameter and 0.3cm thick, have to be sunk in sea water in order that the diameter is decreased by 0.003 cm? Take E = 20×10^6N/cm^2 and $\mu = 0.27$; weight of sea water = 10.25kN/m^3. **7 Marks**

(OR)

10 a) A steel cylinder of 1000mm inside diameter is to be designed for an internal pressure of 4.8MN/m^2. Take E = 200GN/m^2 and $\mu = 1/3$ and calculate: i) The thickness if the maximum shearing stress is not to exceed 21MN/m^2.
ii) The increase in volume, due to working pressure, if the cylinder is 7m long with closed ends. **8 Marks**

b) A thick spherical shell of 180mm internal diameter is subjected to an internal fluid pressure of 24MN/m^2. If the permissible tensile stress is 120MN/m^2, find the thickness of the shell. **6 Marks**

CODE No.:14BT30302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the point defects in a crystal lattice structure? Explain them with neat diagrams.	7 Marks
	b)	What are the different methods used to determine the grain size in metals? Explain.	7 Marks
		(OR)	
2	a)	What are the different types of bonding in materials? Explain them with suitable examples.	7 Marks
	b)	Why materials exhibit different mechanical properties? Explain.	7 Marks

UNIT-II

3	a)	What is a cooling curve? Explain the cooling curve for an ideal eutectoid system and the corresponding phase diagram.	7 Marks
	b)	What is binary isomorphous system? Explain them with neat diagram.	7 Marks
		(OR)	
4	a)	Explain eutectic and peritectic reactions with the help of phase diagram.	7 Marks
	b)	What is phase diagram? Explain the importance of Gibbs phase rule.	7 Marks

UNIT-III

5	a)	Explain the method of plotting TTT diagram. What information is obtained from this diagram?	7 Marks
	b)	Explain: i) Annealing. ii) Normalizing.	7 Marks
		(OR)	
6	a)	Write short notes on: i) Nitriding. ii) Cyaniding	7 Marks
	b)	Why heat treatment of steels done? Explain with examples.	7 Marks

UNIT-IV

7	a)	What are the common alloying elements other than carbon in alloy cast iron? Explain.	7 Marks
	b)	Describe the composition, properties and uses of tool steels.	7 Marks
		(OR)	
8	a)	How you will classify cast iron? Explain structure and properties of each cast iron.	7 Marks
	b)	Explain briefly about super alloys.	7 Marks

UNIT-V

9	a)	Explain sintering process.	7 Marks
	b)	Describe the applications of power metallurgy.	7 Marks
		(OR)	
10	a)	Explain about types of matrices and reinforcement.	7 Marks
	b)	Explain CFRP composites.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

THERMODYNAMICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define following: i) Thermo dynamic state. ii) Quasistatic process. iii) Cyclic and non cyclic process.	9 Marks
	b)	Show that the work and heat are path functions.	5 Marks
		(OR)	
2	a)	If a gas of volume 6000cm^3 and at pressure of 100kPa is compressed quasistatically according to pV2 = constant until the volume becomes 2000cm^3, determine the final pressure and the work transfer.	8 Marks
	b)	State and explain Zeroth law of thermodynamics.	6 Marks

UNIT-II

3	a)	What is a steady flow process? Write the steady flow energy equation and explain the various terms in it.	7 Marks
	b)	Represent schematically heat engine, heat pump, and refrigerator. Give their performance.	7 Marks
		(OR)	
4	a)	State and prove Carnot's theorem.	6 Marks
	b)	A heat engine is used to drive a heat pump. The heat transfers from the heat engine and from the heat pump are used to heat the water circulating through the radiators of a building. The efficiency of the heat engine is 27% and the COP of the heat pump is 4. Evaluate the ratio of the heat transfer to the circulating water to the heat transfer to the heat engine.	8 Marks

UNIT-III

5	a)	State and prove "Clausius inequality".	7 Marks
	b)	Obtain an expression for entropy change of a closed system when it undergoes a polytropic process.	7 Marks
		(OR)	
6	a)	Two kg of water at 80°C are mixed adiabatically with 3kg of water at 30°C in a constant pressure process of 1 atmosphere. Find the increase in the entropy of the total mass of water due to the mixing process (***cp*** of water = 4.187 kJ/kg K).	7 Marks
	b)	Explain available and unavailable energies. When the system does become dead?	7 Marks

UNIT-IV

7	a)	Explain the process of steam generation (change of phase of water) at constant pressure. Show the various stages on P-V and T-S diagrams.	8 Marks
	b)	Derive the Gibbsian relations.	6 Marks

(OR)

8 A gas mixture consists of 0.5kg of carbon monoxide, 1kg of carbon dioxide and 1.5 kg of nitrogen. Determine — 14 Marks

i) Mass fraction of each component.
ii) Mole fraction of each component.
iii) Average molar mass of the mixture.
iv) Gas constant of the mixture.

UNIT-V

9 a) An engine equipped with a cylinder having a bore of 15cm and a stroke of 45cm operates on an Otto cycle. If the clearance volume is 2000cm^3, compute the air standard efficiency. — 7 Marks

b) Derive an expression for the thermal efficiency of Lenoir cycle and draw P-V and T-S diagrams. — 7 Marks

(OR)

10 Derive an expression for efficiency and mean effective pressure for constant volume air cycle with P-V and T-S diagrams. — 14 Marks

CODE No.:14BT30304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

MANUFACTURING TECHNOLOGY-I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write notes on nucleation and grain growth related to casting.	7 Marks
	b)	What must be the preferred shape of a riser? Explain.	7 Marks
		(OR)	
2	a)	What are composite moulds? Why are they used? Where are they used?	7 Marks
	b)	What are different types of gates in sand moulding process?	7 Marks

UNIT-II

3	a)	What are crucible furnaces? Where are they preferred and why?	7 Marks
	b)	Explain the reasons for using the flux in melting of metals in cupola.	7 Marks
		(OR)	
4	a)	Briefly explain cold-chamber die casting process with a neat sketch.	7 Marks
	b)	Explain the working principle of investment casting.	7 Marks

UNIT-III

5	a)	What are the low temperature joining processes? Explain briefly.	7 Marks
	b)	Why is brazing an appropriate method for joining dissimilar metals with widely different melting points?	7 Marks
		(OR)	
6	a)	Describe Electro slag welding.	7 Marks
	b)	Describe metal inert Gas arc welding process with a neat sketch.	7 Marks

UNIT-IV

7	a)	Give a brief account of classification of welding processes.	7 Marks
	b)	Explain TIG welding process variables and enumerate its advantages.	7 Marks
		(OR)	
8	a)	What is the principle of operation, advantages of carbon arc welding?	7 Marks
	b)	Explain briefly about the manual metal arc welding.	7 Marks

UNIT-V

9	a)	Explain the method of laser beam welding and give their applications.	7 Marks
	b)	Explain the method of electron beam welding and given their applications.	7 Marks
		(OR)	
10	a)	Discuss the process parameters of EBM and their influence on machining quality.	7 Marks
	b)	Explain the process capabilities of EBM and PAM.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Box-1 contains 1000 bulbs of which 10% are defective. Box-2 contains 2000 bulbs of which 5% are defective. Two bulbs are picked from a randomly selected box. 7 Marks
   i) Find the probability that both bulbs are defective.
   ii) Assuming that both are defective, find the probability that they came from Box-1.

b) A pair of dice is rolled 10 times. Find the probability that "seven" will come at least once. 7 Marks

(OR)

2 a) If there are **'r'** successes in **'n'** independent Bernouli trials, what is the probability of a success on the **i^{th}** trial? 5 Marks

b) Show that if the events $A_1, A_2 \ldots A_n$ are independent and $B_i = A_i$, then events $B_1, B_2, \ldots B_n$ are also independent. 5 Marks

c) A call occurs at time **'*t*'** is random point in the interval (0, 10). Find **$p(6 \le t \le 8)$**. 4 Marks

UNIT-II

3 a) Define random variable. Find the characteristic function of the random variable ***x*** having density function $f(x) = e^{-x}, -\infty < x < \infty$. 7 Marks

b) A random variable ***x*** has p.d.f $f(x)$ given by $f(x) = \begin{cases} cxe^{x}; if\ x > 0 \\ 0; if x \le 0 \end{cases}$. Find the value of ***c*** and C.D.F of ***x***. 7 Marks

(OR)

4 a) State four properties of conditional density function. 7 Marks

b) Find the MGF of a Binomial distribution and hence find mean and variance. 7 Marks

UNIT-III

5 a) Explain the concept of "Expected value of a random variable". 6 Marks

b) Explain with necessary equation about "Joint density" and list all the properties of the same. 8 Marks

(OR)

6 a) Explain central limit theorem in detail. 6 Marks

b) Discuss moments about the Origin, Central moments, Variance and Skew. 8 Marks

UNIT-IV

7 a) Discuss about Gaussian random process and Poisson random process. 7 Marks

b) Discuss the auto correlation properties of a random process. 7 Marks

(OR)

8 A random process is defined by $Y(t) = X(t)\cos(\omega_0 t + \theta)$ where $X(t)$ is a wide-sense stationary random process that amplitude modulates a carrier of constant angular frequency ω_0 with a random phase 'θ' independent of $X(t)$ and uniformly distributed on $(-\pi, \pi)$. 14 Marks

i) Find E $[Y(t)]$/

ii) Find the auto correlation function of $Y(t)$.

iii) Is $Y(t)$ wide-sense stationary?

UNIT-V

9 a) Obtain an expression to find noise band width of the system. 7 Marks

b) Show that a narrow-band noise process can be expressed as in-phase and quadric components of it. 7 Marks

(OR)

10 Develop a mathematical model of narrow band noise and explain its related properties. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the V-I characteristics of Diode under forward and reverse bias.	10 Marks
	b)	An a.c. voltage of peak value 20.7V is connected in series with a silicon diode and a load resistance of 490Ω. The forward resistance of the diode is 10Ω. Calculate: i) peak current through the diode ii) peak output voltage.	4 Marks

(OR)

2	a)	Discuss the working of a capacitive filter with i) Half-wave rectifier. ii) Full-wave rectifier.	10 Marks
	b)	A 230V, 60Hz voltage is applied to the primary of 5:1 step down center tapped transformer used in a FWR having a load of 900Ω. If the diode resistance and the secondary coil resistance together has a resistance of 100Ω, determine i) d.c voltage across the load. ii) d.c. current flowing through the load. iii) d.c power delivered to the load. iv) PIV across each diode.	4 Marks

UNIT-II

3	a)	Draw the schematic of an NPN transistor indicating the various current components and explain how each one of them arises.	7 Marks
	b)	Determine the quiescent currents and the collector to emitter voltage for a germanium transistor with $\beta = 50$ in self biasing arrangement. Draw the circuit with a given component value with $V_{CC} = 20V$, $R_C = 2K\Omega$, $R_e = 100\Omega$, $R_1 = 100K\Omega$ and $R_2 = 5K\Omega$. Also find out stability factor.	7 Marks

(OR)

4	a)	Draw the circuit diagram of a collector to base bias circuit of CE amplifier and derive expression for stability factor S.	6 Marks
	b)	Explain why $\alpha < 1$ and $\beta > 1$ for a given transistor.	4 Marks
	c)	Discuss about the purpose of DC and AC load lines.	4 Marks

UNIT-III

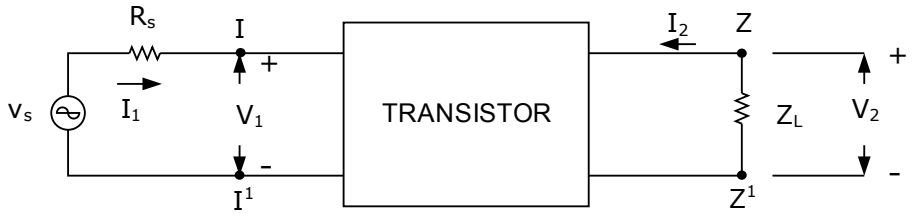
5	a)	Define h-parameters. How do you determine h-parameters from transistor characteristics?	7 Marks
	b)	Draw the circuit diagram of CB amplifier circuit and its h-parameter equivalent circuit. List the characteristics of a CB amplifier.	7 Marks

(OR)

6	a)	Draw the small signal hybrid model of CE amplifier and derive the expression	7 Marks

for its A_I, A_V, R_i, and R_o.

b) Using h-parameters, derive the expressions for $A_I = I_2/I_1$, $A_V = V_2/V_1$, R_i and Y_o of a transistor amplifier in general configuration shown in following figure. 7 Marks



UNIT-IV

7 a) Explain about the small signal model of JFET. How do you determine the parameters r_d, g_m and μ experimentally? 5 Marks

b) Compare and contrast E-MOSFET and D-MOSFET. Mention its applications. 5 Marks

c) Derive the expression for voltage gain of JFET model for self bias configuration. 4 Marks

(OR)

8 a) Prove that the 'g_m' of FET is given by $\frac{2}{|V_P|}\sqrt{I_{DSS}.I_{DS.}}$. 5 Marks

b) Explain the constructional features of a depletion mode MOSFET and explain its operation. 5 Marks

c) What are the advantages of MOSFET over FET? 4 Marks

UNIT-V

9 a) Explain the principle and operation of tunnel diode. 6 Marks

b) Explain the construction, operation, equivalent circuit, V-I characteristics and application of UJT. 8 Marks

(OR)

10 a) With neat diagram, explain about varactor diode. 6 Marks

b) Explain the construction, operation, V-I characteristics and application of SCR. 8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ELECTRONIC DEVICES AND CIRCUITS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the volt-ampere characteristics of PN diode.	7 Marks
	b)	Draw the circuit diagram of Half Wave Rectifier. Explain its working. What is the frequency of ripple in its output?	7 Marks
		(OR)	
2	a)	A Half Wave Rectifier circuit supplies 100mA dc to a 250Ω load. Find the dc output voltage, PIV rating of a diode and the R.M.S. voltage for the transformer supplying the rectifier.	8 Marks
	b)	What are the various applications of p-n junction diode? Explain them.	6 Marks

UNIT-II

3	a)	Explain how transistor is used an amplifier.	7 Marks
	b)	Derive the relationship between **α** and **β**.	7 Marks
		(OR)	
4	a)	Derive an expression for the stability factor of a collector to base bias circuit.	7 Marks
	b)	Explain about measurement of h-parameters from transistor characteristics in CE configuration.	7 Marks

UNIT-III

5	a)	Explain the drain and transfer characteristics of a JFET.	7 Marks
	b)	Explain about comparison between BJT and FET.	7 Marks
		(OR)	
6	a)	Draw the circuit diagram of common drain amplifier and formulate the equation gain of the amplifier.	7 Marks
	b)	Explain how an FET is used as a voltage variable resistor.	7 Marks

UNIT-IV

7	a)	Draw the circuit diagram of a current series feedback amplifier and derive expressions for voltage gain with and without feedback.	6 Marks
	b)	Derive an expression for frequency of oscillation of colpitt's oscillator.	8 Marks
		(OR)	
8	a)	Explain in detail about the different feedback topologies.	6 Marks
	b)	Derive an expression for frequency of oscillation for RC phase shift oscillator.	8 Marks

UNIT-V

9	a)	Explain the characteristics of UJT with respect to a plot between V_E and I_E keeping V_{BB} at a constant value.	7 Marks
	b)	Explain the V-I characteristics of the tunnel diode with a neat sketch.	7 Marks
		(OR)	
10	a)	Explain the construction and working of tunnel diode.	8 Marks
	b)	What are the applications of varactor diode?	6 Marks

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CODE No.:14BT30501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DATA STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Write an algorithm to delete a node in a doubly linked list.	14 Marks
	(OR)	
2	What are the applications of lists and write an algorithm to search for an element in the list?	14 Marks

UNIT-II

3	What is a stack? Explain various operations on a stack.	14 Marks
	(OR)	
4	Write an algorithm for converting infix expression to postfix form.	14 Marks

UNIT-III

5	Consider a list of elements −15, −6, 0, 7, 9, 23, 54, 82, 101, 112, 125, 131, 142, 151. Trace a Binary Search algorithm for searching 151 and −14.	14 Marks
	(OR)	
6	What is AVL tree? Explain about different rotation patterns in balancing with examples.	14 Marks

UNIT-IV

7	What is a graph? How is it represented? Write algorithm for graph creation and inserting a vertex.	14 Marks
	(OR)	
8	Write algorithms for Depth-first traversal and Breadth-first traversal.	14 Marks

UNIT-V

9	Sort the following list of numbers using quick sort 2, 3, 1, 4, 8, 7, 6, 9.	14 Marks
	(OR)	
10	Explain common collision resolution strategies with examples.	14 Marks

CODE No.:14BT30502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DIGITAL LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Convert the given Binary number **11011101** in i) BCD ii) HEXADECIMAL iii) DECIMAL	7 Marks
	b)	What is a 2's complement? Explain it with an example.	7 Marks
		(OR)	
2	a)	What is canonical form? Explain different canonical forms with an example.	7 Marks
	b)	Draw the logic diagram for the Boolean expression $F = A\overline{B} + \overline{C}D + ABC$.	7 Marks

UNIT-II

3	a)	What is Karnaugh map? Explain its concept with example.	4 Marks
	b)	Simplify the Boolean Function $F(A,B,C,D) = \Pi\,(0,2,5,6,7,9,11,14)$ using Karnaugh map.	10 Marks
		(OR)	
4	a)	Explain don't-care condition.	4 Marks
	b)	Implement AND, OR, NOT gates using Universal gates	6 Marks
	c)	Describe EX-OR function with an example.	4 Marks

UNIT-III

5	a)	Design a BCD to decimal decoder.	7 Marks
	b)	What is a multiplexer? Implement the following function with a multiplexer. F(A,B,C,D) = ∑(0,1,3,4,8,9,15)	7 Marks
		(OR)	
6	a)	What is a combinational circuit? Explain it.	7 Marks
	b)	Implement full adder combinational circuit.	7 Marks

UNIT-IV

7	a)	Define the following terms related to flip-flops. i) Set-up time ii) Hold time iii) Preset iv) Clear.	8 Marks
	b)	Distinguish between combinational logic and sequential logic.	6 Marks
		(OR)	
8		Explain the design of sequential circuit with an example. Show the state reduction and state assignment.	14 Marks

UNIT-V

9	a)	With an example, explain the working of Programmable Array Logic circuit.	7 Marks
	b)	Compare and contrast S-RAM ***vs.*** D-RAM.	7 Marks
		(OR)	
10		Discuss in detail about various programmable logic devices.	14 Marks

CODE No.:14BT31001 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

PRINCIPLES OF ELECTRICAL MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different types of errors that occur in measuring instruments.	7 Marks
	b)	Discuss in detail about inductance and capacitance standards.	7 Marks
		(OR)	
2	a)	Analyze M.K.S system of units and C.G.S system of units.	7 Marks
	b)	Describe how R.M.K.S system of units different from M.K.S system of units.	7 Marks

UNIT-II

3	a)	Explain range extending methods of DC ammeters and voltmeters with suitable diagrams.	7 Marks
	b)	Describe the operating forces needed for proper operation of an analog indicating instrument.	7 Marks
		(OR)	
4	a)	Describe multi-range ammeters and voltmeters in detail.	10 Marks
	b)	Briefly discuss about effect of temperature change in voltmeters.	4 Marks

UNIT-III

5		Describe the working of a duo-range potentiometer with its circuit diagram. Mention its advantages and disadvantages.	14 Marks
		(OR)	
6		Explain with the suitable diagrams, how a.c. potentiometers can be used for calibration of voltmeters and ammeters.	14 Marks

UNIT-IV

7		Explain how power can be measured in a three phase circuit with the help of two wattmeters. Illustrate your answer with the help of phasor diagram for a balanced star connected load.	14 Marks
		(OR)	
8		Describe the construction and working of a two element induction type energy meter.	14 Marks

UNIT-V

9		With a neat diagram, explain the Wheatstone bridge construction and derive its sensitivity with equal arms.	14 Marks
		(OR)	
10		Describe the working of a low voltage Schering bridge. Derive the capacitance and dissipation factor. Draw its phasor diagram under balanced conditions.	14 Marks

CODE No.:14BT31002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the sinusoidal transfer function of a first order system and obtain its frequency response. Also discuss how the time constant affects the frequency response.	7 Marks
	b)	Define the terms: i) Dead Zone ii) Span iii) Hysteresis iv) Dynamic Error v) Fidelity vi) Measuring Lag	7 Marks
		(OR)	
2	a)	Explain in detail about the transfer characteristics of a transducer, which should be considered while selecting it.	7 Marks
	b)	Define rise time, peak time and overshoot of a second order system and derive expressions for them.	7 Marks

UNIT-II

3	a)	Explain the construction of a resistive hygrometer and list its applications.	7 Marks
	b)	Explain the working principle of hot wire resistive transducer with a neat diagram.	7 Marks
		(OR)	
4	a)	What is gauge factor? Derive the expression for gauge factor in a strain gauge.	7 Marks
	b)	Explain the construction and working of a metal strain gauge.	7 Marks

UNIT-III

5	a)	Mention the various physical effects employed for measuring the thickness of metal foil and how does this affect the performance of transducer.	7 Marks
	b)	Explain the working of a eddy current sensor.	7 Marks
		(OR)	
6	a)	Explain how LVDT can be used as a device to measure force.	7 Marks
	b)	Explain the working of variable reluctance sensor.	7 Marks

UNIT-IV

7	a)	Write short notes on thermoelectric effects.	7 Marks
	b)	Explain the working of electrochemical sensors.	7 Marks
		(OR)	
8	a)	Explain photovoltaic effect.	7 Marks
	b)	Explain how the piezoelectric transducer can be used to measure force and pressure.	7 Marks

UNIT-V

9	a)	List the applications of semiconductor sensors.	7 Marks
	b)	Explain with neat diagrams the working principle of an absolute encoder.	7 Marks
		(OR)	
10	a)	What is the principle of a fiber optic sensor and write short notes on the technology used.	7 Marks
	b)	Bring out the differences between fiber optic sensor and ultrasonic sensor.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DISCRETE MATHEMATICAL STRUCTURES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Obtain principal disjunctive normal form of $(\neg P \rightarrow R) \wedge (Q \Leftrightarrow P)$.	7 Marks
	b)	Show that the premises $P \rightarrow Q, P \rightarrow R, Q \rightarrow \neg R, P$ are inconsistent.	7 Marks
		(OR)	
2	a)	State the Antecedent rules of Automatic theorem proving.	7 Marks
	b)	Verify the validity of the following argument. Tigers are dangerous animals. There are Tigers. Therefore there are dangerous animals.	7 Marks

UNIT-II

3	a)	Let **P = { 2, 3, 6, 12, 24, 36 }**and $\leq$ be the relation on P such that $x \leq y$ if and only if x divides y. Draw the Hasse diagram for the poset **(P, $\leq$).**	7 Marks
	b)	Define Lattice and give an example.	7 Marks
		(OR)	
4	a)	Show that $f(x, y) = xy$ for $x, y \in N$ is primitive recursive.	7 Marks
	b)	Let $(L, \leq)$ be a lattice and $a, b, c \in L$. Prove that $a \oplus (b * c) \leq (a \oplus b) * (a \oplus c)$.	7 Marks

UNIT-III

5	a)	Show that the set Z of all integers is a group under * such that $a * b = a + b - 1$.	7 Marks
	b)	Prove that the inverse of an element in a group is unique.	7 Marks
		(OR)	
6	a)	Define Isomorphism of Monoids with an example.	7 Marks
	b)	Prove that the set of all elements of a group $(G, *)$ such that $a * x = x * a$ for every $x \in G$, is a subgroup of G.	7 Marks

UNIT-IV

7	a)	How many arrangements are there of the set **{8a, 6b, 7c}** in which 'a' is an at least one side of another 'a'?	7 Marks
	b)	Solve the recurrence relation $a_n - 7a_{n-1} + 10a_{n-2} = 0$ where $a_0 = 1$ and $a_1 = 41$.	7 Marks
		(OR)	
8	a)	Solve the recurrence relation $a_{n-6}\, a_{n-1} + 8\, a_{n-2} = 3^n$ where $a_0 = 3$ and $a_1 = 7$.	7 Marks
	b)	Prove by pigeon hole principle that in a group of 61 people, at least 6 people were born in the same month.	7 Marks

UNIT-V

9	a)	Show that the complete graph k_s is non planar.	7 Marks
	b)	Explain BFS Algorithm with example.	7 Marks
		(OR)	
10	a)	What is minimum spanning tree? Explain minimal spanning tree algorithms with examples.	7 Marks
	b)	Find the chromatic number of the $k_{3,3}$ and wheel graph.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

PROBABILITY AND STATISTICS

[Civil Engineering,Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following and illustrate with example. 8 Marks
i) Random experiment ii) Probability
iii) Mutually exclusive events iv) Conditional event

b) If the probability density of a random variable is given by 6 Marks

$$f(x) = \begin{cases} k(1-x^2), & 0 < x < 1, \\ 0, & \text{otherwise.} \end{cases}$$

Then calculate : (i) k (ii) $P(-0.1 \le x \le 0.2)$ (iii) $P(x > 0.5)$

(OR)

2 a) An anti-aircraft gun takes a maximum of 4 shots at an enemy plane moving away from it. The probability of hitting the plane at the first, second, third and fourth shots are 0.4, 0.3, 0.2, 0.1 respectively. Determine the probability that the gun hits the plane? 6 Marks

b) The probability density function of a variate X is as follows : 8 Marks

X = x	0	1	2	3	4	5	6
P(x)	K	3k	5k	7k	9k	11k	13k

Compute (i) $P(X < 4)$ (ii) $P(3 < X \le 6)$ (iii) $P(X \ge 5)$.

UNIT-II

3 a) Fit a binomial distribution for the following data and calculate the expected frequencies. 7 Marks

x	0	1	2	3	4	5
f(x)	38	144	342	287	164	25

b) The marks obtained in statistics in a certain examination found to be normally distributed. If 15% of the students got ≥ 60 marks, 40% < 30 marks, find the mean and standard deviation. 7 Marks

(OR)

4 a) Fit a Poisson distribution for the following data and calculate the expected frequency: 7 Marks

x	0	1	2	3	4
f(x)	109	65	22	3	1

b) Find the mean and standard deviation of a normal distribution in which 31% of items are under 45 and 8% are over 64. 7 Marks

UNIT-III

5 a) The number of defective items in 20 samples, containing 2000 items are 425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 280, 326, 389. Calculate the values for central line and the control limits for P-Chart. 7 Marks

b) Psychological tests of intelligence and of engineering ability were applied to 10 students. Here is a record of ungrouped data showing Intelligence ratio (I. R) and 7 Marks

Engineering ratio (E.R) calculate the co-efficient of correlation.

Student	A	B	C	D	E	F	G	H	I	J
I.R	105	104	102	101	100	99	98	96	93	92
E.R	101	103	100	98	95	96	104	92	97	94

(OR)

6 a) The number of defective washers in a workshop of 20 samples containing 500 washers are 25, 30, 32, 28, 35, 27, 28, 30, 33, 35, 38, 40, 21, 26, 24, 40, 29, 28, 26, 38. Calculate the values for central line and the control units for P-Chart. 7 Marks

b) A random sample of 5 college students is selected and their grades in Mathematics and Statistics are given in the following table. Calculate the co-efficient of correlation. 7 Marks

	1	2	3	4	5
Mathematics	85	60	73	40	90
Statistics	93	75	65	50	80

UNIT-IV

7 a) The average marks scored by 32 boys are 72 with a Standard Deviation of 8. While that for 36 girls is 70 with a Standard Deviation of 6. Does this indicate that the boys perform better than girls at level of significance 0.05? 7 Marks

b) In a sample of 500 from a village in Rajasthan, 280 are found to be wheat eaters and the rest rice eaters. Can we assume that both articles are equally popular? 7 Marks

(OR)

8 a) A manufacturer claimed that atleast 95% of the equipment which he supplied to a factory confirmed to specifications. An examination of a sample of 200 pieces of equipment revealed that 18 were faulty. Test this claim at 5% level of significance? 7 Marks

b) A researcher wants to know the intelligence of students in a school. He selected two groups of students. In the first group there 150 students having mean IQ of 75 with a S.D. of 15, in the second group there are 250 students having mean IQ of 70 with S.D. of 20. Test whether the mean IQ of two groups differ significantly at 1% level of significance. 7 Marks

UNIT-V

9 a) 200 digits were chosen at random from a set of tables. The frequencies of the digits are shown below: 7 Marks

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	18	19	23	21	16	25	22	20	21	15

Use the Chi square test to assess the correctness of the hypothesis that the digits were distributed in equal number in the tables from which these were chosen.

b) Scores obtained in a shooting competition by 10 soldiers before and after training as below: 7 Marks

Before	67	24	57	55	63	54	56	68	33	43
After	70	38	58	58	56	67	68	75	42	38

Test whether the training is useful at 0.05 level of significance.

(OR)

10 a) A dice is thrown 60 times with the following results. Test the goodness of fit at 5% level. 7 Marks

Face	1	2	3	4	5	6
Frequency	8	7	12	8	14	11

b) The nicotine contents in milligrams in two samples of tobacco were to found as follows: Can it be said that the two samples have come from the same normal population. 7 Marks

Sample A	24	27	26	21	25	-
Sample B	27	30	28	31	22	36

CODE No.:14BT3HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

ENVIRONMENTAL SCIENCES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define scope and multidisciplinary nature of environment.	7 Marks
	b)	Explain briefly about different segments of environment.	7 Marks
		(OR)	
2	a)	Give a detailed account on natural resource management.	7 Marks
	b)	Explain the need of renewable energy resources.	7 Marks

UNIT-II

3	a)	Describe the process of ecological succession.	7 Marks
	b)	Explain briefly about the energy flow in the ecosystem.	7 Marks
		(OR)	
4	a)	Explain the role of biodiversity in addressing new millennium challenges.	7 Marks
	b)	Write a brief note endemic, endangered and extinct species.	7 Marks

UNIT-III

5	a)	Discuss the effects and control measures of soil pollution.	6 Marks
	b)	Explain the different solid waste management methods.	8 Marks
		(OR)	
6	a)	What are the adverse effects of water pollution on living beings?	8 Marks
	b)	Explain about any two pollution case studies.	6 Marks

UNIT-IV

7	a)	What is “sustainable development”? Explain.	7 Marks
	b)	Write note on wasteland reclamation process.	7 Marks
		(OR)	
8	a)	What are the causes for acid rain? Explain with examples.	7 Marks
	b)	Discuss the salient features of Wildlife (Protection) Act, 1972.	7 Marks

UNIT-V

9	a)	Discuss various family welfare programmes and their importance.	7 Marks
	b)	Explain the role of IT in environment and human health.	7 Marks
		(OR)	
10	a)	Write in detail about the EIA procedure for any local environmental issue in your area.	7 Marks
	b)	What are the different effects of population explosion on environment?	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Discuss the role of Informal Communication in a professional environment.	14 Marks
	(OR)	
2	Suggest any rational strategies for improving organizational communication.	14 Marks

UNIT-II

3	Why do you think non-verbal communication is as important as verbal communication? Can't there be communication only through spoken means?	14 Marks
	(OR)	
4	What are the different communication aspects in cross cultural communication?	14 Marks

UNIT-III

5	What are the five stages of business messages?	14 Marks
	(OR)	
6	What are the chief characteristics of a business report? How is it different from a technical report?	14 Marks

UNIT-IV

7	Present the essential features of Business presentations with special reference to Audience orientation.	14 Marks
	(OR)	
8	Enumerate the critical success factors in a Group Discussion.	14 Marks

UNIT-V

9	A Résumé is a self advertisement- substantiate with proper illustrations.	14 Marks
	(OR)	
10	Present different types of interviews, along with essential features and processes.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

PROFESSIONAL ETHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the objectives of ethics?	6 Marks
	b)	Explain the vital role of consensus and controversy while considering moral autonomy in engineering ethics.	8 Marks
		(OR)	
2	a)	How do moral problems arise in engineering?	6 Marks
	b)	Briefly explain the three main levels of moral developments, developed by Laurence Kohlberg.	8 Marks

UNIT-II

3	a)	How can professionalism be achieved?	6 Marks
	b)	How are the theories on "virtues for engineers professionalism" described to find the mean between the "Excess and deficiency" for engineers?	8 Marks
		(OR)	
4	a)	What is meant by professional responsibilities?	6 Marks
	b)	How are the obligations of safety of engineers justified by attractiveness to ethical theories? Explain with a suitable example.	8 Marks

UNIT-III

5	a)	What is meant by informal consent when bringing an experimental product to the market?	8 Marks
	b)	Discuss on 'Engineers as Responsible Experimenters'.	6 Marks
		(OR)	
6	a)	Why engineering projects are viewed as experiments?	8 Marks
	b)	Enumerate the Code of Ethics of engineers.	6 Marks

UNIT-IV

7	a)	Explain the expected confidentiality to be maintained by a computer engineer while he shifts his job on career advancement.	6 Marks
	b)	Write short notes on i) Collective bargaining ii) Risk-Benefit analysis.	8 Marks
		(OR)	
8	a)	What is Whistle blowing? Discuss about main features of it.	6 Marks
	b)	Briefly discuss about types of Whistle blowing moral guidelines and procedures of Whistle blowing.	8 Marks

UNIT-V

9	a)	Describe the Ten international rights suggested by Donaldson.	6 Marks
	b)	Who are computer crooks? Explain what they do in real world with suitable examples.	8 Marks
		(OR)	
10	a)	Explain FCRA.	6 Marks
	b)	Deliberate on the most important conflicts confronted by engineering project managers with suitable examples.	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

ELECTRICAL TECHNOLOGY

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Sketch and explain the load characteristics of series and shunt type of DC generators.	14 Marks
		(OR)	
2	a)	Describe how Swinburne's test is conducted on DC machines. State its advantages and disadvantages.	10 Marks
	b)	List the applications of DC motors.	4 Marks

UNIT-II

3		Obtain the equivalent circuit of a single phase transformer.	14 Marks
		(OR)	
4	a)	What are the losses occurring in transformer? Derive the expression for efficiency and also condition for maximum efficiency.	8 Marks
	b)	A 230/115 V single phase transformer takes a no load current of 2A at a power factor of 0.2 lagging with low voltage winding kept open. If the low voltage winding is now loaded to take a current of 15A at 0.8 pf lagging. Find the current taken by high voltage winding.	6 Marks

UNIT-III

5	a)	Derive the expression for three-phase real power, reactive power and apparent power.	7 Marks
	b)	A 415 V, three phase star connected alternator supplies a delta connected induction motor. The motor has a full load efficiency of 87% and power factor 0.8. Calculate the current in each phase of the motor and the alternator if the output of the motor is 14.92 kW.	7 Marks
		(OR)	
6	a)	What do you mean by Phase sequence in a three phase voltage source?	7 Marks
	b)	Three impedances $Z_1=10\angle 0^o$; $Z_2=10\angle 26.8^o$; and $Z_3=10\angle -26.8^o\ \Omega$ are connected to a three-phase, four wire star connection and the supply is 440V. Find the line current, neutral currents, and total power.	7 Marks

UNIT-IV

7	a)	Discuss the types of three phase induction motors in detail.	10 Marks
	b)	A three phase, 4 pole, 50 Hz induction motor is running at 1455 rpm. Find slip speed and slip.	4 Marks
		(OR)	
8	a)	Explain the classification of alternators.	7 Marks
	b)	A 4 pole, 50Hz star connected alternator has a flux per pole of 0.12 Wb. It has a flux per pole of 0.12 Wb. It has 4 slots per pole per phase, conductors per slot being 4. If the winding coil span is 150°, find emf.	7 Marks

UNIT-V

9		Explain principle and operation of split phase motor.	14 Marks
		(OR)	
10		Explain the principle and operation of shaded pole motor. Mention its applications.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A plane element is subjected to stresses as shown in Fig.1. Determine the Principal stresses, maximum shear stress and their planes, using Mohr's circle. 14 Marks

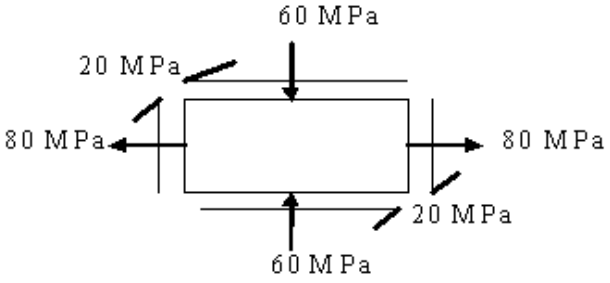


Fig.1

(OR)

2 A plane element is subjected to stresses as shown in Fig.2. Determine, analytically, the Principal stresses, maximum shear stress and their planes. 14 Marks

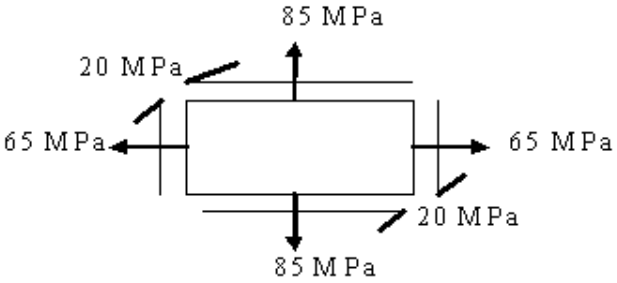


Fig.2

UNIT-II

3 Find out the equations for slope and deflection of the elastic curve of a simply supported beam carrying a u.d.l of intensity 'w' per unit run. What is the maximum value of slope and deflection? 14 Marks

(OR)

4 A cantilever of span 3 m is carrying a u.d.l of 10 kN/m over the whole span. If the maximum bending stress is limited to 7 N/mm^2 and maximum deflection to 15 mm, find the breadth and depth of the cantilever. Take E = 2×10^4 N/mm^2. 14 Marks

UNIT-III

5 A hollow cast-iron column whose outside diameter is 280 mm and has a thickness of 20 mm is 5.3 m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a factor of safety of 2.5. Find the ratio of Euler's to Rankine's loads. Take $E_{\text{cast iron}}$ = 107 GPa and Rankine's constant = 1/1670 for both ends pinned case and the crushing strength of the material as 560 MPa. 14 Marks

(OR)

6 A 4.6 m long circular column having pinned ends has 240 mm external diameter and 20 mm thickness. The column carries a load of 180 kN at an eccentricity of 22 mm from its longitudinal axis. 14 Marks

Determine i) stresses in the extreme fibres of the cross-section
ii) maximum eccentricity so as to have no tension anywhere in its cross section.

The modulus of elasticity of the material is 80 GPa.

UNIT-IV

7 A fixed beam AB of span 10 m carries a concentrated load 200 kN and a clockwise moment of 150 kNm at distances of 3 m and 6 m respectively from the left end support. If the left end support sinks by 12 mm, determine the fixed end moments. Draw shear force and bending moment diagrams. Take E= 5800 kNm². 14 Marks

(OR)

8 Analyze the continuous beam shown in Fig.3 using theorem of three moments, and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve. 14 Marks

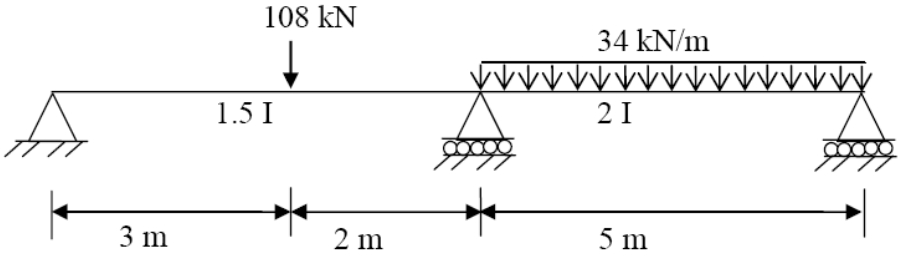


Fig.3

UNIT-V

9 A solid circular shaft is subjected to a bending moment of 70 kNm and a torque of 25 kNm. Design the diameter of the shaft according to: 14 Marks

i) The Maximum Principal Stress Theory
ii) The Maximum Shear Stress Theory and
iii) The Maximum Distortion Energy Theory.

Take Poisson's ratio = 0.28, the stress at elastic limit of the material is 265 MPa and the factor of safety = 3.0.

(OR)

10 A beam of rectangular section 180 mm wide and 300 mm deep is used over a simply supported span of 6.4 m to support two concentrated loads of 6 kN each at 2 m from either support. The plane of loads makes an angle of 33° with the vertical plane of symmetry. Find the direction of the neutral axis and the maximum bending stresses in the beam. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Enumerate the differences between English bond and Flemish bond with neat sketches.	14 Marks
	(OR)	
2	Explain about the different types of masonry.	14 Marks

UNIT-II

3	Discuss about shoring methods in detail.	14 Marks
	(OR)	
4	Write short notes on white washing and distempering.	14 Marks

UNIT-III

5	Suggest the suitable safety measures in construction as per codal requirements.	14 Marks
	(OR)	
6	Write short notes on classification of construction equipment.	14 Marks

UNIT-IV

7	Explain the necessity of planning. Describe various steps for planning a project.	14 Marks
	(OR)	
8	A project consists of eight activities M, N, O, P, Q, R, S and T. Draw the network and number of events if i) Activities M, N and Q can start concurrently. ii) Activities O and P are concurrent and depend on the completion of both M and N. iii) Activities R and S are concurrent and depend on the completion of O. iv) Activity T depend on the completion of P, Q and R. v) The project is complete when S and T are done.	14 Marks

UNIT-V

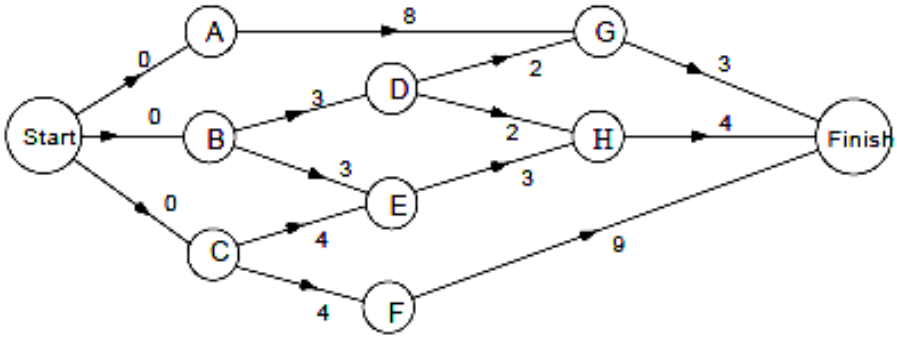
9 Consider the following activity network, in which the vertices represent the activities and the numbers next to the arcs represent time in days. 14 Marks

Assuming that an unlimited number of workers is available, write down:

i) The minimum completion time of project

ii) The corresponding critical path

iii) Find the float time activity of B



(OR)

10 A project consists of seven activities and the time estimates of the activities are furnished as under: 14 Marks

Activity	Optimistic days	Most likely days	Pessimistic days
1-2	4	10	16
1-3	3	6	9
1-4	4	7	16
2-5	5	5	5
3-5	8	11	32
4-6	4	10	16
5-6	2	5	8

i) Draw the network diagram.

ii) Identify the critical path and its duration.

iii) What is the probability that project will be completed in 5 days earlier than the critical path duration?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

SURVEYING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the following terms: 9 Marks
(i) Check line (ii) Tie station (iii) Well conditioned triangle

b) A road 6m wide in a cutting is on a curve of 120m radius and is to be widened to 9m width the whole widening taking place on the inside of the curve. The side slope of 1.5 horizontal to 1 vertical is to be retained. The depths of formation are 3.0, 4.6, and 5.0 metres at chainages 200, 230 and 260 metres respectively. The original surface of the ground is level. Calculate the volume of earth work to be removed in this length of 60 metres. 5 Marks

(OR)

2 a) What are the instruments required in making a chain survey? How is a chain survey executed in the field? 7 Marks

b) A series of perpendicular offsets are taken from a straight line to a curved boundary line. The offsets are 5 m apart and were taken in the following order: **6.8**, **7.2**, **4.6**, **5.7**, **7.1**, **6.3** and **6.8**. Find the area enclosed between the straight line, curved boundary line and the two offsets. 7 Marks

UNIT-II

3 a) Define the following terms: 6 Marks
(i) Chain angle (ii) True bearing (iii) Declination

b) The following bearings were observed in running a compass traverse. 8 Marks

Line	Fore bearing	Back bearing
AB	45°15'	225°15'
BC	123°15'	303°15'
CD	181°0'	1°0'
DA	289°30'	109°30'

Calculate the interior angles of the traverse.

(OR)

4 a) Describe the characteristics of contours and explain the uses of contour maps. 7 Marks

b) An observer standing on the deck of a ship just sees a light house. The top of the light house is 42m above the sea level. Determine the distance of the observer from the light house. 7 Marks

UNIT-III

5 a) What are the permanent adjustments in a theodolite? Discuss briefly their effects on the angle measurements. 7 Marks

b) Explain repetition and reiteration methods of measuring horizontal angles with a theodolite. 7 Marks

(OR)

6 a) What do you mean by balancing of traverse? Discuss briefly the common methods of balancing a traverse. 7 Marks

b) The following data pertains to a theodolite traverse: 7 Marks

Line	Length (m)	Latitude (m)	Departure (m)
AB	129.64	+129.56	+4.52
BC	300.08	+17.27	+299.58
CD	147.61	-147.53	+4.94
DA	307.20	0	-307.20

Balance the traverse by Transit rule and compute the independent coordinates of the stations, given the coordinates of the station A as (N400 m, E200 m).

UNIT-IV

7 a) What are the various methods employed in tacheometric survey? Explain the method most commonly used. 7 Marks

b) To determine the gradient between two points A and B, a tacheometer was set up at another station C and the following observations were taken, keeping the staff vertical. 7 Marks

Staff at	Vertical angle	Stadia readings
A	+5010’	1.30, 1.61, 1.92
B	-3020’	2.15, 2.46, 2.77

The horizontal angle ACB is 70°15’. K = 100; C = 0
Determine the gradient between A and B.

(OR)

8 a) Define the following terms related to curve setting: 7 Marks
i) Point of curve and point of tangency ii) External distance
iii) Degree of curve iv) Deflection angle

b) A circular curve has to pass through a point P at 15 m from the point of intersection and equidistant from the tangents. If the chainage of point of intersection is 3540.00 m and the intersection angle is 28°. Calculate the radius of curve and the chainage of the tangent points. 7 Marks

UNIT-V

9 a) Define Electronic Distance Measurement (EDM) used for surveying and explain its importance in advanced surveying. 7 Marks

b) What are the errors in electronic distance measurements? How are errors corrected in electronic distance measurements? 7 Marks

(OR)

10 a) What are the advantages and disadvantages of a total station? 7 Marks

b) Explain the data collection procedures while using data collectors. 7 Marks

CODE No.:14BT40104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

FLUID MECHANICS - II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A circular disc 3m in diameter is held normal to a 15m/s wind having specific weight of 11.8N/m^3. If the drag coefficient is 0.4 find the power required to hold it.	6 Marks
	b)	Define drag and lift forces.	4 Marks
	c)	What is Magnus effect?	4 Marks

(OR)

2		What is meant by separation of boundary layer and how do you control the same?	14 Marks

UNIT-II

3	a)	What is meant by most economical section? Derive the condition for a trapezoidal channel section to be most economical.	7 Marks
	b)	What are critical, sub critical and super critical flows?	7 Marks

(OR)

4		Define specific energy and explain specific energy curve.	14 Marks

UNIT-III

5		A jet of water having a velocity of 35m/s impinges on a series of vanes moving with a velocity of 20m/s. The jet makes an angle of 30^0 to the direction of motion of vanes when entering and leaves at an angle of 120^0. Draw the triangles of velocities at inlet and outlet and also find: i) The angles of vanes tips so that water enters and leaves without shock. ii) The work done per unit weight of water entering the vanes. iii) The efficiency.	14 Marks

(OR)

6	a)	Derive the equation for force exerted by a jet on stationary inclined flat plate.	7 Marks
	b)	A jet of water 75mm in diameter having velocity of 22m/s strikes a series of the flat plates arranged around the periphery of a wheel such that each plate appears successively before the jet. If the plates are moving at a velocity of 5m/s, compute the force exerted by the jet on the plate, the work done per second on the plate and efficiency of the jet.	7 Marks

UNIT-IV

7		Explain the classification of hydraulic turbines and a Pelton wheel is to be designed for the following specifications: Shaft power = 11,772 kW, Head=380 metres, Speed = 750 r.p.m., Overall efficiency = 86%, Jet diameter is not to exceed one-sixth of the wheel diameter. Determine: i) The wheel diameter ii) The number of jets required iii) The diameter of the jet.	14 Marks

Take co-efficient of velocity as 0.985 and speed ratio as 0.45.

(OR)

8 Derive the expression for specific speed of a turbine and explain the performance characteristic curves of a hydraulic turbine. 14 Marks

UNIT-V

9 a) What are all the losses that occur during the operation of a centrifugal pump? 7 Marks

b) Expand and explain the term NPSH. 7 Marks

(OR)

10 a) What is a Gear pump? 7 Marks

b) Determine the number of the impellers required for a multistage pump to lift 4200litres/minute against a total head of 185m, at a speed of 750 r.p.m. The specific speed is not to exceed 720 r.p.m. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

SIGNALS AND NETWORKS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) The continuous time LTI system is described by the equation; 8 Marks

$$\frac{d^2y(t)}{dt^2} + 3\frac{dy(t)}{dt} + 2\ y(t) = \frac{dx(t)}{dt} + x(t).$$

Find i) The impulse response of the system
ii) The output response of the system signal for the input signal $x(t)=e^{-3t}u(t)$.

b) Find the output response of the system described by differential equation 6 Marks

$$\frac{d^2y(t)}{dt^2} + 5\frac{dy(t)}{dt} + 6\ y(t) = x(t)$$

When the input signal $x(t)$ =cost. The initial conditions are $\frac{dy(0+)}{dt} = 1$; $y(0+)=1$

(OR)

2 a) State Dirichlet's conditions. Also write its importance. 4 Marks
b) Explain casual and anti-casual signals with suitable examples. 5 Marks
c) Derive the expression for convolution integral. 5 Marks

UNIT-II

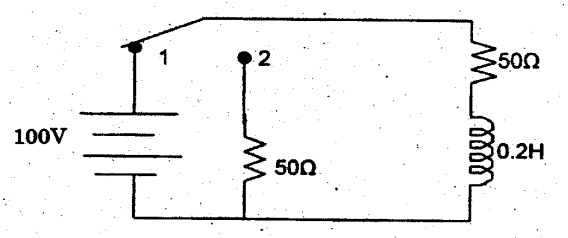
3 a) Derive the design equations for constant K high pass filter. 7 Marks
b) Derive Z_{OT} and $Z_{O\pi}$ for low pass filter section 7 Marks

(OR)

4 a) Classify the pass band and stop band filters in detail. 8 Marks
b) Design a constant K low pass filter with a cut-off frequency of 1 kHz, $R_O = 60\ \Omega$. 6 Marks

UNIT-III

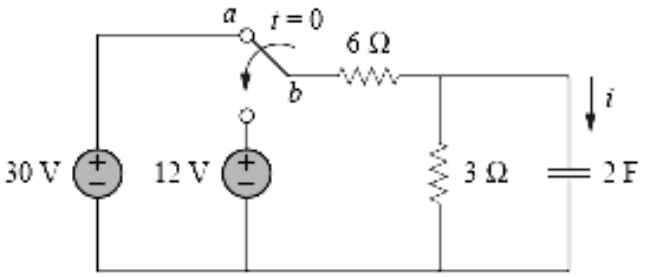
5 a) In the circuit of Figure shown below the switch has been in position 1 for sufficient time to establish steady-state conditions. The switch is then moved to position 2. Find the current transient and the energy dissipated in the resistors during the transient. 7 Marks



b) A series RC circuit with R = 100Ω and C = 25μF has sinusoidal voltage 200 sin*500*t applied at t = 0. Find the expression for current. The initial charge on capacitor is zero. 7 Marks

(OR)

6 a) The switch shown in figure below has been in position *a* for a long time. At $t = 0$, it moves to position *b*. Calculate *i(t)* for all $t > 0$. 7 Marks



b) A series RLC circuit with R = 100Ω, C = 100μF and L = 0.1H has a constant voltage 200V applied at t = 0. Find the current transients, assuming zero initial charge on the capacitor. 7 Marks

UNIT-IV

7 a) Following short circuit currents and voltages are obtained experimentally for two port network: 7 Marks

i) With output short circuited $I_1 = 5mA$, $I_2 = -0.3mA$, $V_1 = 25V$

ii) With input short circuited $I_1 = -5mA$, $I_2 = 10mA$, $V_2 = 30V$

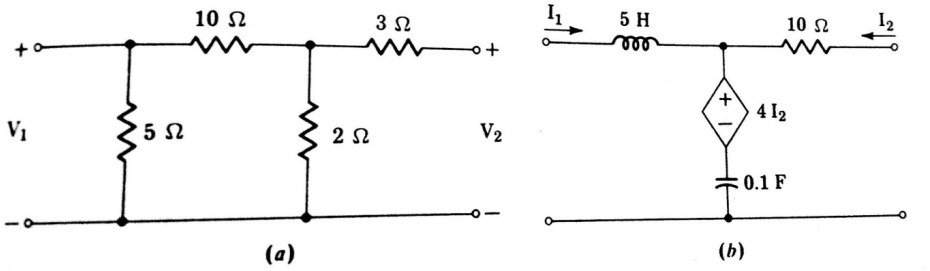
Determine Y parameters.

b) Obtain transmission parameters in terms of hybrid parameters. 7 Marks

(OR)

8 i) Find Z_{11}, Z_{12}, Z_{21} and Z_{22} for the network of figure (a) 14 Marks

ii) Find the four open circuit impedance parameters as functions of ***s*** for the network of figure (b)



UNIT-V

9 a) Test whether a polynomial expressed as $P(s) = S^3 + 6S^2 + 11S + 6$ is Hurwitz or not? 7 Marks

b) An Impedance function at the input of a network is represented by 7 Marks
$Z(s) = (S^2 + 5S + 4) / (S^2 + 2S)$. Express it in the second foster form.

(OR)

10 a) Write properties of positive real functions. 7 Marks

b) Find first and second Cauer Forms of $Z(s) = S(S + 3) / (S + 2)(S + 4)$ 7 Marks

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CODE No.:14BT40202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the advantage and disadvantages of pumped storage hydro power plant?	7 Marks
	b)	Explain the functions of the fallowing i) Dam ii) Spillways iii) Surge tank iv) Draft tube	7 Marks
		(OR)	
2	a)	Discuss various factors which affect the location of a hydropower station.	7 Marks
	b)	Explain in detail about working principle of Kaplan turbine.	7 Marks

UNIT-II

3	a)	Explain the essential factors, which influence the choice of site for a thermal power plant.	7 Marks
	b)	Explain the fuel handling and ash handling mechanisms employed in thermal plant.	7 Marks
		(OR)	
4	a)	Explain the purpose of chimney and dust collectors in thermal power plant.	7 Marks
	b)	Explain the essential differences in the manner of expansion of steam in impulse and reaction turbines.	7 Marks

UNIT-III

5	a)	What are the factors to be considered for the selection of site of a nuclear power station?	7 Marks
	b)	Explain with a neat sketch the various parts of nuclear power plant.	7 Marks
		(OR)	
6	a)	Explain PWR with neat sketches.	7 Marks
	b)	What are the advantages and disadvantages of BWR?	7 Marks

UNIT-IV

7	a)	What are the advantages of diesel electric station and what are the main disadvantages?	7 Marks
	b)	Explain the impact of renewable energy generation.	7 Marks
		(OR)	
8	a)	What are the typical specifications a diesel engine?	7 Marks
	b)	What are the renewable energy resources? Explain briefly.	7 Marks

UNIT-V

9 a) Define the terms load factor and diversity factor and discuss their effect upon the cost of generation and design of power station. 7 Marks

b) A domestic lighting installation having fifteen 60 watt lamps is operated as follows: 7 Marks

5 lamps from 6 p.m. till 8 p.m.
10 lamps from 8 p.m. till 10 p.m.
6 lamps from 10 p.m. till 12 p.m.

i) Determine the connected load, the maximum demand, the demand factor and the daily load factor.

ii) Also determine the improved load factor if a 2 kW immersion heater is used from 1 p.m. till 5 p.m. and a 2 kW heater from 8 p.m. till 11 p.m.

(OR)

10 a) Explain Diminishing value method of depreciation. What are its drawbacks? 7 Marks

b) A supply company offers the following alternative tariffs: 7 Marks

i) Standing charges of Rs 75 per annum plus 300 paisa/kWh.

ii) First 300 kWh at 200 paisa/kWh; and additional energy at 50 paisa /kWh. If the annual consumption is 1800 kWh, which tariff is more economical and by how much?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the constructional details and principle of operation of a d'Arsonval galvanometer. Derive the expression for steady state deflection.	7 Marks
	b)	Classify different types of instruments and describe primary and secondary standards in instruments.	7 Marks
		(OR)	
2		Explain the concept of damping in measuring instruments. Discuss different types of damping devices suitable for either d.c or a.c supplies.	14 Marks

UNIT-II

3	a)	Explain different types of errors in PMMC instruments.	7 Marks
	b)	A 50V moving iron voltmeter has a resistance of 400Ω, made up of a copper coil of 40Ω and 80mH in series with a non-inductive resistance of 360Ω. Show how to connect a capacitor so that the Instrument will read correctly on DC and AC. Calculate the value of capacitance required.	7 Marks
		(OR)	
4	a)	Classify Electrodynamometers and explain any two with suitable diagrams.	7 Marks
	b)	Explain working and constructional details of three phase Induction type energy meter.	7 Marks

UNIT-III

5	a)	Briefly describe CT and PT with diagrams.	7 Marks
	b)	Draw the equivalent circuit and phasor diagram of a current transformer and derive the expression for ratio and phase angle errors.	7 Marks
		(OR)	
6	a)	Briefly describe single phase Electrodynamometer type power factor meter.	7 Marks
	b)	Explain the disadvantages of shunts and multipliers when used for extension of range. Explain how instrument transformers are a better substitute for shunts and multipliers especially for high range values.	7 Marks

UNIT-IV

7	a)	What modifications are made in the basics Wheatstone bridge to convert it into Kelvin's double bridge to make is suitable for low resistance measurement below the value of 0.1 Ω and explain with the help of circuit diagram, how it is used to measure low resistance? Give the necessary relationship used to determine unknown resistance in terms of known resistance of the bridge circuit.	8 Marks
	b)	Determine the loss factor using Schering Bridge.	6 Marks
		(OR)	
8	a)	Write short notes on Hay's bridge and Owen's bridge.	7 Marks
	b)	Find the series equivalent inductance and resistance of the network that causes an opposite angle to null with the following bridge arms:	7 Marks

ω =3000rad/sec, R_1= 2KΩ R_2= 10KΩ, C_1=1μF, R_3= 1KΩ.

UNIT-V

9 Draw the circuit diagram of a Crompton's potentiometer and explain its working. Describe the steps used when measuring an unknown resistance. 14 Marks

(OR)

10 a) Explain the term 'standardization' of potentiometer. Describe the procedure of standardization of a d.c. potentiometer. 7 Marks

b) Explain the principle and working of CRT display with a neat diagram. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify various types of transformers based on their construction and explain them with applications.	7 Marks
	b)	What are the various losses of a transformer? Derive the condition for getting maximum efficiency of a transformer.	7 Marks
		(OR)	
2	a)	Discuss the effect of variations of frequency and voltage on iron loss.	7 Marks
	b)	A single phase transformer has 500 turns on primary and 100 turns on the secondary. The no load current is 24A at a power factor of 0.2 lagging. Calculate the primary current and power factor when the secondary current is 200A at a power factor of 0.8 lagging. Assume the voltage drop in the windings to be negligible.	7 Marks

UNIT-II

3		With neat diagram, explain the various tests conducted on transformer to obtain its equivalent circuit. Derive all related equations.	14 Marks
		(OR)	
4	a)	Derive the equation for saving in copper in using auto transformer when compared to two winding transformer.	7 Marks
	b)	In a test for the determination of the losses of a 440V, 50Hz transformer, the total iron losses were found to be 2500W at normal voltage and frequency. When the applied voltage and frequency were 220V, 25Hz, the iron loss were found to be 850W. Calculate the hysteresis and eddy current losses at normal voltage and frequency.	7 Marks

UNIT-III

5		Explain the different methods of connecting windings of three phase transformers.	14 Marks
		(OR)	
6	a)	Draw the phasor diagrams and winding connection of a three-phase transformer for i) Group 1: phase displacement of zero degrees. ii) Group 2: phase displacement of 180 degrees.	7 Marks
	b)	Determine the values of Z_P, Z_s and Z_t of three winding transformer.	7 Marks

UNIT-IV

7	a)	Draw and explain slip - torque characteristics of an induction motor.	6 Marks
	b)	A 4 pole, 50Hz, 3-phase induction motor develops a maximum torque of 162.8N-m at 1365rpm. The resistance of the star connected rotor is 0.2 ohms/ph. Calculate the value of the resistance that must be inserted in series with each rotor phase to produce a starting torque equal to half the maximum torque.	8 Marks

(OR)

8	a)	Does the induction motor have any similarities with the transformer? Compare the similarities and differences between them.	7 Marks
	b)	Show that a rotating magnetic field is produced in the air-gap, when a balanced three-phase ac supply is given to the stator of a 3-phase induction motor. Justify your claim with necessary mathematical equations.	7 Marks

UNIT-V

9		Explain any two methods of speed control of a squirrel cage induction motor.	14 Marks

(OR)

10	a)	Explain the principle of operation of induction generator.	7 Marks
	b)	A 400V, 4kW, 3-phase, 1440 r.p.m., 0.8p.f lag, $\eta = 0.85$, 4-pole star connected induction motor has a starting current of 7 times the full load current. If the starting current is limited to 2.5 times full load current. Calculate the autotransformer percentage tap and corresponding starting torque.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define 'Machine' and 'Mechanism'. How are these different from each other? Distinguish between structure and a machine. 5 Marks

b) Sketch slider crank chain and its various inversions, stating actual machines in which these are used in practice. 9 Marks

(OR)

2 a) What do you understand by degrees of freedom? For a plane mechanism derive an expression for Grubler's equation. 6 Marks

b) Explain in detail about double slider crank chain. Enumerate all the inversions of double slider crank mechanism. 8 Marks

UNIT-II

3 The following data refer to a crank and slotted lever type quick return mechanism shown in Fig. 1. 14 Marks

OA = 400 mm, OP = 200 mm, AR = 700 mm, RS = 300 mm.

If the crank OP rotates at 210 rpm in clockwise direction and makes an angle AOP = 120°, determine the velocity of the cutting tool S and angular velocities of the link RS.

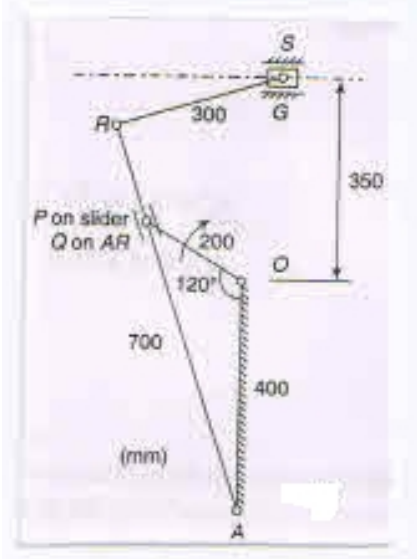

Fig. 1

(OR)

4 In a reciprocating engine mechanism (Fig.2) the crank CB = 10 cm and connecting rod BA = 30 cm with the center of gravity G, 10 cm from B. The crank makes an angle of 120° from inner dead centre. In this position the crank has a velocity of 75 rad/s and an angular acceleration of 1200 rad/s^2, both in clockwise direction. Find (i) the velocity and acceleration of G and (ii) the angular velocity and angular acceleration of AB. 14 Marks

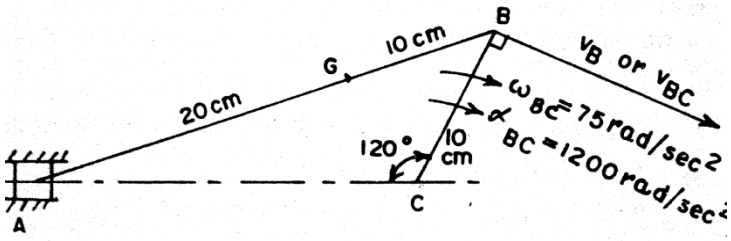

Fig.2

UNIT-III

5 a) Enumerate straight line mechanisms. Why are they classified into exact and approximate straight line mechanisms? 5 Marks

b) Give a neat sketch of the straight line motion 'Hart mechanism.' Prove that it produces an exact straight line motion. 9 Marks

(OR)

6 Derive an expression for the ratio of shafts velocities for Hooke's joint and draw the polar diagram depicting the salient features of driven shaft speed. 14 Marks

UNIT-IV

7 Draw the profile of a cam to raise a valve with harmonic motion through 40 mm in 1/3 of revolution, keep it fully raised through 1/12 revolution, and to lower it with harmonic motion in 1/6 revolution. The valve remains closed during the rest of the revolution. The diameter of the roller is 20 mm and minimum radius of the cam is to be 25 mm. The diameter of the cam shaft is 25 mm. The axis of the valve rod passes through the axis of the cam shaft. Assume the cam shaft to rotate with a uniform velocity. 14 Marks

(OR)

8 Draw the profile of a cam to give the following motion to the reciprocating follower with a flat or mushroom contact surface: 14 Marks

i) Follower to move outward through a distance of 30 mm during 120° of cam rotation
ii) Follower to dwell for 30° of cam rotation
iii) Follower to return to its initial position during 120° of cam rotation
iv) Follower to dwell for the remaining 90° of cam rotation.

The minimum radius of cam is 25 mm and the flat face of the follower is at right angles to the line of stroke of the follower. The outward and return strokes of the follower are take place with uniform acceleration and retardation motion.

UNIT-V

9 A pair of spur gears with involute teeth is to give a gear ratio of 3:1. The arc of approach is not to be less than the circular pitch and smaller wheel is the driver. The angle of pressure is 20° 14 Marks

i) What is the least number of teeth that can be used on each wheel?
ii) What is the addendum of the wheel in terms of circular pitch?

(OR)

10 a) What do you understand by 'gear train'? Discuss the various types of gear trains. 4 Marks

b) In an epicyclic gear train, an annular wheel A having 54 teeth meshes with a planet wheel B which gears with a sun wheel C, the wheels A and C being rotates about the axis of the wheels A and C. If the wheel A makes 20 rpm in a clockwise sense and the arm rotates at 100 rpm in the anticlockwise direction and the wheel C has 24 teeth, determine the speed and direction of rotation of wheel C. 10 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 Through a very narrow gap off height ***h***, a thin plate of large area is pulled at a velocity ***v***. On the upper side of the plate is an oil of viscosity μ_1 and on the other side is an oil of viscosity μ_2. Calculate the position of the plate when; 14 Marks

i) Shear force on the two side of the plate are equal.

ii) The shear force required to pull the plate is minimum.

(OR)

2 A U-tube manometer is used to measure the pressure of water in a pipe line which is in excess of atmospheric pressure. The right limb of the manometer contains mercury and is open to atmosphere. The contact between water and mercury is in the left limb. Determine the pressure of water in the main line, if the difference in level of mercury in the limbs of U-tube is 10 cm and free surface of mercury is in level with the centre of the pipe. If the pressure of water in pipe line is reduced to 9810N/cm^2, calculate the new difference in the level of mercury. Sketch the arrangements in both cases. 14 Marks

UNIT-II

3 A 300mm diameter pipe carries water under a head of 20m with a velocity of 3.5m/s. If the axis of the pipe turns through 45°, find the magnitude and direction of the resultant force at the bend. 14 Marks

(OR)

4 State Bernoulli's theorem for steady flow of an incompressible fluid. Derive an expression for Bernoulli's theorem from first principle and state assumptions made for such derivation. 14 Marks

UNIT-III

5 Describe major and minor losses in pipe flow in detail. 14 Marks

(OR)

6 a) Obtain an expression for force exerted by a jet of water on inclined (fixed and moving) flat plate in the direction of jet. 7 Marks

b) A nozzle of 50mm diameter delivers a stream of water at 20m/s perpendicular to a plate that moves away from the jet at 5m/s find : 7 Marks

i) the force on the plate

ii) work done

iii) the efficiency of jet.

UNIT-IV

7 The Propeller reaction turbine of runner diameter 4.5m running at 48 r.p.m. The guide blade angle at inlet is 145° and the runner blade angle at outlet 25° to the direction of vane. The axial flow area of water through the runner is 30m². If the runner blade angle at inlet is radial, determine; 14 Marks

i) Hydraulic efficiency of the turbine
ii) Discharge through the runner
iii) Power developed by the runner.

(OR)

8 A Francis turbine with an overall efficiency of 75% is required to produce 148.25kW power. It is working under a head of 7.62m. The peripheral velocity is $0.26\sqrt{2gH}$ and the radial velocity of flow at inlet is $0.96\sqrt{2gH}$. The wheel runs at 150 r.p.m. and the hydraulic losses in the turbine are 22% of the available energy. Assuming radial discharge at outlet, determine: 14 Marks

i) guide blade angle
ii) The wheel vane angle at inlet
iii) Diameter of the wheel at inlet
iv) width of the wheel at inlet.

UNIT-V

9 A three-stage centrifugal pump has impeller 400mm diameter and 20mm wide. The vane angle at outlet is 450 and the area occupied by the thickness of the vanes may be assumed 8% of the total area. If the pump delivers 3.6 m³/ min when running at 920 r.p.m., determine: 14 Marks

i) Power of the pump
ii) Manometeric head
iii) Specific speed

(OR)

10 The bore and stroke of a double acting single cylinder reciprocating pump running at 30 r.p.m. are 200mm and 400mm respectively. The pump draws water from sump 1.2m below the pump through a suction pipe 100mm in diameter and 3.0m long. The water is delivered to a tank 28m above the pump through a delivery pipe 100mm in diameter and 38m long. Assuming the motion of the piston to be simple harmonic determine the net force due to fluid pressure on the piston when it has moved through a distance of 100mm from the inner dead centre (IDC). Take friction coefficient for both suction and delivery pipes as 0.006. Neglect size of the piston rod. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the port timing diagram of a two-stroke engine and explain.	7 Marks
	b)	Explain, with the help of neat sketches, how the actual indicator diagrams of a two-stroke and four-stroke engine differ from those of theoretical diagrams.	7 Marks

(OR)

2	a)	Draw the cross-section of a Spark-ignition engine to show different components of it and explain their functions.	7 Marks
	b)	Explain how the actual cycles for I.C. engines differ from air-standard cycles.	7 Marks

UNIT-II

3	a)	S.I. engine knock is primarily a problem at wide-open throttle and lower engine speeds. Explain why this is the case.	7 Marks
	b)	Explain the various stages of combustion in C.I. engine with neat sketch.	7 Marks

(OR)

4	a)	What do you mean by pre ignition? How it is detected?	7 Marks
	b)	Discuss the various methods of charge stratification with neat sketches.	7 Marks

UNIT-III

5		A four-stroke cycle gas engine has a bore of 20 cm and a stroke of 40 cm. The compression ratio is 8. In a test on the engine the indicated mean effective pressure is 5 bar, the air to gas ratio is 5:1 and the calorific value of the gas is 12 kJ/m^3 at NTP. At the beginning of the compression stroke the temperature is 75°C and the pressure is 1 bar. Neglecting residual gases, determine the indicated power, thermal efficiency and the relative efficiency of the engine at 225 r.p.m.	14 Marks

(OR)

6	a)	Give the comparison of various methods used to find friction power.	7 Marks
	b)	Name different methods of measurement of air consumption in an engine and explain any one of them in detail.	7 Marks

UNIT-IV

7	a)	Explain the working principle of a CRDI engine with the help of a neat diagram.	7 Marks
	b)	Name different non-conventional engines and give their merits and demerits over conventional engines.	7 Marks

(OR)

8	a)	Explain briefly the working principles of i) VCR engine and ii) Wankel engine.	7 Marks
	b)	What is a lean burn engine? Explain how it works.	7 Marks

UNIT-V

9	a)	Derive the expression for an optimum intermediate pressure in a two-stage reciprocating compressor.	7 Marks
	b)	Explain, with the help of a neat sketch, working principle of a Rotary Vane	7 Marks

compressor.

(OR)

10 Air it to be compressed isentropically at the rate of 1 m^3/s from 1 bar and 25°C to 10 bar. Find the work of compression and the volumetric efficiency if the clearance volume is 5% of stroke volume for all the cylinders for: 14 Marks

i) Single stage compression
ii) Two stage compression
iii) Three stage compression

Assume air density as 1.2 kg/m^3.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

MANUFACTURING TECHNOLOGY-II

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the principle of rolling with a neat sketch and discuss about differences between Hot working and Cold working processes.	7 Marks
	b)	Explain briefly with a neat sketch, the process of wire drawing.	7 Marks
		(OR)	
2	a)	Is rolling useful for making tubes? Explain your answer with proper sketches.	7 Marks
	b)	With neat sketches, explain briefly any two types of Extrusion processes.	7 Marks

UNIT-II

3		With neat sketches, explain about deep drawing and stretch forming processes.	14 Marks
		(OR)	
4	a)	Write short notes on: i) Embossing ii) Coining	7 Marks
	b)	Write short notes on: i) Spinning ii) Sheet bending	7 Marks

UNIT-III

5	a)	Distinguish between plastics and polymers.	7 Marks
	b)	What are plastics? How are they classified?	7 Marks
		(OR)	
6		Write a short notes on: i) Injection Moulding ii) Blow Moulding	14 Marks

UNIT-IV

7		With a neat sketch, explain the working principle of Ultrasonic Machining process and different elements in it. What are the advantages, limitations of this process?	14 Marks
		(OR)	
8		Illustrate the mechanism involved in abrasive jet machining with a neat sketch and its applications.	14 Marks

UNIT-V

9		Describe and emphasize the principle of Electro-chemical Machining process with a neat sketch.	14 Marks
		(OR)	
10		Describe and emphasize the principle of Electro-chemical Honing process with a neat sketch.	14 Marks

CODE No.:14BT40401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Describe the generation of DSB-SC using Ring modulator. 8 Marks

b) Calculate the net modulation index and power associated with AM Signal $V(t) = 8\cos 2\pi 10^6 t + 4\cos 2\pi 10^6 t \cos 2\pi 10^4 t + 2\cos 2\pi 10^6 t \cos 3\pi 10^4 t$. 6 Marks

(OR)

2 a) Describe the generation of AM signals with Square Law modulator. 8 Marks

b) A 1000 kHz carrier is simultaneously AM modulated with 300Hz, 800Hz and 2 kHz audio sine waves. What will be frequencies present in the output? 6 Marks

UNIT-II

3 a) Explain the generation of SSB signals using frequency discrimination method. 7 Marks

b) Describe the VSB modulation system along with receive filter design. 7 Marks

(OR)

4 a) Explain the generation of SSB signals using phase discrimination method. 7 Marks

b) Compare different DSB-SC, AM, SSB system in terms of power efficiency, bandwidth efficiency and receiver complexity. 7 Marks

UNIT-III

5 a) Sketch the FM and PM waveforms assuming the message signal to be a square wave. 7 Marks

b) Distinguish between angle modulation and amplitude modulation systems. 7 Marks

(OR)

6 a) Explain the generation of FM waveforms using direct and indirect method. 7 Marks

b) Sketch the FM waveforms for modulating signal m(t) given below assuming $k_f = 2\pi 10^5$ assuming $f_c = 100$ MHz. 7 Marks

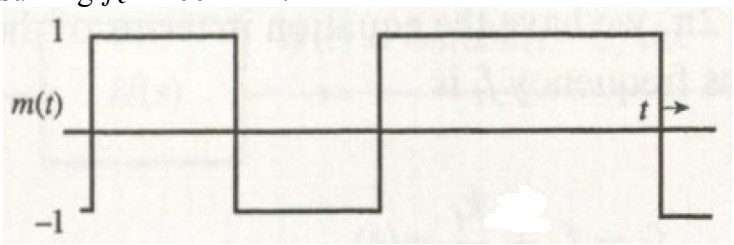


Fig. 1

UNIT-IV

7	a)	With neat block diagram, explain the principle and operation of Super heterodyne radio receiver and also describe receiver characteristics.	8 Marks
	b)	When a super heterodyne receiver is tuned to 555 kHz, its local oscillator provides the mixer with an input at 1010 kHz. What is the image frequency? The antenna of this receiver is connected to the mixer via tuned circuit whose loaded Q is 40. What will be the rejection ratio for the calculated image frequency?	6 Marks

(OR)

8	a)	Prove that Figure of Merit of DSB-SC and SSB are superior to that of AM.	8 Marks
	b)	Distinguish high level and low level AM transmitters. With neat block diagram, explain the principle and operation of low level AM transmitter.	6 Marks

UNIT-V

9	a)	Draw the wave forms of PAM, PPM and PWM signals for sinusoidal modulating signal.	7 Marks
	b)	Compare merits and demerits of TDM and FDM multiplexing schemes.	7 Marks

(OR)

10	a)	Describe generation and detection of PAM signals with neat schematics.	8 Marks
	b)	Discuss various applications of pulse modulation schemes.	6 Marks

CODE No.:14BT40402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

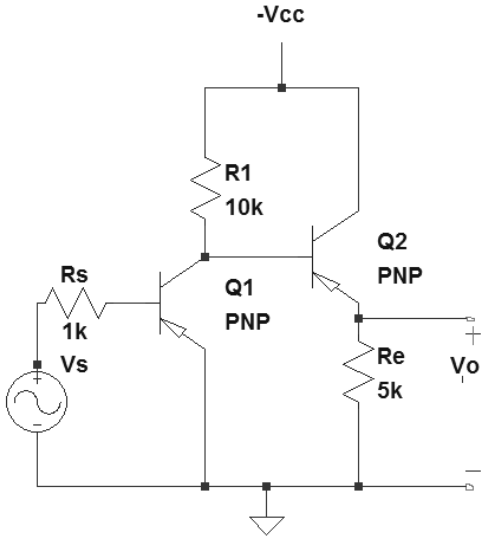
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the voltage gain A_{vs} of the amplifier shown in figure h_{ie}=1000 Ω $h_{re}=10^{-4}$, h_{fe}= 50, $h_{oe}=10^{-4}$ A/V. Find R_o' also. 10 Marks



b) Write short notes on cascading of amplifiers. 4 Marks

(OR)

2 a) What is Darlington connection? Derive the current gain and input resistance. 7 Marks

b) Differentiate different types of coupling schemes used in multistage amplifiers. 7 Marks

UNIT-II

3 What are the typical values of various components in Hybrid - π model? Show that at low frequencies the Hybrid - π model with r_{be} and r_{ce} taken as infinite and reduces to the approximate CE h-parameter model. (b) The following low-frequency parameters are known for a given transistor at I_C = 10mA, V_{CE} =10 V, and at room temperature, h_{ie}= 500, h_{oe} = $4x10^{-5}$ A/V, h_{fe}= 100, h_{re} = 10^{-4}. At the same operating point, f_T = 50MHz and C_c = 3PF, compute the values of all the Hybrid - π parameters. 14 Marks

(OR)

4 a) Sketch the circuit of a CS amplifier. Derive the expression for A_V at low frequencies. What is the maximum value of A_V? 7 Marks

b) Derive the expression for the voltage gain of a common drain FET Amplifier. 7 Marks

UNIT-III

5	a)	Explain Colpitts oscillator and derive the expression for frequency of oscillation and also mentions its advantages and disadvantages?	10 Marks
	b)	In a Hartley Oscillator L_2 = 0.04mH, C = 0.004μF. If the frequency of oscillation is 150 kHz, find L_1. Neglect mutual Inductance.	4 Marks

(OR)

6	a)	Derive the expressions for voltage gain, input impedance and output impedance of a voltage shunt feedback amplifier.	8 Marks
	b)	Explain the effect of negative feedback on amplifier bandwidth.	6 Marks

UNIT-IV

7	a)	With the help of a neat diagram, explain the operation of a complementary symmetry configured class B power amplifier.	9 Marks
	b)	Compare series fed and Transformer coupled Class-A amplifier.	5 Marks

(OR)

8	a)	In a class A amplifier V_{CE}(max)=25 V, V_{CE}(min)=5 V. Find the overall efficiency for series fed load and transformer coupled load.	6 Marks
	b)	In series fed Class-A power amplifier, explain the importance of the position of operating point on output signal swing. Show that the conversion efficiency is 25%.	8 Marks

UNIT-V

9	a)	Explain the working of a single-tuned amplifier.	6 Marks
	b)	Derive an expression for the resonance frequency of a parallel resonant circuit.	8 Marks

(OR)

10	a)	Explain in brief, the advantage in using double-tuned circuit over the single-tuned.	8 Marks
	b)	A tuned circuit has resonance frequency of 800 kHz and a band width of 10 kHz. What is the value of its Q-factor?	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and prove Gauss Divergence theorem.	7 Marks
	b)	Discuss about Electric flux, Electric flux density and salient features of Electric flux density.	7 Marks

(OR)

2	a)	Define Electric Potential and derive the relation between $\vec{E}$ and V.	7 Marks
	b)	Derive the expression for the capacitance between two concentric spheres.	7 Marks

UNIT-II

3	a)	Explain Ampere's force law.	7 Marks
	b)	Find the force per unit length on two long, straight, parallel conductors if each carries a current of 10.0A in the same direction and the separation distance is 0.20m.	7 Marks

(OR)

4	a)	Derive the expression for Vector Magnetic potential.	7 Marks
	b)	Determine $\vec{J}$ at (2, π, 0) in cylindrical coordinates if the magnetic field, $\vec{H}$ is given by $\vec{H} = 5\rho \sin\phi \ \vec{az}$ mA/m².	7 Marks

UNIT-III

5	a)	What is the inconsistency in Ampere's Law? How it is rectified by Maxwell?	7 Marks
	b)	Explain how the concept of displacement current was introduced by Maxwell to account for the production of magnetic fields in the empty space.	7 Marks

(OR)

6	a)	Show that the total displacement current between condenser plates connected to an alternating voltage source is exactly the same as the value of charging current.	7 Marks
	b)	Perfect dielectric medium, the EM wave has maximum value for E of 10 V/m with μ_r =1 and ϵ_r=4. Find the velocity of the wave, impedance of the medium and peak value of the magnetic field.	7 Marks

UNIT-IV

7	a)	A plane wave of frequency 2MHz is incident upon a copper conductor normally. The wave has an electric field amplitude of E = 2mV/m. The copper has ϵ_r=1, μ_r=1 and σ =5.8 × 10^7 mho/m. Find out average power density absorbed by the copper.	7 Marks
	b)	Define and distinguish between the terms perpendicular polarization, parallel polarization, for the case of reflection by a perfect conductor under oblique incidence.	7 Marks

(OR)

8	a)	Derive expression for reflection and transmission coefficients of an EM wave when it is incident normally onto a dielectric.	7 Marks
	b)	Define complex Poynting vector and explain how to obtain average power.	7 Marks

UNIT-V

9	a)	Discuss about Primary and Secondary constants of a transmission line.	7 Marks
	b)	Derive the expression for the input impedance of a lossless transmission lines.	7 Marks

(OR)

10	a)	Explain the characteristics of Smith chart and its applications.	7 Marks
	b)	Discuss how $\lambda/2$, $\lambda/8$ lines act as circuit element.	7 Marks

CODE No.:14BT40404 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) A discrete-time system ***s*** described by the following input-output relation $y(n) = x^2(n)$. Is this system (i) static or dynamic and (ii) linear or non-linear? 7 Marks

b) Find the step response of an LTI system whose unit impulse response is given by $h(n) = (0.5)^n u(n)$. 7 Marks

(OR)

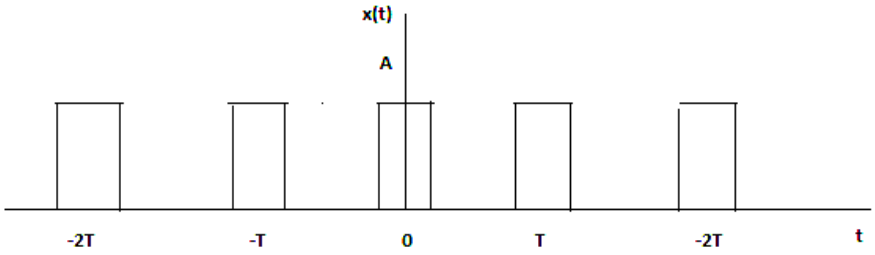
2 a) Find the convolution sum of sequences $x(n)$ and $y(n)$ for n = 0, 3, 5 and 10 if $x(n) = (3/4)^n\, u(n)$ and $y(n) = u(n)$. 7 Marks

b) For what range of values of the parameter α are the systems defined by the following difference equations stable? 7 Marks

$$y(n) - \alpha^2\, y(n-2) = x(n-3).$$

UNIT-II

3 Find the complex exponential Fourier expansion and also trigonometric Fourier series of the periodic waveform shown in figure. 14 Marks



(OR)

4 a) Find the Fourier transform of the Gaussian pulse given by $x(t) = \frac{1}{\sqrt{2\pi}} e^{-t^2/2}$ 7 Marks

b) Prove that if $f(t) \leftrightarrow F(w)$ then $f(t + T) + f(t - T) \leftrightarrow 2\cos(wT)F(w)$. 7 Marks

UNIT-III

5 a) Determine the relation between convolution and correlation. 7 Marks

b) Explain the concept of filtering and how is it useful in the extraction of signal from noise. 7 Marks

(OR)

6 a) Explain briefly reconstruction of signal from its samples. 8 Marks

b) Derive the relation between correlation and power spectral density. 6 Marks

UNIT-IV

7 a) A certain function *f(t)* is known to have a transform $F(s) = \frac{s - 5}{(2s^2 + 6s + 5)}$. Find $f(0+)$ and $f(\infty)$. 7 Marks

b) Find the inverse Laplace Transform of $X(s) = \frac{-1000}{s^2 - 100}$; ROC: $-10 < \sigma < 10$. 7 Marks

(OR)

8 a) Find the unilateral Laplace Transform of the signal shown in the figure. 7 Marks

b) Find the region of convergence of the Laplace transform of the following function: 7 Marks

$\frac{1}{1+t^2}u(t)$

UNIT-V

9 a) Determine z - transform, pole - zero locations and sketch the ROC of following signal x(n) = - u(-n-1) + $(1/2)^n$ u(n). 7 Marks

b) Find the inverse z - transform of X(z) = $(2+z^{-1})/(1- 0.5\ z^{-1})$ with ROC $|z| > ½$ using power series expansion. 7 Marks

(OR)

10 State and Prove initial value and final value theorem of Z-transform. 14 Marks

CODE No.:14BT40405 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain Canonical and Standard forms with suitable examples. 6 Marks

b) Implement the INVERTER gate, OR gate and AND gate using: 8 Marks
i) NAND gate ii) NOR gate

(OR)

2 a) Simplify the following Boolean expressions to a minimum number of literals using basic Boolean laws. 10 Marks

i) $\overline{X} + XY + X\bar{Z} + X\bar{Y}Z$

ii) $X\overline{Y} + \overline{Y}\overline{Z} + \overline{X}\overline{Z}$

iii) $\overline{A}B(\overline{D} + \overline{C}D) + B(A + \overline{A}CD)$

b) There exists 2^{2n} functions for n binary variables. Justify and give all the functions for n = 2. 4 Marks

UNIT-II

3 Simplify the following Boolean functions using K-Maps: 14 Marks
i) $\mathbf{f_1(A, B, C, D) = \sum_m(1, 3, 7, 11, 15) + \sum_d(0, 2, 5)}$
ii) $\mathbf{f_2(A, B, C, D) = B'D+A'BC'+AB'C+ABC'}$

(OR)

4 Find all the prime implicants, essential prime implicants and minimal SOP expression for the following function using QM method: 14 Marks
$\mathbf{F(A, B, C, D) = \sum_m(0, 1, 6, 7, 8, 9, 13, 14, 15)}$

UNIT-III

5 a) Explain structure and functioning of BCD adders. 7 Marks

b) Explain the operation of full subtractor and implement the logical circuit. 7 Marks

(OR)

6 a) Implement the following functions using decoder 7 Marks
$\mathbf{F(w,x,y,z) = (w+x)(\overline{w}\,xy+yz)(x\,\overline{y}+w)}$

b) Design a circuit of a 3 bit parity generator and the circuit of a 4 bit parity checker using an odd parity bit. 7 Marks

UNIT-IV

7 a) Write the truth tables and excitation tables of S-R, J-K, T and D flip-flops. 6 Marks

b) Design a 3-bit synchronous counter with control bit M=0 for UP counter and M=1 for DOWN counter. 8 Marks

(OR)

8 a) Design a decade asynchronous counter with timing diagrams. 8 Marks

b) Explain 4 bit Ring and Twisted ring counter with their truth tables. 6 Marks

UNIT-V

9 Implement a full-adder circuit using PLA having three inputs, eight product terms and two outputs. 14 Marks

(OR)

10 a) What do you mean by critical and non-critical races? Give examples for both. 6 Marks

b) Minimize the following table using implication method: 8 Marks

Present State	Next State, Output(Z)	
	0	1
A	D,0	C,1
B	E,1	A,1
C	H,1	D,1
D	D,0	C,1
E	B,0	G,1
F	H,1	D,1
G	A,0	F,1
H	C,0	A,1
I	G,1	H,1

CODE No.:14BT40431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the circuit diagram and hybrid model of CE amplifier with emitter resistance and derive the current gain, input impedance and voltage gain.	7 Marks
	b)	Derive the current gain of a CE amplifier with resistive load at high frequencies.	7 Marks
		(OR)	
2	a)	Derive the BJT simplified hybrid model for small signal analysis.	7 Marks
	b)	Draw the circuit diagram and equivalent high frequency model of a emitter follower.	7 Marks

UNIT-II

3	a)	What are the advantages of negative feedback? Explain the different sensing and return mechanisms in different feedback topologies.	7 Marks
	b)	Draw the circuit diagram of a BJT based RC phase shift oscillator and derive the expression for frequency of oscillations.	7 Marks
		(OR)	
4	a)	Derive the effect of negative feedback on the output impedance in different feedback topologies.	7 Marks
	b)	Draw the circuit diagram of Colpitt's oscillator and derive the expression for the frequency of oscillations.	7 Marks

UNIT-III

5	a)	Derive the equation for power output and conversion efficiency of a class A series fed amplifier.	8 Marks
	b)	Discuss the origin of various distortions in transistor amplifier circuits.	6 Marks
		(OR)	
6	a)	Draw the push-pull power amplifier circuit. Derive the expression for the output current in push pull amplifier with base current as $I_b = I_{bm} \sin\omega t$.	8 Marks
	b)	What is Harmonic distortion in transistor amplifier circuits? Discuss second harmonic distortion.	6 Marks

UNIT-IV

7	a)	Explain the response of RC low pass circuit for exponential input signal.	8 Marks
	b)	Explain negative peak clipper with and without reference voltage.	6 Marks
		(OR)	
8	a)	State and prove clamping circuit theorem.	8 Marks
	b)	Explain the terms pertaining to transistor switching characteristics. i) Rise time. ii) Fall time iii) Storage time.	6 Marks

UNIT-V

9	a)	Draw the circuit diagram of a bistable multivibrator realized with BJTs and explain its operation.	7 Marks
	b)	Draw the circuit diagram of a Schmitt trigger circuit and explain its operation and application as a comparator.	7 Marks

(OR)

10	a)	Explain the use of commutating capacitors in bistable multivibrator circuits.	7 Marks
	b)	Distinguish between bistable, monostable and astable multivibrators and mention their applications.	7 Marks

CODE No.:14BT40432 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

DATA COMMUNICATIONS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare the difference between serial and parallel Data transmission.	8 Marks
	b)	Explain in detail, about quadrature amplitude modulation. If the baud rate for a 64-QAM signal is 2000, what is the bit rate?	6 Marks
		(OR)	
2	a)	With a neat sketch explain the components of a communication net work.	5 Marks
	b)	Define noise. Explain about Electrical noise and Signal to noise ratio.	9 Marks

UNIT-II

3	a)	Explain the different types of metallic transmission lines in details.	7 Marks
	b)	Discuss about different types of optical fibre transmission.	7 Marks
		(OR)	
4	a)	What is a transmission line? Compare balanced and unbalanced transmission lines.	8 Marks
	b)	What is an optical communication system? Explain an optical fiber communication system with a neat block diagram.	6 Marks

UNIT-III

5	a)	A PCM-TDM system multiplexes 24 voice-band channels. Each sample is encoded into 7-bits., and a framing bit is added to each frame. The sampling rate is 9000 samples per second. Determine the line speed in bps.	9 Marks
	b)	What is cross talk? Mention the difference between intelligent and unintelligent cross talk. List out and describe three different types of cross talk.	5 Marks
		(OR)	
6	a)	Define Pulse code modulation. Explain briefly about Pulse code modulation with suitable diagrams.	9 Marks
	b)	Define Multiplexing. Explain briefly about Time-Division Multiplexing.	5 Marks

UNIT-IV

7	a)	With the aid of block diagram, explain about working of different units present in standard telephone set.	7 Marks
	b)	Explain operation of cardless telephone and explain how it is different from standard telephone.	7 Marks
		(OR)	
8	a)	What do you mean by line conditioning? Explain in detail about available line conditionings.	7 Marks
	b)	List all six common units of signal and noise power measurements in telephone industry and explain them.	7 Marks

UNIT-V

9	a)	Explain in detail about cellular telephone network components.	7 Marks
	b)	Briefly describe AMPS cellular telephone system.	7 Marks
		(OR)	
10	a)	Design circuit that generates serial parity and parallel parity.	7 Marks
	b)	For a 12 bit data string of **101100010010**, determine the number of hamming bits required, arbitrarily place hamming bits into data stream and insert transmission error in the 14^{th} bit and prove that hamming code will successful detect the error.	7 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

COMPUTER ORGANIZATION

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define computer. Specify the different types of computers and their characteristics.	8 Marks
	b)	Determine the base of the numbers in each case for the following operations to be correct: i) 14/2 = 5 ii) 54/4 = 13 iii) 24 + 17 = 40	6 Marks
		(OR)	
2	a)	Briefly explain the binary multiplication and division algorithm**.**	10 Marks
	b)	Formulate a weighted binary code for the decimal digits using weights 6,3,1,1.	4 Marks

UNIT-II

3		What are the differences between a direct and an indirect address instruction? How many references to memory are needed for each type of instruction to bring an operand into a processor registrar? Explain.	14 Marks
		(OR)	
4	a)	A computer has 32-bit instructions and 12-bit addresses. Suppose there are 250 two-address instructions. How many one-address instructions can be formulated?	7 Marks
	b)	Draw and explain the micro program sequences for a control memory.	7 Marks

UNIT-III

5	a)	Compare interrupt driven data transfer scheme with DMA. Using block diagram explain interrupt driven transfer scheme.	8 Marks
	b)	Why bus arbitration is required? Explain with block diagram of bus arbitration using daisy chain.	6 Marks
		(OR)	
6		When a device interrupt occurs, how does the processor determine which device issued the interrupt? Explain.	14 Marks

UNIT-IV

7	a)	Explain Direct Associative, Set Associative and Fully Associative mapping with an example in cache memories.	7 Marks
	b)	Compare and contrast various Read Only Memories (ROM).	7 Marks
		(OR)	
8	a)	List various secondary storage memories and explain any one of them.	7 Marks
	b)	A cache has 8 lines and what would be the address of cache line to transfer 12^{th} block of Main Memory if the cache using Direct mapping management technique.	7 Marks

UNIT-V

9	a)	What is a vector? Differentiate between a conventional scalar processor and a vector processor?	8 Marks
	b)	Discuss the inter processor communication and synchronization.	6 Marks

(OR)

10	a)	What is an instruction pipeline? What are the difficulties that cause the instruction pipeline to deviate from its normal operation?	8 Marks
	b)	Write short notes on array processor.	6 Marks

CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

DATABASE MANAGEMENT SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the main characteristics of the database approach and specify how it differs from traditional file system.	8 Marks
	b)	Describe the concept of client/server model with a neat sketch.	6 Marks
		(OR)	
2	a)	Discuss in detail about various concepts used in ER-model.	6 Marks
	b)	With example explain about various constraints of ER model.	8 Marks

UNIT-II

3	a)	Explain the basic Relational Algebra operations with the symbol used and an example for each.	8 Marks
	b)	What is the input to a relational query? What is the result of evaluating a query?	6 Marks
		(OR)	
4		What is meant by tuple relational calculus? State and explain various types of queries in it. And also compare it with domain relational calculus.	14 Marks

UNIT-III

5	a)	By considering an example describe various data update operations in SQL.	8 Marks
	b)	List and explain the common data types available in SQL.	6 Marks
		(OR)	
6	a)	What is Functional Dependency? Explain its concept.	6 Marks
	b)	State 1NF, 2NF and 3NF. Explain with examples.	8 Marks

UNIT-IV

7	a)	List the ACID properties. Explain usefulness of each.	7 Marks
	b)	Discuss about multiple granularity.	7 Marks
		(OR)	
8	a)	Describe the concepts serializability and recoverability.	7 Marks
	b)	What is the time stamp based protocols? Explain any one of them.	7 Marks

UNIT-V

9	a)	Discuss in detail about cluster and multilevel indexes.	8 Marks
	b)	Explain in detail about internal hashing techniques.	6 Marks
		(OR)	
10	a)	Explain in detail about indexed accessing methods.	7 Marks
	b)	Explain B+ tree operations with examples.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain various Asymptotic Notations used in algorithm analysis.	8 Marks
	b)	Explain set Representations using Trees.	6 Marks
		(OR)	
2	a)	Write a Non-Recursive Algorithm for finding the Fibonacci sequence and derive its time Complexity.	7 Marks
	b)	Solve the following Recursive relation using substitution method.	7 Marks
		$T(n) = \{ b$ where $n<3$	
		$3T(n/3)\ b_n$ where $n>=3. \}$	

UNIT-II

3	a)	Explain and write algorithm for divide and conquer strategy.	7 Marks
	b)	Find the Time complexity for Strassen's matrix multiplication.	7 Marks
		(OR)	
4	a)	What is spanning tree? Explain in detail.	7 Marks
	b)	Explain Binary search technique with algorithm.	7 Marks

UNIT-III

5	a)	Write an algorithm to implement job sequencing with deadlines.	8 Marks
	b)	Explain the terms feasible solution, optimal solution and objective function.	6 Marks
		(OR)	
6	a)	What is Minimum Cost Spanning Tree? What are its Applications?	6 Marks
	b)	Solve the following instance using Knapsack Problem.	8 Marks
		$M = 5$, $(w1, w2, w3, w4) = (2, 1, 3, 2)$, $(p1, p2, p3, p4) = (12, 10, 20, 15)$	

UNIT-IV

7	a)	Explain graph coloring problem and its complexity with appropriate example.	7 Marks
	b)	Explain the general method of Back Tracking Strategy with an example.	7 Marks
		(OR)	
8	a)	Explain sum of subsets problem in detail.	7 Marks
	b)	Explain the principles of FIFO Branch and Bound.	7 Marks

UNIT-V

9	a)	Define P and NP class problems with the help of examples.	7 Marks
	b)	Explain in detail about Flow Shop and Job Shop scheduling.	7 Marks
		(OR)	
10	a)	Briefly explain the concepts of the NP-Hard and NP-Complete.	7 Marks
	b)	Describe clique decision problem in NP-Complete.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

OBJECT ORIENTED PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate among the scope of different access specifiers in Java.	7 Marks
	b)	Write a Java program to find the smallest number present in the given array of *n* numbers.	7 Marks
		(OR)	
2	a)	Design a student details management system and illustrate the use of constructors and overloading methods in your program.	7 Marks
	b)	Write a Java program using command line arguments to find whether the given number is a prime number or not.	7 Marks

UNIT-II

3	a)	List the similarities and differences of classes and interfaces.	7 Marks
	b)	Write a Java program using inheritance that gets the properties of a person and extends to faculty and student and display the details accordingly.	7 Marks
		(OR)	
4	a)	Explain different forms of implementing interfaces.	5 Marks
	b)	Create a class sum to perform the sum of the natural numbers in the first package pack1. In the second package pack2, create a class square to find the square of the given number. Now, create another package named pack3 and create a class sum_square to perform the sum of the square of the given numbers by importing the packages pack1, pack2 and using their methods.	9 Marks

UNIT-III

5	a)	Explain the process of creating threads with suitable examples.	7 Marks
	b)	Write short note on synchronization of threads.	7 Marks
		(OR)	
6		What is Inter Thread Communication? Write suitable Java Program that demonstrates Inter Thread Communication.	14 Marks

UNIT-IV

7	a)	Explain the difference between Applets and Applications.	7 Marks
	b)	Write short note on: i) Life Cycle of an Applet ii) Types of Applets	7 Marks
		(OR)	
8	a)	Explain the process of passing parameters in an Applet using suitable code.	7 Marks
	b)	Write short note on Graphics Class.	7 Marks

UNIT-V

9	a)	Explain the steps and Java methods involved in establishing database connectivity.	7 Marks
	b)	Write a servlet program to demonstrate parameter passing from HTML script using post method.	7 Marks
		(OR)	
10		Create a table 'student' with attributes Reg_no, Stud_name, age, branch, year. Establish database connectivity and design a GUI to add, delete and display entries of the table.	14 Marks

CODE No.:14BT41501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

COMPUTER GRAPHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate about DDA line drawing algorithm with relevant examples in detail.	7 Marks
	b)	Explain in detail the basic features of graphic hardware and software components.	7 Marks
		(OR)	
2	a)	Explain the procedure for scan line polygon filling algorithm.	7 Marks
	b)	Discuss in detail about the midpoint circle algorithm with the help of an example.	7 Marks

UNIT-II

3	a)	Describe how lines outside the screen are identified in Cohen-Sutherland algorithm with examples in detail.	7 Marks
	b)	Reflect the object with vertices **A(5,5), B(4,0) and C(7,5)** about x-axis and y-axis using appropriate transformation matrices.	7 Marks
		(OR)	
4		Prove that the multiplication matrices for each of the following sequence of operations is commutative. i) Two successive Rotations. ii) Two successive Translations. iii) Two successive Scaling.	14 Marks

UNIT-III

5		If the equation for a plane surface is expressed in the form $\mathbf{Ax + By + Cz + D = 0}$. Explain the procedure to calculate the parameters A, B, C and D using Cramer's rule if the three successive polygon vertices are given as input.	14 Marks
		(OR)	
6		Define B-Spline curves. List out the properties of B-Spline curves.	14 Marks

UNIT-IV

7		Explain in detail about: i) Rotations with Quaternions ii) Reflections and Shear Transformations.	14 Marks
		(OR)	
8		Explain in detail about 3D Transformations pipeline from modelling co-ordinates to final device co-ordinates.	14 Marks

UNIT-V

9		Explain about the Depth Buffer Algorithm and Depth Sorting Method.	14 Marks
		(OR)	
10		Discuss in detail about the BSP-Tree Methods.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

CONTROL SYSTEMS

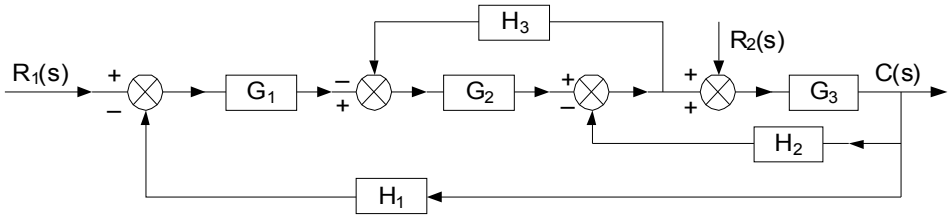
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

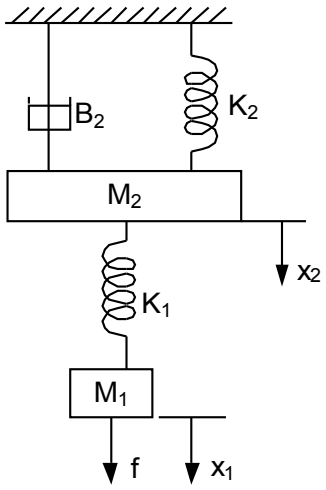
1 a) Find the transfer function $C(s)/R_1(s)$, $C(s)/R_2(s)$ in figure using signal flow graph technique and assume that only one input is present in each case. 7 Marks



b) Determine the transfer function of Field controlled DC motor and draw the block diagram. 7 Marks

(OR)

2 a) Write the differential equations governing the behavior of the mechanical system shown in figure. Also obtain the analogous electrical circuit in force-current analogy. 7 Marks



b) Explain the principle and operation of Synchro. 7 Marks

UNIT-II

3 a) The unity feedback system is characterized by an open loop transfer function $G(s)=K/s(s+10)$. Determine the gain K, so that the system will have a damping ration of 0.7, for this value of K determine settling time, peak overshoot and time to peak overshoot for a unit step input. 7 Marks

b) Measurement conducted on a servomachanism show the system response to be $\mathbf{C(t) = 1 + 0.2e^{-6t} - 1.2e^{-t}}$ when subjected to a unit step input. 7 Marks

i) Obtain the expression for the closed loop transfer function.

ii) Determine the undamped natural frequency and damping ratio of the system.

(OR)

4 a) Explain about proportional derivative controller. 7 Marks

b) For a unity feedback system the open loop transfer function is $G(s) = \frac{10(S+2)}{s^2(s+1)}$. 7 Marks

Find the positional, velocity and acceleration error constants. Also find steady state error when the input is $R(s) = \frac{3}{s} - \frac{2}{s^2} + \frac{1}{s^3}$.

UNIT-III

5 a) Consider a sixth order system with character equation 7 Marks
$s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0$. Find the stability of the system using Routh's test and comment on nature of roots.

b) What are the rules to formulate root locus of a closed loop control system? 7 Marks

(OR)

6 Sketch the root locus plot of a unity feedback system with open loop transfer function $G(s) = K/s(s+2)(s+4)$. Find the range of values of K for which the system has damped oscillatory response. 14 Marks

UNIT-IV

7 Sketch the bode plot showing the magnitude in dB and phase angle in degrees of $G(s)=10/s(1+0.5s)(1+0.02s)$. Determine the gain cross over frequency, phase cross over frequency, gain margin and phase margin. 14 Marks

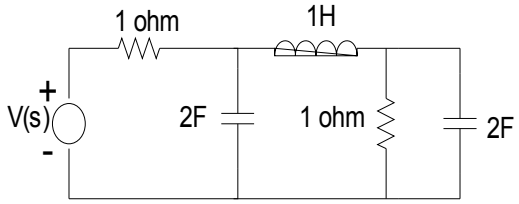
(OR)

8 a) State and explain Nyquist stability criterion to determine the stability of a system. 7 Marks

b) What are compensating network? Explain about lead, lag networks. 7 Marks

UNIT-V

9 a) Write the state equation for the circuit shown in figure. 7 Marks



b) What is state transition matrix? State and prove its properties. 7 Marks

(OR)

10 A system is characterized by the following state space equations. 14 Marks

$$\begin{bmatrix} X_1 \\ X_2 \end{bmatrix} = \begin{bmatrix} -3 & 1 \\ -2 & 0 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u;\ t > 0$$

$$y = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix}$$

i) Compute the state transition matrix.

ii) Solve the state equation for the unit step input under zero initial conditions.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

PULSE AND DIGITAL CIRCUITS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Obtain response of low pass RC circuit for step input voltage.	7 Marks
	b)	A symmetrical wave whose average value is zero is applied to RC low pass circuit. The time constant of the circuit is equal to the period of the square wave. Determine the peak to peak value of the input wave is 3V.	7 Marks
		(OR)	
2	a)	Show that how the low pass RC circuit acts as a integrator circuit.	7 Marks
	b)	Describe the response of the low pass RC circuit for ramp input voltage.	7 Marks

UNIT-II

3	a)	State and prove clamping circuit theorem.	7 Marks
	b)	Explain the operation of transistor clipper circuit.	7 Marks
		(OR)	
4	a)	A 125V peak-peak square wave with a period of 25ms is to be negatively clamped at 50V. Draw the circuit diagram required to accomplish it. Sketch the output waveform.	8 Marks
	b)	What are the advantages and disadvantages of the clippers?	6 Marks

UNIT-III

5	a)	With a neat circuit diagram and relevant waveforms, explain the operation of a Schmitt trigger using BJTs.	7 Marks
	b)	Design a collector coupled monostable multivibrator with the following specifications. V_{cc}=+12V, V_{bb} = -6V, h_{FEmin} = 20, V_{EBO} = 5V, I_c = 20mA. Transistors are of silicon n-p-n type. Output pulse width = 200μsec.	7 Marks
		(OR)	
6	a)	Derive an expression for gate width of a monostable multivibrator.	7 Marks
	b)	With the help of a neat circuit diagram, explain the operation of an astable multivibrator.	7 Marks

UNIT-IV

7	a)	Describe the different generating time base waveforms methods.	6 Marks
	b)	Explain the terms: i) Sweep time ii) Return time iii) Sweep error iv) Transmission error.	8 Marks
		(OR)	
8	a)	Draw and explain the operation of SCR with VI characteristics.	6 Marks
	b)	Design a relaxation oscillator to have a 2kHZ output frequency using 2N 3980 and 20V supply. Calculate the output impedance. (The specifications are: η=0.68 to 0.82 .I_p=2μA, I_V=1mA and V_{BE} (sat) = 3V).	8 Marks

UNIT-V

9	a)	Describe the transistor as a chopper switch.	6 Marks
	b)	Draw and explain the operation of a bidirectional diode gate.	8 Marks
		(OR)	
10	a)	Give the applications of sampling gate.	6 Marks

b) Describe AND logic operation using diodes. 8 Marks

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CODE No.:14BT50501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Show that if L be a set accepted by an NFA then there exists a DFA that accepts L. 14 Marks

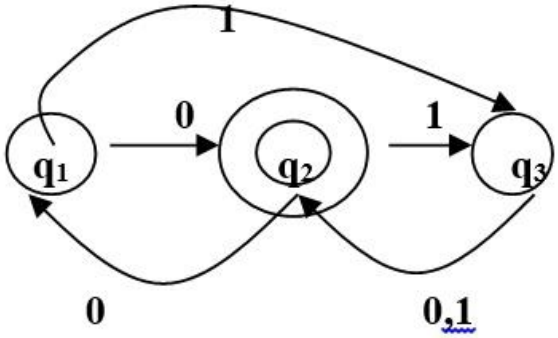
(OR)

2 Convert an NFA to a DFA given NFA M = $(\Sigma, Q, \delta, q_0, F)$ $\Sigma=\{0,1\}$, 14 Marks
$Q = \{ q_0, q_1, q_2, q_3\}$, $F= \{ q_0\}$,

δ	0	1
q_0	$\{ q_0\}$	$\{ q_0, q_1\}$
q_1	$\{ q_2\}$	$\{ q_2\}$
q_2	$\{ q_3\}$	$\{ q_3\}$

UNIT-II

3 Obtain the regular expression that denotes the language accepted by: 14 Marks



Using the recursive relation.

(OR)

4 For the two regular expressions given below, 14 Marks
i) find a string corresponding to $\mathbf{r_2}$ but not to $\mathbf{r_1}$ and
ii) find a string corresponding to both $\mathbf{r_1}$ and $\mathbf{r_2}$.
$\mathbf{r_1 = a^* + b^*}$ $\mathbf{r_2 = ab^* + ba^* + b^*a + (a^*b)^*}$

UNIT-III

5 Construct a PDA accepting the language of palindromes over the alphabet {a, b}. 14 Marks
Prove the equivalence of acceptance by final state and empty stack in PDA.

(OR)

6 State and prove closure properties and decision algorithms for CFL. 14 Marks

UNIT-IV

7 Draw a transition diagram for a Turing machine accepting the following language? $\{a^n b^n c^n \mid n>0\}$. 14 Marks

(OR)

8 Explain different types of Turing machines and state universal Turing machine. 14 Marks

UNIT-V

9 Is the following problem decidable? Give a proof of your answer. 14 Marks
Given a Turing machine *T* and a string *w*, does *T* loop forever on input *w*.

(OR)

10 Illustrate the Turing machine model formally. 14 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular/Supplementary Examinations May - 2017

OPERATING SYSTEMS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss different types of operating systems with suitable examples.	14 Marks
		(OR)	
2		Briefly explain various scheduling algorithms.	14 Marks

UNIT-II

3	a)	Describe critical section problem. What are the requirements for the solutions of critical section problem?	7 Marks
	b)	Discuss classic problems of synchronization.	7 Marks
		(OR)	
4		What are deadlock? Explain methods for handling deadlocks.	14 Marks

UNIT-III

5		What is paging? Explain the different structures of page table.	14 Marks
		(OR)	
6	a)	How is frame allocation done in memory?	7 Marks
	b)	Explain working set model for thrashing.	7 Marks

UNIT-IV

7	a)	Explain indexed allocation of files.	10 Marks
	b)	Explain directory implementation.	4 Marks
		(OR)	
8		How is disk management done by OS?	14 Marks

UNIT-V

9	a)	Explain Kernel I/O subsystem.	10 Marks
	b)	What are the characteristics of I/O devices?	4 Marks
		(OR)	
10	a)	Explain the principles of protection.	7 Marks
	b)	What protection problems may arise if a shared stack is used for parameter passing?	7 Marks

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Baye's theorem.
b) The diameter of an electric cable say X is assumed to be a continuous random variable with p.d.f $f(x) = 6x(1-x) \quad 0 \le x \le 1$.
i) Check that above is a p.d.f ii) Find mean and variance

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

3. a) Find the rank correlation coefficient from the following data

Rank in X	1	2	3	4	5	6
Rank in Y	4	3	1	2	6	5

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

4. a) Distinguish a parameter from a statistic. Give the out line of one tailed and two tailed tests with a suitable example or otherwise.
b) What are confidence intervals? Explain how they differ from mathematical intervals.

5. a) Before an increase in excise duty on tea, 800 people out of a sample of 1000 were consumers of tea. After the increase in duty, 800 people were consumers of tea in a sample of 1200 persons. Find whether there is significant decrease in the consumption of tea after increase in duty?
b) It is claimed that a random sample of 100 tyres with a mean life of 15269 is drawn from a population of tyres which has a mean life of 15200km and a standard deviation of 1248km. Test the validity of this claim.

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

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

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

8. A local bank has only one server. Customers arrive at the bank at the rate of 45 customers per hours and the mean service rate of the servers is 60 customers per hour. Arrivals are Poisson where as service times are exponentially distributed. For a one minute period find out:
i) The probability that there are no customers in the bank.
ii) The average number of customers in the waiting line.
The probability that an arriving customer has to wait for service.

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CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

ENVIRONMENTAL SCIENCES

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

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. a) Write a short note on types of ecosystems.
b) Define food chain and food web.

4. a) Write an essay on Hot spots of Bio diversity.
b) Explain the values of Bio diversity.

5. a) Name the different types of air pollutants. Explain the characteristics and biochemical effects of air pollutants.
b) Write a small essay about Disaster Management.

6. a) Enumerate rainwater harvesting methods, currently being adopted in your localities and try to propose suggestions for improvement.
b) Discuss salient features of Air Act, 1981 (prevention and control of pollution).

7. a) What is the population growth and its impacts on environment?
b) What are occupational health hazards? Explain with an example.

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

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Derive Bernoulli's equation from Euler's equation of motion.
b) A 30cm diameter pipe conveying water branches into two pipes of diameters 20cm and 15cm respectively. If the average velocity in the 30cm diameter pipe is 2.5 m/s, find the discharge in this pipe. Also determine the velocity in 15cm pipe if the average velocity in 20cm diameter pipe is 2 m/s.

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

4. a) In case of a jet striking symmetrical moving curved vane at the centre, show that V=3u for maximum efficiency. Where V= Velocity of the jet and u= Velocity of the vane.
b) A jet of water moving at 12 m/s impinges on a concave vane shaped to deflect the jet through 120^0 when stationary. If the vane is moving at 5 m/s, find the angle of the jet so that there is no shock at inlet. What is the absolute velocity of the jet at exit in magnitude and direction and the work done per sec per N of water? Assume that the vane is smooth.

5. a) Distinguish between run-off river plants and storage plants.
b) Write detailed note on the selection of suitable type of turbine for a hydroelectric scheme.

6. a) Explain the construction and working of Kaplan turbine.
b) A Francis turbine operates under a head of 30m consuming 5 litres per sec running at a speed of 1200 r.p.m. What will be the flow rate and expected speed if the head drops to 29m.

7. a) Define the unit quantities for a turbine. Why they are important?
b) Explain about the selection of a turbine at a particular place.

8. a) Explain the working principle of a Reciprocating Pump with a neat sketch.
b) Explain the working of a single-stage centrifugal pump with sketches.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

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, using Mohr's circle.

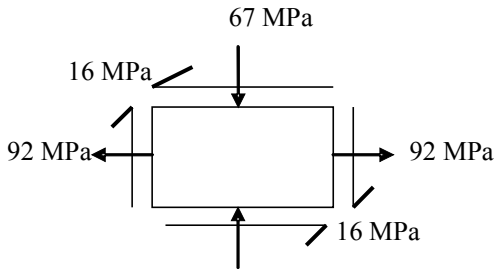

Fig.1

2. A beam of span 6 m is simply supported at the ends A and B. The beam is subjected to two point loads of 25kN each at a distance of 2m and 3m respectively from the left end A. Determine the position and magnitude of maximum deflection. Take E= 2 x 10^5 N/mm^2 and I = 7200 cm^4.

3. A beam AB of span 8m is simply supported at the ends. The beam is subjected to a point load of 10kN at 6m from the left support A. Using area moment method, calculate deflection under the point load and slope at the ends A and B. Take I = 7x10^8 mm^4 and E = 2x10^5 N/mm^2.

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 bolt is required to resist an axial tension of 37kN and a transverse shear of 29kN. Find the size of the bolt by:

i) the Maximum Principal Stress Theory. ii) the Maximum Strain Theory.
iii) the Maximum Shear Stress Theory.

The stress at elastic limit of the material is 282MPa. Poisson's ratio =0.29 and the factor of safety=2.4.

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. Analyse the fixed beam shown in Fig.2 and draw shear force and bending moment diagrams. Find the distance of the points of contra-flexure from supports.

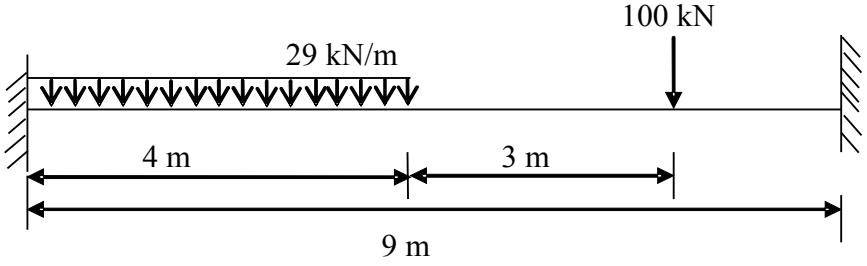

Fig.2 Fig.4

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

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CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a boundary layer? Discuss the factors influencing its thickness with a neat sketch.
b) A kite weighing 15.2N has an effective area of 1.10sqm. The tension in the kite string is 36N when the string makes an angle of 45° with the horizontal. For a wind of 35kmph, what be the coefficients of lift and drag if the kite assumes an angle of 9° with the horizontal ? Take specific weight of air as 12.01kg/m^3.

2. a) Prove the statement "The maximum discharge from a circular cross section not under pressure, but occurs at a little less than full depth."
b) A trapezoidal channel of bottom width 6.8m and side slope 2H:1V, carries 72cumec at a uniform depth of 2.5m. Compute the bed slope. Take Manning's N = 0.025.

3. a) Derive the dynamic equation for gradually varied flow and list all the assumptions involved.
b) How are the channel bottom slopes classified? Explain.

4. a) Derive an expression for the force exerted by a jet of water on moving inclined flat plate in the direction of the jet.
b) A jet of water having a velocity of 45m/s impinges without shock on a series of vanes moving at 15m/s. The direction of motion of the vanes is inclined at 20° to that of jet. The relative velocity at outlet is 0.9 of that at inlet and absolute velocity of water at exit is to be normal to the motion of vanes. Find vane angles at inlet and outlet.

5. a) Explain: i) gross and net heads ii) hydraulic and overall efficiencies of turbines. What is the practical application of specific speed concept of a turbine?
b) A 150mm diameter jet of water strikes the bucket of a Pelton wheel and is deflected through an angle of 165° by the buckets. Head available at the nozzle is 350m. Taking coefficient of velocity as 0.96, speed ratio as 0.46 and loss of velocity of jet due to friction, while passing through the buckets as 12%, find the power developed by the machine.

6. a) Explain process governing of turbines with a neat sketch.
b) A Francis turbine operates under a head of 5m at 210 r.p.m. and develops 75kW, when the discharge is 1.8cumec. The runner diameter is 1 m. If the head on this turbine is increased to16m, determine its new speed, discharge and power.

7. a) Define the different heads and efficiencies of a centrifugal pump.
b) The internal and external diameters of the impeller of a centrifugal pump are 200mm and 400mm respectively. The pump is running at 1200 r.p.m. The vane angles of the impeller at inlet and outlet are 20° and 30° respectively. The water enters the impeller radially and the velocity of flow is constant. Determine the work done by the impeller per unit weight of water.

8. a) Explain the classification of hydropower plants in detail.
b) Explain the terms:
i) load factor ii) plant factor iii) utilization factor.

CODE No.:10BT40103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

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 6m has a rectangular section 300mm wide by 650mm deep. The beam is reinforced with 4 bars of 25mm 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 Characteristic strength, Characteristic loads and partial safety factors.
b) Estimate the stress block parameters in Limit state method.

3. a) Find the design constants in Limit state method for M25 grade concrete and Fe 415 grade steel.
b) A rectangular reinforced concrete beam of width 400mm and effective depth 600mm is to be designed to support an ultimate moment of 600 kN.m. Using M20 grade concrete and Fe415 grade steel, design suitable reinforcements in the beam at an effective cover of 60mm.

4. a) Briefly explain the IS code provisions for the design of simply supported beams.
b) A simply supported reinforced concrete beam of size 300mm x 500mm effective depth is reinforced with 4 bars of 16mmø HYSD steel of Fe415 grade. Determine the anchorage length of the bars at the simply supported end if it is subjected to a factored shear force of 350kN at the centre of 300mm wide masonry support. The concrete mix is of M20 grade.

5. Design the reinforcement of a 450mmx450mm column of unsupported length 3.6m subjected to an axial load of 1500kN with bi-axial moments 175kNm and 125kNm. Use M 20 concrete and Fe 415 steel.

6. Design the circular footing for a circular column of 450mm diameter carrying an axial load of 1500 kN. Assume the bearing capacity of soil is 200 kN/m². Use M 20 concrete and Fe 415 steel.

7. Design a R.C. slab for a room measuring 5mx6m. The slab carries a live load of 2 kN /m². The slab is simply supported at all the 4 edges with corners free to lift. The width of the supporting walls is 300mm. Use M 25 grade concrete and Fe 500 grade steel. Adopt Limit State method. Assume mild exposure condition. Sketch the reinforcement details.

8. A simply supported one-way slab 180mm thick having an effective span of 4.3m is reinforced with 10mm diameter bars spaced at 125mm c/c at an effective cover of 25mm. The slab is subjected to a live load of 4 kN/m² and a surface finish of 1 kN/m². Use M25 concrete and Fe 500 grade steel. Assume ultimate shrinkage strain = 0.0003 and creep coefficient = 1.6. Estimate the only the long-term deflection.

CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for electric field intensity due to several point charges.
b) A point charge Q_1 300 micro-coulombs located at (1,-1,-3) m, experiences a force $\mathbf{F = 8a_x - 8a_y + 4a_z}$ **N**, due to a point charge Q_2 at (3,-3,-2) m. Determine Q_2.

2. a) Derive the expression for potential due to dipole.
b) A point charge Q_1=10 micro coulombs is located at a point P_1(1,2,3) in free space while Q_2=5 micro coulombs is at P_2(1,2,10). Find :

i) Force experienced on Q_2 by Q_1.
ii) the coordinates of a point at which a point charge experiences no force.

3. a) State and prove the conditions at the boundary between two dielectrics.
b) Explain the Phenomenon of polarization when a dielectric slab is subjected to an electric field with neat diagrams.

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

5. a) State Amperes law and explain how it can be applied to infinite sheet of current.
b) Determine the current density associated with the magnetic field. $\overline{H} = 5r\overline{a}_\rho + 3r\overline{a}_\phi + 7\overline{a}_z \; A/m$

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

7. Derive an expression for force between two straight long parallel current carrying conductors .What will be the nature of force if the current is carrying in the same direction and opposite directions?

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

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. a) Explain the measurement of power using Three wattmeter method
b) Two wattmeters connected to read the total power in a 3 phase system supplying a balanced load read 10.5 KW and -2.5KW respectively. Calculate the total power and power factor. Also explain the significance of (i) equal wattmeter readings and (ii) a Zero reading on one wattmeter.

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

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

6. a) What is the need for Kelvin's double bridge for measuring low resistance? Derive the balancing condition and write the expression for unknown resistance.
b) Explain any method for finding unknown resistance of very high resistance.

7. a) Deduce the condition for balancing the bridges in AC bridges.
b) Explain the working of Anderson's bridge with help of phasor diagram.

8. a) Write a short note on: i) Thermocouple ii) LVDT
b) Explain the working of mechanical resonance type and Weston type frequency meters.

CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

KINEMATICS OF MACHINERY

[Mechanical Engineering]

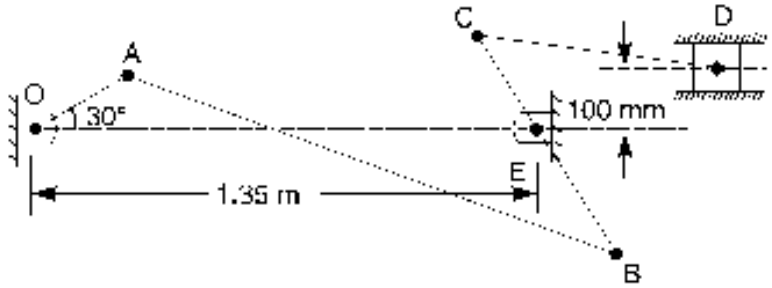
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is Kinematic Link? Classify it
b) Explain crank and slotted lever mechanism with neat sketch.

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

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



4. a) Discuss in detail about Davis steering gear and derive the necessary equations.
b) In a double universal coupling joining two shafts, the intermediate shaft is inclined at 10° to each. The input and the output forks on the intermediate shaft have been assembled inadvertently at 90° to one another. Determine the maximum and the least velocities of the output shaft if the speed of the input shaft is 500 r.p.m. Also find the coefficient of fluctuation in speed.

5. a) Enumerate different types of cams and followers commonly used. State their relative merits and demerits.
b) Derive expressions for displacement, velocity and acceleration for roller follower operated by a tangent can, when the contact is on straight flank.

6. a) Derive a relation for minimum number of teeth on the gear wheel and the pinion to avoid interference.
b) A three start worm has a pitch diameter of 80mm and a pitch of 20mm. It rotates at 600 r.p.m. and drives a 40 tooth worm gear. If coefficient of friction is 0.05;
find i) the helix angle of the worm
ii) the speed of the gear
iii) the centre distance
iv) the efficiency and maximum efficiency.

7. a) Derive an expression for the length of an open belt drive.

b) A flat belt of mass 1.2kg/m is used to connect two pulleys of 1.5 m diameter each and the pulley shafts are parallel. The slipping is found to be imminent at a speed of 325 r.p.m. when the resisting moment of the driven shaft is 1150Nm. When the speed is lowered to 210 r.p.m. the resisting moment on the driven shaft is 1465Nm for slipping to be imminent. Assuming that the belt obeys Hooke's law and the initial tension in the belt is constant; find the co-efficient of friction between the pulley and the belt.

8. A compound epicyclic train, the input shaft A1 of 1st train is connected to sun wheel S_1 having 24 teeth. A planet wheel P_1 carried by planet carrier C_1 drives and internal gear B_1 having 66 teeth. The internal wheel B_1 is compounded with a sum wheel S_2 which has 28th teeth, while the planet carrier C_1 drives a pinion P_2 actuated on sun wheel S_2 connecting a fixed internal wheel B_2 of 62 teeth. The planet carrier C_1 or C_2 forms the output shaft. Sketch the arrangement.

Determine:

i) speed of the output shaft
ii) output torque
iii) holding torque

If the input shaft runs at 1500 r.p.m. and the input torque is 500 Nm.

CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the working of dual cycle with help of p-v diagram and T-S diagram.
b) Differentiate between otto cycle, diesel cycle and dual cycle.

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

3. a) Explain the port timing diagram for a 2-stroke diesel engine with a neat sketch.
b) Explain the working of a simple carburetor with a neat sketch.

4. a) For efficient combustion chamber design for a spark ignition engine, what factors to be considered and justify your answer with discussion?
b) What is called detonation or knocking?

5. a) List out the factors that affect the delay period in CI engines.
b) Distinguish the knocking in SI engines and CI engines.

6. a) Explain the Morse test method of determination of frictional power.
b) Explain the volumetric type flow meter for measurement of fuel consumption with a neat sketch.

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

8. a) Develop a stead flow energy equation for a centrifugal stage compressor.
b) Draw and explain about the construction and working of a screw type compressor.

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

ELECTRONIC CIRCUIT ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. Derive expressions for lower and upper cutoff frequencies of multi stage amplifier.

3. a) Describe how an emitter follower behaves at high frequencies.
b) A BJT has parameters measured at I_C = 1 mA ; h_{ie}= 3Kohm; h_{fe}=100; f_T = 4MHz; C_c = 2Pf; C_e = 18 Pf.
Find $r_{bb'}$, $r_{b'e}$, g_m and f_H for R_L= 1Kohm.

4. Draw the circuit of Common Drain MOSFET amplifier with resistive load. Analyze the circuit with the help of small signal model.

5. a) An amplifier has A_{vf}=500. If the gain without feedback changes by 20% and gain with feedback should not vary more than 2% . Determine open loop gain and feedback ratio.
b) Draw the circuit diagram of a current series feedback amplifier. Derive expressions to show the effect of negative feedback on input and output impedances, bandwidth and distortion of amplifier.

6. a) Draw the circuit diagram of Wein Bridge Oscillator and explain its operation.
b) Derive the frequency of oscillation for Colpitts Oscillator.

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

8. a) Discuss the advantages and disadvantages of Tuned amplifiers.
b) What is the effect of cascading single tuned amplifiers on bandwidth?

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

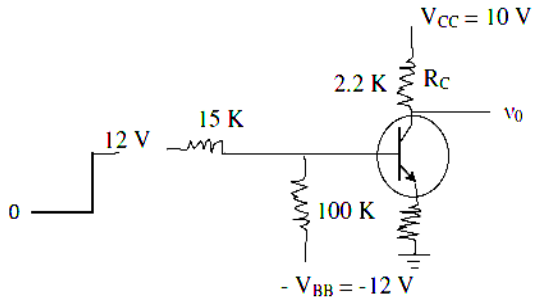
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how the high pass RC circuit acts as a differentiator.
b) What is Ringing circuit and explain its operation?

2. a) Explain the operation of all four diode clippers with the help of transmission characteristics.
b) What is clamping circuit theorem? Explain the necessity of synchronized clamping.

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



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

5. a) With the help of a neat circuit diagram and waveforms explain the working of a transistor current time base generator.
b) Define the terms slope error, displacement error and transmission error.

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

7. a) Explain the pulse synchronization technique of relaxation devices with an example.
b) Explain the operation of sinusoidal divider using regeneration and modulation with the help of block diagram.

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

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Prove that electric field at any point due to infinite uniform plane charge density $\frac{\rho_s C}{m^2}$ is $\frac{\rho_s}{2 \in_0}$.

b) Discuss the applications of Gauss law.

2. a) An infinite long, uniform line charge is located at y = 3, z = 5. If ρ_L = 30nC/m, find **E** at point (5,6,1).

b) Given V = ln (1/ r) and r = $\sqrt{[\ x^2 + y^2\ ]}$. Show $\nabla^2 V = 0$ using cylindrical coordinates.

3. a) State and explain Biot-Savart's law relating the magnetic field produced at a point due to the current in a small elemental wire.

b) A circular loop located on $x^2 + y^2 = 9$, $z = 0$ carries a direct current of 8 A along α_φ. Determine $\vec{H}$ at (0, 0, 4) and (0, 0, -4).

4. a) Discuss about the inconsistency of Ampere's law and hence concept of displacement current density.

b) Explain the importance of displacement current.

5. a) Show that poynting vector P = E x H represents power flow for unit area.

b) Derive the propogation parameters of EM waves in good conductors.

6. a) State and prove poynting theorem and interpret each term of the expression.

b) Define depth of penetration and derive an expression for a good conductor.

7. a) For a typical open wire telephone cable the primary constants are R = 10 Ω/km, L= 0.0037 H/Km, C = 0.0083 μF/Km, G = 0.4 x 10^{-6} mho/Km. Determine z_0 and the propagations constant at a frequency of 1 KHz.

b) Derive the expression for **α** and **β** in terms of primary constants of a line.

8. Explain in detail:

i) Excitation of wave guides.

ii) Resonant circuits.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the following numbers.
i) $(1256)_8=(X)_2$; ii) $(FACE)_{16}$ to binary
b) Explain the 7-bit Hamming code. A receiver with even parity hamming code is received the data 1110110. Determine the correct code.

2. a) Why the binary number system is used in computer design
b) For the binary numbers a=1010.1; b=101.0; c=1001.1, perform the following
i) a+b; ii)a-b iii) a.c iv)a/b

3. Simplify the following Boolean function for minimal POS form using K-Map and implement using NOR gates F(W,X,Y,Z)=P(4,5,6,7,8,12) d(1,2,3,9,11,14).

4. a) Realize full adder using 4x1 multiplexers.
b) What is decoder? Design 4 x 16 Decoder using two 3 x 8 decoders.

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

6. Design a synchronous Decade counter using T flip-flop and implement it, also construct timing diagrams.

7. Design a sequential circuit with two JK flip-flops A and B, and two inputs E and x. If E=0, the circuit remains in the same state regardless of the value of x. When E=1 and x=1, the circuit goes through the state transitions from 00 to 01 to 10 to 11 back to 00 and repeats. When E=1 and x=0, the circuit goes through the state transitions from 00 to 11 to 10 to 01 back to 00 and repeats.

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

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Von-Neuman Architecture.
b) Explain the Fixed point and Floating Point data representation in detail.

2. Explain any five addressing modes of CPU with examples.

3. a) Write short note on nano programming.
b) With neat diagram, explain the design of control unit.

4. Explain about attached array processor and SIMO array processor.

5. a) Explain virtual memory in detail.
b) Explain input-output interface in detail.

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

7. a) Explain the characteristics of a multiprocessor.
b) Explain system bus structure for multiprocessor with a neat diagram.

8. Discuss in detail about power PC architecture.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the OOPs concepts with necessary examples.
b) What is constructor? Discuss different types of constructors with suitable examples.

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

3. a) Write about the data types supported by Java.
b) Write a Java program that illustrate the usage of the charAt() and setCharAt()methods of String Buffer class. Give the output.

4. a) Define an examiner class. Provide all necessary data and function members to provide the following:
The examiner must access answer sheets of at least one subject; He may examine answer sheets of multiple subjects; The examiner represents a college and also a university; Most of the examiners are local and represent local university; and have more than one constructor including one default and one with default argument. Provide a meaningful copy constructor.
b) Define a person class with more than three constructors. Define data and function members in the class such a way that all three constructors are meaningful.

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

6. a) Explain the life cycle of an Applet.
b) Write a Java program to implement Runnable class to create a thread.

7. a) What is event? Discuss about Window and MouseEvent.
b) Explain the different AWT components.

8. a) What is meant by MVC architecture? Explain the differences between swing and AWT.
b) Explain the JTree and JTabbedPane components.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain, the principle and operation of a moving iron instrument with a neat diagram. Why this meter is suitable for both ac and dc measurements?

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 Electrodynamo wattmeter.
b) Briefly discuss about the testing and calibrating procedures employed for energy meters.

4. a) Discuss the procedure involved to measure the medium resistance using Wheatstone's bridge.
b) Explain about the Maxwell's capacitance bridge with the necessary balancing equations.

5. a) Explain True RMS Reading Voltmeter with a neat diagram.
b) Draw the block diagram of Staircase Ramp DVM and explain its operation.

6. a) Explain Output Power Meter with a neat circuit diagram.
b) Explain various types of errors associated with Frequency Counter.

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

8. a) 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.

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

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

3. a) Explain how the potentiometer works with a suitable example.
b) A 350 Ω strain gage having G = 2.1 is attached to an aluminum strut (E = 73 GPa). The outside diameter of the strut is 50mm and the inside diameter is 47.5mm. Calculate the change in resistance when the strut supports a 1000 kg load.

4. a) What is LVDT? Explain its construction, principle and applications.
b) Explain about Electromagnetic transducer with an example.

5. a) Explain the advantages and disadvantages of capacitive transducers.
b) Explain the measurement of humidity.

6. a) Explain the construction and working of piezoelectric transducer.
b) Explain the construction and working of pyrometric transducer.

7. a) Explain in detail about Chopper amplifier.
b) Explain in detail about balance and deflection measurement in Wheatstone bridge.

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

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the seven layers of OSI protocol hierarchy.
b) What are the types of digital modulation techniques?

2. a) Describe a transverse electromagnetic wave.
b) Comparison between optical fibre cables to metallic transmission lines.

3. a) Explain in brief the operation of time division multiplexing.
b) What is the relation between the number of slots in a frame and the number of input lines for synchronous TDM? Repeat it for Asynchronous TDM.

4. a) 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 multifrequency signaling.
b) Define line conditioning and describe C-type and D-type conditioning.

6. a) Describe second-generation cellular telephone system.
b) Explain the concept of cell splitting and Hand off.

7. a) Define error control and relate it to probability of error and bit error rate.
b) Determine the BCS for the following data and CRC generating polynomials:
Data G(x) = $\mathbf{x^7 + x^5 + x^4 + x^2 + x^1 + x^0}$.
CRC P(x) = $\mathbf{x^5 + x^4 + x^1 + x^0}$.

8. a) Explain modem synchronization and list its functions.
b) What is meant by modem training?

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about raster scan system.
b) Discuss about the construction and functioning of different graphical input devices.

2. a) Generate all raster points on the line segments, if the two end points are given as (0,0) and (6,18) using DDA line drawing algorithm.
b) Explain the scan-line algorithm for polygon filling.

3. a) Prove that we can transform a line by transforming its endpoints and then constructing a new line between the transformed endpoints.
b) What is meant my composite transformations?

4. a) What is polygon clipping? Explain Sutherland-Hodgeman algorithm for polygon clipping.
b) Explain the Sutherland Cohen line-clipping algorithm. Is this applicable to any type of window? Justify your answer.

5. a) Give a 3x3 homogeneous matrix to rotate the image clockwise by 90º. Shift the image to right by 10 units. Finally scale the image by twice as large.
b) What is B-Spline? How is it related to Bezier curve? Explain.

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

7. a) Discuss different file format standards.
b) Explain the concept of full motion video.

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

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

CONTROL SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the effect of feedback on parameter variation.
b) Discuss the mathematical modeling of fundamental components of mechanical rotational systems.

2. a) Obtain the transfer function armature voltage control of a DC shunt motor.
b) Determine the signal flow graph for the system $\frac{G(s)}{R(s)} = \frac{2.5(s+3)}{(s+10)^2(s+4)}$.

3. a) A unity feedback system is characterized by an open-loop transfer function

$$G(S) = \frac{K}{S(S+10)}$$

Determine the gain K so that the system will have a damping ratio of 0.5. For this value of K determine settling time, peak overshoot and time to peak overshoot for a unit-step input.
b) Discuss the effect of P and PI controllers on time response.

4. a) Explain briefly Routh-Hurwith stability criterion with an example.
b) An open loop system is described by $G(s) = \frac{k}{s(s^2+5s+6)}$. Sketch the root locus plot for the values of k ranging from 0 to unity.

5. Draw the Bode plot of the system whose open-loop transfer function is given by

$$G(S)H(S) = \frac{K}{S(1+S)(1+0.1S)(1+0.02S)}$$

Determine the value of K for the gain margin of 10db.

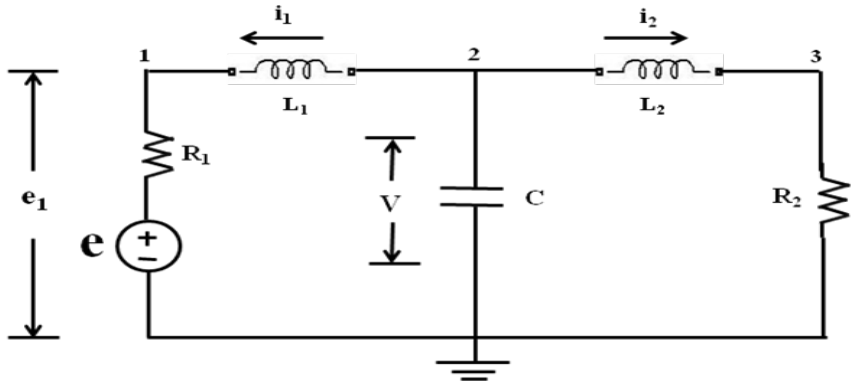
6. Explain briefly the Nyquist stability criterion with an example.

7. a) For the transfer function $G(s) = \frac{3}{s(s+1)(0.5s+1)}$ and $H(s) = 1$. Determine a compensator lag network such that closed loop transfer function t will provide a phase margin of 45^0
b) Explain the Lead compensator design briefly.

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

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

b) Obtain the state model of the electrical network shown in figure.



CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

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

2. a) Write the Greedy algorithm to generate shortest path.
b) If p_1/w_1, p_2/w_2..... p_n/w_n prove that Knapsack generates an optimal solution to the given instance of the Knapsack problem.

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

4. a) Explain the method of reduction to solve Traveling Sales Person problem using Branch and Bound.
b) Explain the principles of FIFO Branch and Bound.

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. Write a short note on "0-1Knapsack" problem.
"0-1Knapsack problem can be solvable by greedy method" - Analyze your answer.

7. With respect to the Branch and Bound strategy of algorithms, give the solution for Traveling Sales Person problem.

8. Write notes on the following:
i) Non-deterministic algorithms.
ii) NP-Hard Scheduling algorithms.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

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. Explain the architecture of 8086 microprocessor with a neat block diagram.

2. a) Develop an 8086 assembly language program with a procedure named BCD-BIN which coverts BCD numbers to binary. Use the AL register to pass parameters to the procedure.
b) Write a program to sort an array in descending order.

3. a) With an example, explain how static RAMs are interfaced to 8086.
b) Explain the need for DMA. Discuss in detail about DMA data transfer method.

4. a) Discuss about the control word formats of 8255 and give the interpretation of each bit in the format.
b) Explain about the need for 8255 in microprocessor based systems.

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

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

7. a) Explain the salient features of a 80386 microprocessor.
b) Explain how physical address is obtained from virtual address in protected mode of a 80386 microprocessor.

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

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

THEORY OF COMPUTATION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the sum N natural numbers and prove that your answer is correct through mathematical induction.
b) Simplify the following set to the extent possible: $\cap\{x||x-a|<=r\}$ and **r<1** all the numbers are real.

2. Explain the following in details.
i) Equivalence between NFA and DFA.
ii) Mealy and Moore machine.

3. Design Push Down Automata for the language $L=\{wcw^R | w \in (0+1)^*\}$.

4. a) Prove that the CFG G1 with productions.
$S_1 \rightarrow S_1+T/T$
$T \rightarrow T*F/F$
$F \rightarrow (S_1)/a$ is unambiguous
b) Drawn NFA accepting the language generated by the grammar with productions.
$S \rightarrow abA/bB/aba$
$A \rightarrow b/aB/bA$
$B \rightarrow aB/aA$

5. a) Let G be the grammar with productions.
$S \rightarrow AACD$
$A \rightarrow aAb/\Lambda$
$C \rightarrow aC/a$
$D \rightarrow aDA/bDb/\Lambda$ convert into Chomsky normal form.
b) Explain and simplified of forms and Normal forms?

6. Construct a PDA a equivalent to the following CFG.
$S \rightarrow 0BB$
$B \rightarrow 0S/1S/0$ Test whether 010^4 is in N(A)

7. a) Explain polynomial time using Kruskal's algorithm.
b) Explain non-deterministic polynomial time using Travelling Sales Person problem.

8. Explain the following terms in brief:
i) Computable function
ii) P and NP problem
iii) UTM.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Baye's theorem.
b) The diameter of an electric cable say X is assumed to be a continuous random variable with p.d.f $f(x) = 6x(1-x) \quad 0 \le x \le 1$.
i) Check that above is a p.d.f ii) Find mean and variance

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

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

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

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

4. With reference to tests of significance explain the following terms:
i) Statistic
ii) Sampling distribution
iii) Null and alternative hypotheses
iv) Critical Region and
v) Level of significance.

5. a) Before an increase in excise duty on tea, 800 people out of a sample of 1000 were consumers of tea. After the increase in duty, 800 people were consumers of tea in a sample of 1200 persons. Find whether there is significant decrease in the consumption of tea after increase in duty?
b) It is claimed that a random sample of 100 tyres with a mean life of 15269 km is drawn from a population of tyres which has a mean life of 15200 km and a S.D of 1248 km. Test the validity of this claim.

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

7. The diameters of certain 10 cylinders are: 1.2, 1.7, 1.1, 1.3, 1.1, 1.8, 1.9, 1.4, 1.3, and 1.8 inches. Can we say that the process is in state of statistical quality control?

8. 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,
i) What is the probability that a customer has to wait for service?
ii) What is the expected percentage of idle time for each girl?
iii) If the customer has to wait in the queue, what is the expected length of his waiting time?

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CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

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) Explain the components of environment and their major interactions.
b) Explain role of an individual in promoting environmentalism.

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

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

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

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

6. Explain the following:
i) Green house effect and Global warming
ii) Acid rains

7. What is meant by population stabilization? Discuss family welfare and family planning program in Indian context.

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

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define 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 is meant by Perfect Competition? Explain the features of perfect competition.

4. Explain the features of Sole Proprietorship, Partnership and Joint Stock Company with suitable examples.

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

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

6. From the following balances extracted from the books of Mahesh & Co. as on 31st March, 2010, prepare final accounts.

	Rs.		Rs.
Opening stock	5,000	Commission (Cr.)	2,000
B/R	22,500	Returns Outwards	2,500
Purchases	1,95,000	Trade expenses	1,000
Wages	14,000	Office fixtures	5,000
Insurance	5,500	Cash in hand	2,500
Debtors	1,50,000	Cash at bank	23,750
Carriage Inward	4,000	Rent and taxes	5,500
Commission (Dr.)	4,000	Carriage outwards	7,250
Interest on capital	3,500	Sales	2,50,000
Stationery	2,250	Bills payables	15,000
Returns Inwards	6,500	Creditors	98,250
		Capital	89,500

The closing stock was valued at Rs.12,500, Outstanding rent Rs.1,500, Prepaid Insurance Rs.150 and Depreciation on office fixtures at 10%.

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

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

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

8. Explain the features of Tally Accounting Package.

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between manometers and mechanical gauges.
b) A simple manometer is used to measure the pressure of oil (sp.gr. =0.8) flowing in a pipe line. Its right limb is open to the atmosphere and left limb is connected to the pipe. The centre of the pipe is 9 cm below the level of mercury (sp.gr.=13.6) in the right limb. If the difference of mercury level in the two limbs is 15 cm, determine the absolute pressure of the oil in the pipe in N / cm^2 .

2. a) What do you mean by one dimensional, two dimensional and three dimensional flows?
b) A 300 mm diameter pipe carries water under a head of 20 meters with a velocity of 3.5 m/sec. If the axis of the pipe turns through 45^0, find the magnitude and the direction of the resultant force at the bend.

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

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

5. a) Describe pumped storage plant with a neat sketch.
b) Write short notes on Scroll casing and Draft-tube.

6. a) What do you mean by gross head, net head and efficiency of a turbine?
b) A Pelton wheel has a mean bucket speed of 35 m/s with a jet of water flowing at the rate of 1 m^3/s under a head of 270 m. The buckets deflect the jet through an angle of 170°. Calculate the power delivered to the runner and the hydraulic efficiency of the turbine.
Assume co-efficient of velocity as 0.9.

7. a) Define unit head, unit power and specific speed of a turbine.
b) A turbine is to operate under a head of 25 m at 200 rpm. The discharge is 9 m^3/sec.
If the efficiency is 90% determine
i) Specific speed for the machine ii) Power generated
iii) Type of the turbine iv) Performance under a head of 2 m.

8. a) Define a centrifugal pump. Explain the working of a single-stage centrifugal pump with sketches.
b) The internal and external diameters of the impeller of a centrifugal pump are 300 mm and 600 mm respectively. The pump is running at 1000 r.p.m. The vane angles at inlet and outlet are 20^0 and 30^0 respectively. The water enters the impeller radially and velocity of flow is constant. Determine the work done by the impeller per unit weight of water.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

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.

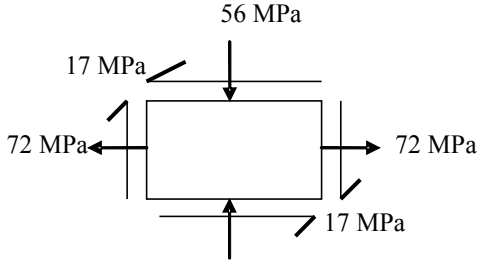


Fig.1

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.

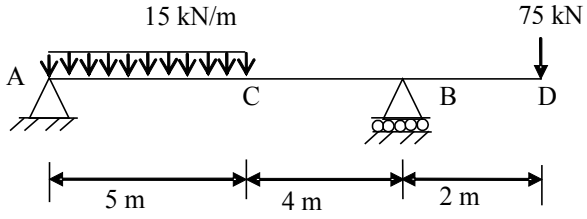


Fig.2

3. Compute the maximum slope and deflection for the beam shown in Fig.3, using Moment-Area method.
EI = 14,000 kNm^2.

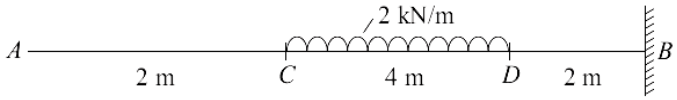


Fig.3

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

5. A solid circular shaft is subjected to a bending moment of 67 kNm and a torque of 32 kNm. Design the diameter of the shaft according to:
i) The Maximum Principal Stress Theory,
ii) The Maximum Shear Stress Theory and
iii) The Maximum Distortion Energy Theory.
Take Poisson's ratio = 0.29, the stress at elastic limit of the material is 285 MPa and the factor of safety = 3.0.

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

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. Analyze the continuous beam shown in Fig.4, using theorem of three moments, and draw shear force and bending moment diagrams. Assume constant EI throughout the beam. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

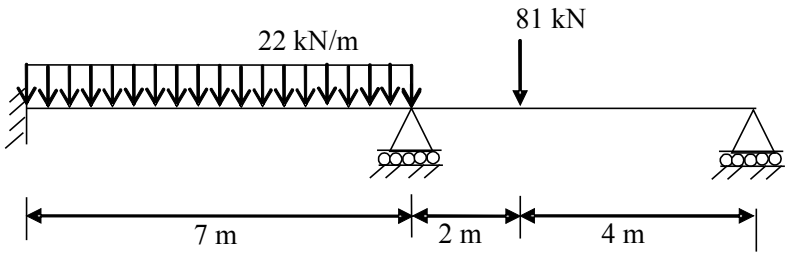


Fig.4Fig.5

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is boundary layer? Explain with a neat sketch the development of boundary layer along a flat plate.
b) A thin plate 1m x 1m is held parallel to a stream of water moving at a velocity of 2.5m/s. Assuming laminar conditions in the boundary layer at the leading edge of the plate, locate where the boundary layer changes from laminar to turbulent and determine the thickness of the boundary layer and the boundary shear stress at this point.

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

4. a) Show that the efficiency of a free jet striking normally on a series of flat plates mounted on the periphery of a wheel can never exceed 50%.
b) A jet of water of diameter 7.5cm strikes a curved plate at its centre with a velocity of 20 m/s. The curved plated is moving with a velocity of 8 m/s in the direction of the jet. The jet is deflected through an angle of 165 °.
Assuming the plate smooth, find :
i) The force exerted on the plate in the direction of jet
ii) The power of the jet
iii) The efficiency of the jet.

5. a) Classify turbines based on different criteria. How the classification based on specific speed is practically useful?
b) A 150 mm diameter jet of water strikes the bucket of a Pelton wheel and is deflected through an angle of 165° by the buckets. Head available at the nozzle is 350 m. Taking coefficient of velocity as 0.96, speed ratio as 0.46 and loss of velocity of jet due to friction, while passing through the buckets as 12%, find the power developed by the machine.

6. a) What are unit quantities? Define the unit quantities for a turbine. Why are they important?
b) A water turbine develops 175 hp at 230 r.p.m. under a head of 16m. Determine the scale ratio and the speed of a similar machine which will generate 900 h.p working under a head of 25 m.
c) What is the necessity of governing the turbines?

7. a) Derive an expression for the work done by a centrifugal pump on water per second / unit weight.
b) A centrifugal pump rotating at 100 rpm delivers 160 lps of water against a head of 30 m. The pump is installed at a place where atmospheric pressure is 1×10^5 Pa. (abs) and vapour pressure of water is 3 kPa.(abs). The head loss in suction pipe is equivalent to 0.2 m of water. Calculate minimum NPSH.

8. The water turbine of a hydel storage scheme has an output of 7500kW, when working under a net head of 25m and with an overall efficiency of 85%. The inflow in the reservoir during a year is as given below:

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Inflow in 10^6 m^3	105	111	93	84	75	90	123	93	96	102	103	99

Find
i) the minimum capacity of reservoir to satisfy the uniform demand of water
ii) the total quantity of water wasted during the year.
Use analytical method. Assume that the reservoir is full at the beginning of January.

CODE No.:10BT40201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

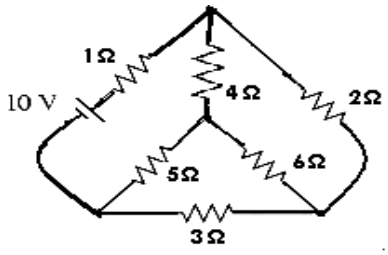
NETWORK ANALYSIS AND SYNTHESIS

[Electrical and Electronics Engineering]

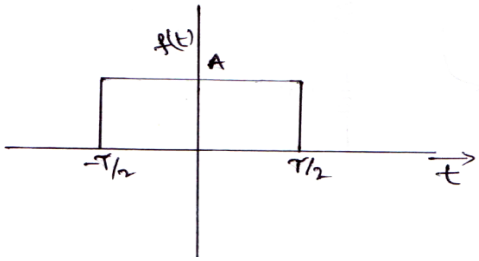
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

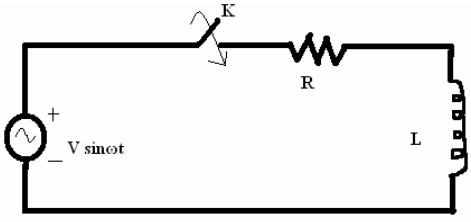
1. a) Explain the terms: Twigs, links and cut-set matrix with an example.
b) Draw the oriented graph and obtain the tie-set matrix (Consider 4Ω, 5Ω and 6Ω branches as twigs).



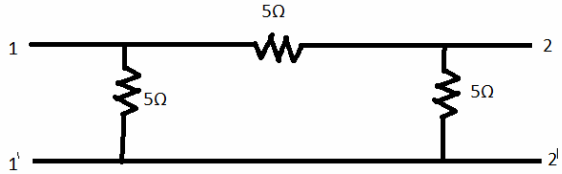
2. Find the Fourier transform of the function shown in the Figure.



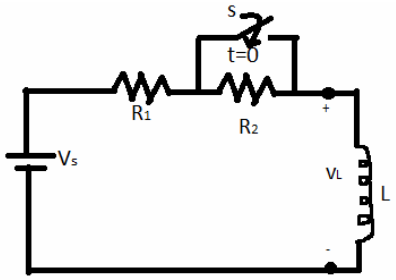
3. a) Explain initial and final value theorems.
b) At t = 0, a switch is closed, connecting a voltage source V = Vsinωt to a series RL circuit. By the method of the Laplace transformation, show that the current is given by the equation $i = \frac{V}{z}\sin(\omega t - \phi) + \frac{\omega LV}{Z^2} e \frac{Rt}{L}$, where $Z = \sqrt{(R^2 + (\omega L)^2}$ and $\phi = \tan^{-1}\left(\frac{\omega L}{R}\right)$.



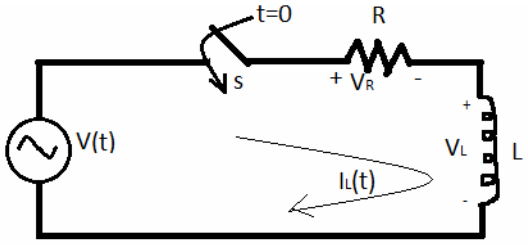
4. a) Explain symmetry and reciprocity properties in two port network with an example.
b) Obtain **Z** parameters for the network shown below.



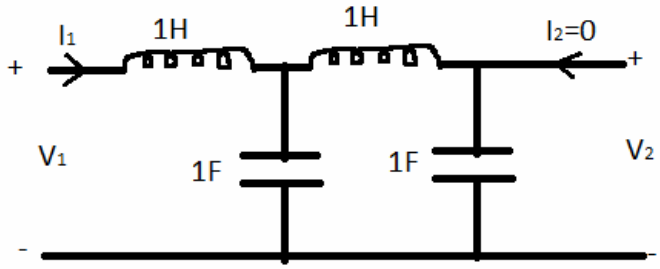
5. a) Derive an expression for the transient response of RC series network for a DC excitation.
b) Determine the inductor current for t > 0 in the network shown in fig below. The switch S has been open for a long time and is then closed at t=0.



6. a) Explain the transient response of series RLC circuit for sinusoidal excitation.
b) In the series RL circuit shown in fig, a sinusoidal voltage $V=V_m \sin \omega t$ is applied at t = 0 through a switch S. The switch has been open for a long time. Use Laplace transform method to determine $i_L(t)$ for t > 0.



7. a) Explain the conditions for driving point function.
b) Determine driving point impedance of the ladder network shown in figure.



8. Explain the LC network synthesis of first foster form.

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CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain Coulomb's law for the vector force between two point charges in free space.
b) Find the flux of the electric field through a spherical surface of radius 5m and center origin, in free space, If there is a charge of 10μc at the point (0, 0,4m). What are its units?

2. a) Find electric potential due to electric dipole.
b) A point charge Q is satiated at the center of the dielectric sphere of radius **r** and dielectric constant ε_r. Determine D, E, P and V everywhere.

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

4. A perpendicularly polarized wave propagates from a region having $\epsilon_r = 8.5, \mu_r = 1, \sigma = 0$ to free space with an angle of incidence of 15°.The incident field is 1.0 $\frac{\mu V}{m}$, find the reflected and transmitted electric field; incident, reflected ,and transmitted magnetic field.

5. a) State and explain Biot-Savart's law.
b) Derive the expression for magnetic field intensity at a radial distance R due to an infinite conductor carrying a current I.

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. Derive an expression for force between two straight long parallel current carrying conductors. What will be the nature of force if the current is carrying in the same direction and opposite directions?

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

CODE No.:10BT40203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

GENERATION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the main parts of a electric power system.
b) Explain the requirements of an electric power system.

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

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

4. Describe the layout of a nuclear power plant in detail.

5. a) Give the classification of distribution systems.
b) What are the factors that affect the size of the conductor?

6. a) Describe the layout of an outdoor substation.
b) Draw the line diagram of a gas insulated substation.

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

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

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the 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° 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=1.73×10^{-8} Ωm.

2. Explain the disadvantages of shunts and multipliers when used for extension of range. Explain how instrument transformers are a better substitute for shunts and multipliers for high range.

3. a) Explain the method for finding reactive power in a balance three phase circuit.
b) Explain the construction and working of single phase wattmeter.

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

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

6. a) Describe the working of a Carey Foster Slide Wire bridge.
b) What are the different difficulties encountered in the measurement of high resistances? Explain how these difficulties are overcome.

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

8. a) Write a short notes on
i) RVDT.
ii) LVDT.
b) Explain procedure for finding B-H curve using method of reversal.

CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Define regulation of a transformer and derive the expression for regulation for lagging power factor.
b) A 11000/230V, 150 kVA, 1-phase, 50 Hz transformer has core loss of 1.4kW and full load copper loss of 1.6kW. Determine the kVA load for maximum efficiency at unity power factor and the efficiency at half full load, 0.8 p.f leading.

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

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

5. a) Describe with neat sketches the constructional details of three phase wound type induction motors.
b) Explain the principle of operation of 3φ induction motors. What are the operational similarities between transformers and induction motors?

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

7. Explain the procedure of experimentally constructing the circle diagram for induction motors. Explain how the performance characteristics are obtained from the circle diagram.

8. a) Explain the principle of operation of an induction generator in detail.
b) The rotor of a 4-pole 50Hz slip-ring induction motor has a resistance of 0.30 ohms per phase and runs at 1440 r.p.m., at full load. Calculate the external resistance per phase which must be added to lower the speed to 1320 r.p.m., the torque being the same as before.

CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

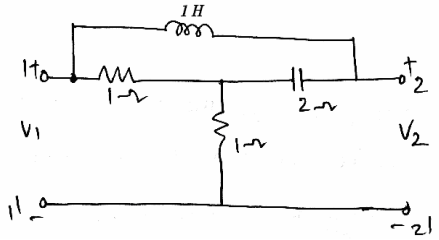
PRINCIPLES OF ELECTRICAL ENGINEERING

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

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

Answer any FIVE questions
All questions carry equal marks

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



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

3. Explain π - type attenuator and also design it to give 20db attenuation and to have characteristic impedance of 100Ω.

4. a) State the principle of operation of a dc generator and derive the expression for the e.m.f. generated.
b) A 6 - pole dc shunt generator with a wave - wound armature has 960 conductors. It runs at a speed of 500 r.p.m. A load of 20Ω is connected to the generator at a terminal voltage of 240V. The armature and field resistances are 0.3Ω and 240Ω respectively. Find the armature current, the induced e.m.f. and flux per pole.

5. a) What are the advantages of a poly phase system over a single phase system?
b) Balanced delta connected load of $5.0\angle 30^{\circ}$ Ω and a balanced star connected load of $5.0\angle 45^{\circ}$ Ω are supplied by the same balanced 240 V, 3 phase ABC system. Obtain line currents I_A, I_B and I_C.

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

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

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

CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify Kinematic pairs according to relative motion between the elements.
b) Sketch and describe the working of two different types of quick return mechanisms. Give examples of their applications. Derive an expression for the ratio of times taken in forward and return stroke for these mechanisms.

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

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

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

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

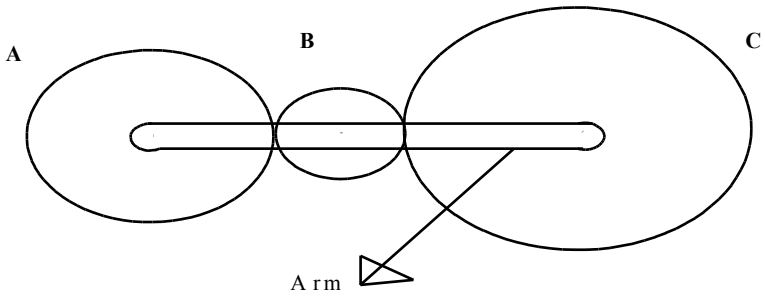
6. a) Derive a relation for minimum number of teeth on the gear wheel and the pinion to avoid interference.
b) A three start worm has a pitch diameter of 80 mm and a pitch of 20 mm. It rotates at 600 rpm and drives a 40 tooth worm gear. If coefficient of friction is 0.05
find i) The helix angle of the worm
ii) The speed of the gear
iii) The centre distance
iv) The efficiency and maximum efficiency.

7. a) Derive an expression for centrifugal tension in belt drive.
b) A leather belt is required to transmit 8 kW from a pulley 1.5 m diameter running at 240 rpm. The angle of contact is 160°C and the coefficient of friction between belt and pulley is 0.25. The safe working stress for the belt is 1.5 MPa, and density of the belt material is 1000 kg/m^3 determine the width of the belt if its thickness
is 10 mm. The effect of centrifugal tension is to be taken into account.

8. In an epicyclic gear train, shown in Fig. The number of teeth on wheels A, B and C are 42, 26, and 56 respectively. If the arm rotates at 600rpm CW,

Find

i) Speed of wheel C when A is fixed and
ii) Speed of wheel A when C is fixed.



CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Differentiate between actual cycle and fuel cycles in IC engines.
b) With neat sketch explain the different losses that occur in actual cycle of IC engines.

3. a) Draw a neat sketch of MPFI system and explain its construction and working highlighting its merits compared to other conventional methods.
b) What is delay period and what are the factors that affect the delay period?

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

5. a) List out the factors that affect the delay period in CI engines.
b) Distinguish the knocking in SI engines and CI engines.

6. a) Describe with a neat sketch the working of vane type compressor and show its P-V diagram.
b) Distinguish between positive and non-positive displacement type compressors.

7. a) Differentiate between isentropic efficiency and isothermal efficiency of a compressor. How to increase the isothermal efficiency of a compressor?
b) An air compressor takes in air at 1 bar and 20 °C and compresses it according to law $pv^{1.2} = c$. It is then delivered to a receiver at a constant pressure of 10 bar. Determine the temperature at the end of compressor, work done and heat transferred during compression per kg of air.

8. a) Develop a stead flow energy equation for a centrifugal stage compressor.
b) Draw and explain about the construction and working of a screw type compressor.

CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Discuss the role of casting volume and surface area as they relate to the total solidification time.
b) What assumptions were made when using Chvorinov's rule to calculate the rise of a riser?

3. a) What are different types of welding flames? Explain proper reason for selection of each one of them.
b) Explain the working principle of flux shielded metal arc welding operation with a neat sketch.

4. Describe the following types of welding techniques:
i) TIG welding ii) Explosive welding

5. a) Explain how the cross sectional area of a given metal can be reduced in rolling operation. What are different rolling stand arrangements?
b) How a metal working process is different from metal cutting process?

6. a) Differentiate between press forging and drop forging.
b) A 20 cm thick plate is flat forged to decrease thickness in steps to 10 cm and 5 cm. Determine total strains based on initial and final dimensions and also on the summation of the incremental strains using engineering strain and true strain. Give conclusion.

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

8. a) With a neat sketch discuss the working principle of abrasive jet machining process.
b) With a neat sketch discuss the working principle of electron beam machining process.

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

ELECTRONIC CIRCUIT ANALYSIS

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

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Differentiate between direct and capacitive coupling of multiple stages of amplifier.
b) Describe the working of a cascade amplifier with neat diagram.

3. A BJT amplifier is operated at the quiescent operating point 'Q' with Collector current I_{CQ} = 2 mA, V_{CEQ} = 20V, I_{BQ} = 20 μA. Other data given is T = 300º K, f_T = 50 MHz, h_{ie} = 1400 ohms, $h_{re} = 2.5 \times 10^{-4}$, h_{oe} = 25 μ mhos, C_C = 5 pF. Calculate the parameters of Hybrid - Pi model.

4. a) Explain the FET small signal model.
b) Derive the voltage gain, input admittance and output admittance of common source amplifier at high frequencies.

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

6. a) Calculate the gain, input impedance and output impedance of voltage series feedback amplifier having gain A = -300, R_{in} = 1.5K ohms and R_{out} = 50K ohms, β = 0.05.
b) Give the performance comparison of various feedback amplifiers.

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

8. a) Discuss the applications of tuned amplifiers.
b) Explain the need for stagger tuned amplifier.

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CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

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

3. Write about
i) Breakdown Voltages
ii) Characteristics of transistor using Ebers and Moll equations
iii) Reach-through

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

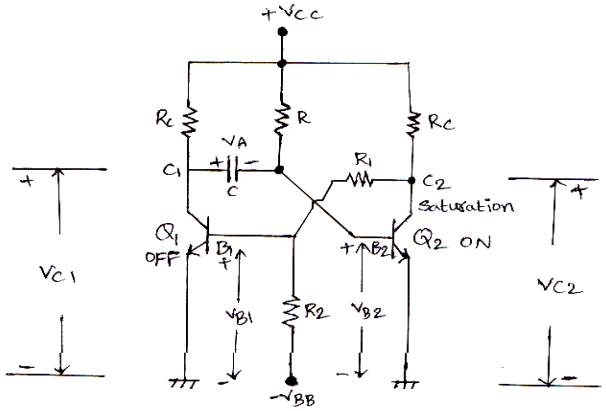

Figure 2

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

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

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

7. a) Explain the pulse synchronization technique of relaxation devices with an example.
b) Explain the operation sinusoidal divider using regeneration and modulation with the help of block diagram.

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

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CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Prove that electric field at any point due to infinite uniform plane charge density $\frac{\rho_s C}{m^2}$ is $\frac{\rho_s}{2\epsilon_0}$.

b) Discuss the applications of Gauss law.

2. a) An infinite long, uniform line charge is located at y=3, z=5. If ρ_L= 30nC/m, Find **E** at point (5,6,1).

b) Given V = ln (1/ r) and r = $\sqrt{[\ x^2 + y^2\ ]}$. Show $\nabla^2 V = 0$ using cylindrical coordinates.

3. a) State Ampere's circuital law.

b) Determine the force and the torque of the loop in the x-y plane with sides b_1 and b_2 carrying a current **I** lies in a uniform magnetic field $B = a_x B_x + a_y B_y + a_z B_z$.

4. a) State Faraday's law.

b) Derive the integral form of the Maxwell's equation for both electric and magnetic fields from point form of the Maxwell's equation.

5. Prove the following in a Uniform plane wave

i) Electric field and magnetic field are perpendicular to each other.

ii) Fields are transverse to the direction of propagation.

6. a) State and prove Poynting theorem. And interpret each term of the expression.

b) Define depth of penetration and derive an expression for a good conductor.

7. a) Explain the conditions which are used for minimum attenuation in transmission lines.

b) For a cable it is decided to provide lumped loading. The primary constants of the cable are R=40 ohm/km, L=1mH/km, G=1μmho/km, C=0.05μF/km. Find the new value of the inductance required to achieve distortion less condition .By what factor inductance is required to be raised.

8. Explain the technique of the single stub matching and discuss the operation of the quarter wave transformer.

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

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

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

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

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 2mA. Find emitter diffusion capacitance (diffusion constant 47Cm^2/sec).

3. a) What is the effect of voltage series negative feedback in the performance measures of BJT amplifiers?

b) Explain the concept of feedback. Derive the expression for the gain of the amplifier with feedback.

4. a) Draw the circuit diagram of a RC phase shift oscillator using BJT. Derive the expression for frequency of oscillations.

b) A Crystal has L= 2 H, C=0.01 pF and R= 2kΩ. Its mounting capacitance is 2 pF. Calculate its series and parallel resonating frequency.

5. a) What are the advantages and disadvantages of a transformer coupled class - A power amplifier?

b) A loud speaker of 8Ω is connected to the secondary of the output transformer of a class - A amplifier circuit. The quiescent collector current is 140mA. The turns ratio is 3:1. Collector supply voltage is 10V. If a.c. power delivered to the loud speaker is 0.48W, assuming ideal transformer, calculate

i) P_{ac} ii) P_{dc} iii) V_{1rms} iv) V_{2rms} v) I_{1rms} vi) I_{2rms}

6. a) A 10 KHz Square wave is applied to RC high pass circuits produces output with a tilt of 3.8%. Calculate the lower 3dB frequency of the circuit. If the circuit uses the capacitor of 0.47 μF determine the value of resistance.

b) State and prove clamping circuit theorem with relevant circuit and waveforms.

7. a) Define rise time, storage time, fall time and turn off time in the case of transistor as a switch.

b) Design a common emitter transistor switch operating with two power supplies V_{CC} = 18 V, $-V_{BB}$ = -12 V. The transistor is expected to operate at I_C = 8 mA and I_B = 0.75 mA. The static current gain is 25. Assume Si transistor and $R_2 = 5R_1$.

8. a) Explain the operation of Schmitt trigger with circuit diagram and waveforms. Define UTP and LTP.

b) Draw the circuit of a Bistable multivibrator with symmetrical collector triggering and explain it.

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CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017
COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. Explain Booth's multiplication algorithm with example.

2. a) Write about instruction cycle in detail.
b) Explain various types of instruction formats.

3. a) Write short note on nano programming.
b) With neat diagram, explain the design of control unit.

4. Explain about attached array processor and SIMO array processor.

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

7. Write about the following Inter connection structures
a) Multiport memory.
b) Multistage switching network.

8. Explain RISC Architecture.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

OBJECT ORIENTED PROGRAMMING

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain copy constructor and multiple constructor with suitable example.
b) How to achieve operator overloading through friend function?

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

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

4. a) Define an examiner class. Provide all necessary data and function members to provide the following: The examiner must access answer sheets of at least one subject; He may examine answer sheets of multiple subjects; The examiner represents a college and also a university; Most of the examiners are local and represent local university; and have more than one constructor including one default and one with default argument. Provide a meaningful copy constructor.
b) Define a person class with more than three constructors. Define data and function members in the class such a way that all three constructors are meaningful.

5. a) Differentiate exception and error? Explain the keywords used in exception handling in JAVA.
b) What is the need of packages in JAVA? Explain how to create and access packages.

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

7. a) Discuss about menu bar with suitable example.
b) What is Layout Manager? Discuss different Layout managers in JAVA.

8. a) Explain about MVC architecture.
b) Explain container class with an example.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain, why ammeter and voltmeter are connected in series and parallel respectively?
b) Derive an expression for driving torque of a moving iron ammeter with help of diagram.

2. a) Explain, why normal methods of resistance measurements cannot be used for measurement of resistance of Electrolytes and name the difficulty associated with measurement of low resistances.
b) The insulation resistance of a dc line is measured by means of voltmeter method. A 50kΩ voltmeter, when connected between the positive main and earth on a 250 volt system, reads 25 volts. When connected between the -ve main and earth, the reading is 75 volts. Calculate the insulation resistance of each main to earth. Also discuss the theory of the method.

3. a) Explain the construction and principle of single phase Electrodynamo wattmeter.
b) Briefly discuss about the testing and calibrating procedures employed for energy meters.

4. a) In a Kelvin's double bridge, there is error due to mismatch between the ratios of outer and inner are resistances.
The bridge has following values:
Standard resistance = 100.03μΩ ;
Inner ratio arms = 100.31μΩ and 200μΩ;
Outer ratio arms = 100.24μΩ and 200μΩ.

The resistance of the connecting leads from standard to unknown resistance is 700μΩ. Calculate the unknown resistance under this condition.
b) Explain about the Hay's bridge. Write the necessary balancing equations.

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

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

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

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

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) Define the following:
i) Sensitivity ii) Linearity iii) Hysteresis iv) Calibration
b) Explain the second order measurement system and its response to step input

3. a) Explain the different types of strain gages with neat diagrams
b) Describe the construction and working of thermistors.

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

5. a) Explain the different principles and working of capacitive transducers.
b) Explain how capacitive transducer can be used for measurement of displacement?

6. a) Explain the construction and working of piezoelectric transducer.
b) Explain the construction and working of pyroelectric transducer.

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

8. a) Discuss briefly about nanosensors.
b) Explain the thermometer transducer based on semiconductor junction.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

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

2. a) Describe the structure of an optical fibre and explain the mechanism of light propagation along the fibre.
b) What are the advantages and disadvantages of optical fibre communications?

3. a) Explain the difference between linear and nonlinear PCM codes for a single -channel PCM system with a sample rate f_s = 6000 samples per see and a seven -bit compressed PCM code determine the line speed.
b) Explain the concept of WDM.

4. a) Describe wave attenuation and absorption and the relation between them.
b) Describe ground wave, space wave and sky wave propagation.
c) Define free-space path loss.

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

6. a) Define interference. Describe co-channel and adjacent channel interference.
b) Define and explain roaming and handoffs.
c) Describe and outline the frequency allocation for the Advanced Mobile Telephone system.

7. a) List and describe the various error detection and error correction methods.
b) What is the hamming distance for the following codes and also give explanation in support to the answer:
i) d(10000, 01000)
ii) d(0000, 0000)
iii) d(10000, 01100)
iv) d(11001, 11111)

8. a) What are the functions of modem with neat diagram?
b) Write short notes on the following:
i) Fax modem
ii) Cable modem

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail graphic monitors and work stations.
b) Explain the architecture of a raster graphics system.

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

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

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

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

6. a) Briefly explain about evolving technologies for multimedia.
b) Explain the applications of multimedia with suitable examples.

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) Write in brief about the types of multimedia authoring systems.
b) Analyze the object server architecture used in a distributed multimedia system.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

CONTROL SYSTEMS

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) 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) Obtain the transfer function of armature voltage control of a DC shunt motor.
b) Determine the signal flow graph for the system $\frac{G(s)}{R(s)} = \frac{2.5(s+3)}{(s+10)^2(s+4)}$.

3. a) Discuss the unit step response of second order system.
b) For a system with, $GH(S) = \frac{5}{S+5}$, calculate the generalized error coefficients and the steady state error. Assume $r(t) = 6 + 5t$.

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

5. a) Obtain the bode plot for the transfer function $G(s) = \frac{2}{(s+1)(s+6)(s+2)}$. From the Bode plot, obtain phase margin and gain margin

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

7. Draw the Bode plot of a typical lag-lead compensator.

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.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an algorithm? Why do we analyze algorithms? How to compare algorithms?
b) Find the running time of the following function. Give proper reasons in arriving your answer.

```
void Function(int n){
       int i=1, s=1;
       while(s<=n) {
       i++;
       s=s+i;
       printf("*");
       }}
```

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

3. a) Explain the general method of Divide and conquer.
b) Explain merge sort algorithm using Divide and conquer.

4. a) Write Greedy algorithm to generate shortest path.
b) Define merging and purging rules of 0/1 Knapsack problem.

5. a) Explain 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. a) Explain the properties of strongly connected components.
b) Describe algorithm for Biconnected components and analyze its time complexity.

7. Write short notes on
i) Graph coloring problem
ii) 8 queen's problem

8. State and Prove Cook's theorem.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

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) Explain with a neat diagram interfacing of 8257 with 8086.
b) Explain how static RAMs are interfaced to 8086. Give necessary interface diagram assuming appropriate signals and memory size.

4. a) Draw the interfacing scheme of 8255 and 8086 in memory mapped I/O mode.
b) Explain how eight seven-segment display devices and hex keyboard can be interfaced to a microprocessor.

5. a) Discuss Interrupt Vector table of 8086 microprocessor.
b) Draw and explain the architecture of 8259 programmable Interrupt controller.

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

7. a) Explain the salient features of 80386 microprocessor.
b) Explain how physical address is obtained from virtual address in protected mode of 80386 microprocessor.

8. a) Discuss briefly about serial data transmission modes of 8051.
b) Write short notes on General-purpose registers of 8051.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

OPERATING SYSTEMS

[Information Technology]

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

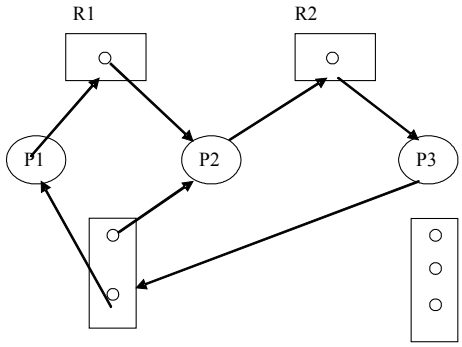
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the services provided by operating systems.
b) Explain the architecture of operating system with neat sketch.

2. a) Write notes on Process scheduling.
b) Explain states of process with neat sketch.

3. a) Compare how synchronization and concurrency in handled in UNIX and Windows.
b) Write short notes on classical problems of synchronization.

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



5. What is demand paging? Explain using an example the paging mechanism and how the logical addresses are mapped to physical addresses.

6. a) What are different types of files supported by an operating system?
b) Explain contiguous and Indexed File allocation methods in detail.

7. a) Explain and compare the C-LOOK and C-SCAN disk scheduling algorithms.
b) Explain the services provided by a Kernel I/O sub system.

8. a) Write about Access Matrix for providing protection.
b) Discuss about security problems and program threats.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

THEORY OF COMPUTATION

[Information Technology]

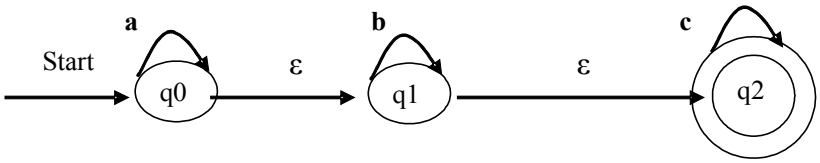
Time: 3 hours **Max. Marks: 70**

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) Explain about the application of regular expression.
b) Narrate the laws of Identities and annihilators.

5. a) Eliminate " ε -productions from the grammar G given as
A → aBb | bBa
B → aB | bB |ε "

b) Convert the following grammar to Greibach Normal Form
S →ABA | AB | BA | AA |B
A → aA |a
B → bB |a

6. a) Define PCP with an example.
b) Explain about modified PCP.

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

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

CODE No.:14BT3BS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) State and prove Bayes Theorem. 6 Marks

b) x is a continuous random variable with probability density function given by : 8 Marks

$$f(x) = \begin{cases} kx, & 0 \le x \le 2 \\ 2x, & 2 \le x \le 4 \\ k(6-x), & 4 \le x \le 6 \end{cases}$$

Determine i) k ii) mean iii) variance (iv) P(1<x<2)

(OR)

2 a) In a certain college 25% of boys and 10% of girls are studying mathematics. The girls contribute 60% of the student body. 6 Marks

i) What is the probability that mathematics is being studied?

ii) If a student is selected at random and is found to be studying mathematics, find the probability that the student is a girl?

b) A random variable X has the following probability function: 8 Marks

X	0	1	2	3	4	5	6	7	8
P(X)	k/45	k/15	k/9	k/5	2k/45	6k/45	7k/45	8k/45	4k/45

Determine i) k ii) P(X < 4) iii) P(X > 1) iv) P(2 < X < 7)

UNIT-II

3 a) Fit a binomial distribution for the following data and calculate the expected frequencies. 8 Marks

x	0	1	2	3	4	5
f(x)	2	14	20	34	22	8

b) In a sample of 1000 cases, the mean of a certain test is 14 and S.D. is 2.5. Assuming the distribution is normal, find: 6 Marks

i) how many students score between 12 and 15

ii) how many score above 18 iii) how many score below 18

(OR)

4 a) Fit a Poisson distribution for the following data and calculate the expected frequency: 6 Marks

x	0	1	2	3	4	5	6	7	8
f(x)	56	156	132	92	37	22	4	0	1

b) If X is a normal variate, find the area A 8 Marks

i) To the left of z= -1.78 ii) To the right of z= -1.45

iii) Corresponding to -0.8<z<1.53 iv) To the left of z= -2.52 and to the right of z=1.83

UNIT-III

5 a) Discuss the basic principles underlying control charts. Explain in brief how control limits are determined for (i) P – Chart, (ii) C – Charts. 8 Marks

b) The following are the number of hours which 10 students studied for an examination and the scores they obtained. 6 Marks

Number of hours studied : x	8	5	11	13	10	5	18	15	2	8

Score : y	56	44	79	72	70	54	94	85	33	65

Calculate Rank correlation coefficient.

(OR)

6 a) The number of defective washers in a workshop of 20 samples containing 2000 washers are 425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 280, 326, 389. Calculate the values for central line and the control units for P-Chart. 7 Marks

b) Calculate coefficient of correlation from the following data 7 Marks

x	12	9	8	10	11	13	7
y	14	8	6	9	11	12	3

UNIT-IV

7 a) Write short notes on : 8 Marks

i) Null hypothesis ii) Alternative hypothesis

iii) Level of significance iv) Left tailed test.

b) If the population is 3,6,9 15,27. 6 Marks

i) List all possible of samples of size 3 that can be taken without replacements from the finite population.

ii) Determine the mean of each of the sampling distributions of means.

iii) Determine the standard deviation of the sampling distributions of means.

(OR)

8 a) An ambulance service claims that it takes on the average less than 10 mins to reach its destination in emergency call. A sample of 36 calls has a mean of 11 mins and variance is 16 mins. Test the significance at 0.05 level. 7 Marks

b) A sample of 400 items is taken from population whose standard deviation is 10. The mean of sample is 40. Test whether the sample has come from a population with mean 38. 7 Marks

UNIT-V

9 a) The following figures gives the distribution of digits in numbers chosen at random from a telephone directory 7 Marks

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory.

b) The blood pressure of 5-women before and after intake of a certain drug as follows: 7 Marks

Test whether there is significant change in blood pressure at 1% level of significance.

Before	110	120	125	132	125
After	120	118	125	136	121

(OR)

10 a) A dice is thrown 264 times with the following results. Test the goodness of fit at 5% level. 7 Marks

Face	1	2	3	4	5	6
Frequency	40	32	28	58	54	52

b) The time taken by workers in performing a job by Method-I and Method-II as follows: 7 Marks

Do the data show the variance of time distributions from population from which these samples are drawn do not differ significantly.

Method-I	20	16	26	27	23	22	-
Method-II	27	33	42	35	32	34	38

CODE No.:14BT3HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

ENVIRONMENTAL SCIENCES

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a short note on public awareness on environmental studies.	7 Marks
	b)	Discuss the concept of World food problems.	7 Marks
		(OR)	
2	a)	Write short notes on deforestation.	7 Marks
	b)	Explain the importance of renewable energy sources.	7 Marks

UNIT-II

3	a)	What is meant by Ecological Succession? Explain.	8 Marks
	b)	What are the major threats to biodiversity? Explain.	6 Marks
		(OR)	
4	a)	Discuss the structure and functions of forest ecosystem.	6 Marks
	b)	What is meant by biodiversity? Explain genetic and species diversity.	8 Marks

UNIT-III

5	a)	Definition, causes, effects and control measures of air pollution.	7 Marks
	b)	Explain in detail about the disaster management.	7 Marks
		(OR)	
6	a)	Explain the process of solid waste management.	7 Marks
	b)	Definition, causes, effects and control measures of noise pollution.	7 Marks

UNIT-IV

7	a)	What is the importance of environmental education among public.	7 Marks
	b)	Define Brundtland commission. Write a short note on sustainable development for a smart city.	7 Marks
		(OR)	
8	a)	Enumerate and discuss the effects of acid rains.	7 Marks
	b)	What are the salient features of forest conservation act?	7 Marks

UNIT-V

9	a)	Explain the concept of family welfare programme in India.	7 Marks
	b)	Write note on HIV/AIDS.	7 Marks
		(OR)	
10	a)	What is meant by EIA? Explain it.	7 Marks
	b)	Prepare a detailed report on the pond ecosystem which you have visited as part of environmental field visit.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	What are the different kinds of communication network in an organization? Which do you think is most effective and why?	14 Marks
	(OR)	
2	What is internal communication? If you were manager, would you prefer vertical mode of communication or horizontal or both? Explain.	14 Marks

UNIT-II

3	To what extent does non- verbal communication play a role in supplementing verbal communication?	14 Marks
	(OR)	
4	Elaborate the different cross cultural communication strategies adopted when communicating across cultures.	14 Marks

UNIT-III

5	Present the fundamental features and components of a Business Letter.	14 Marks
	(OR)	
6	Compile an analytical note on the steps of writing a Business Report.	14 Marks

UNIT-IV

7	Define and present the Non-functional elements of Group Discussion.	14 Marks
	(OR)	
8	Elucidate the process involved in preparing the business presentations and the steps to be initiated for making a worthy presentation.	14 Marks

UNIT-V

9	Elaborate the process of setting the goal for a bright career with a focus on 'SMART'ness of the process.	14 Marks
	(OR)	
10	Give an account of the differences between Telephonic and Face-to-face interviews.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

PROFESSIONAL ETHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the professional obligations of engineers?	6 Marks
	b)	What are the skills required for improving moral autonomy of engineers and professionals?	8 Marks
		(OR)	
2	a)	Why do engineers need codes of ethics?	6 Marks
	b)	How does Gillison viewed the three levels of moral development initiated by Kohlberg?	8 Marks

UNIT-II

3	a)	What are the attributes of a profession?	6 Marks
	b)	What are the different criteria needed to be a professional engineer?	8 Marks
		(OR)	
4	a)	What are the "pleasures" offered by engineering?	6 Marks
	b)	What is meant by "virtues" related to engineering professionalism?	8 Marks

UNIT-III

5	a)	What is meant by informal consent when bringing an experimental product to the market?	8 Marks
	b)	How the ethical codes provide discipline among the engineers?	6 Marks
		(OR)	
6	a)	What do you mean by Learning from past? Discuss with examples.	8 Marks
	b)	Write short notes on Challenger case.	6 Marks

UNIT-IV

7	a)	Write the advantages and disadvantages of rights.	6 Marks
	b)	"Respect for authority creates lot of conflicts in employees" - Discuss the statement with examples.	8 Marks
		(OR)	
8	a)	How does one manage risk?	6 Marks
	b)	What is espionage? Evaluate the pros and cons of espionage.	8 Marks

UNIT-V

9	a)	Discuss in detail about the moral and ethical issues involved in use of Computers.	6 Marks
	b)	Discuss the following in detail: i) Business Ethics ii) Environmental Ethics.	8 Marks
		(OR)	
10	a)	Discuss on safety. Explain what safety measures are to be taken by an engineer working in a deep ground mine.	6 Marks
	b)	Discuss the following in detail:	8 Marks

i) Engineers as Managers ii) Moral Leadership.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

ELECTRICAL TECHNOLOGY

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the construction and principle of working of a DC generator in detail. 14 Marks

(OR)

2 A 230V, 1000rpm DC shunt motor has field resistance of 115 Ω and armature circuit resistance of 0.5Ω. At no load, motor runs at 1000rpm with armature current of 4A and with full field flux. 14 Marks

i) For a developed torque of 80Nm, compute armature current and speed of the motor.

ii) If it is desired that motor develops 8kW at 1250rpm, determine the value of external resistance that must be inserted in series with the field winding. Saturation and armature reaction are neglected.

UNIT-II

3 a) State and prove the condition for maximum efficiency of transformer. 7 Marks

b) A 50kVA, 1100/220V, 50Hz transformer has an HV winding resistance of 0.125Ω and a leakage reactance of 0.625Ω. The LV winding has corresponding values of 0.005Ω and 0.025Ω respectively. Find the equivalent impedance of the transformer referred to HV and LV sides. Find the **p.u.** impedance of the transformer. 7 Marks

(OR)

4 a) Explain the equivalent circuit of transformer on No load. 7 Marks

b) A 100kVA, single-phase transformer with ratio of 10000/200V, 50Hz, requires 300V at the HV side to circulate full-load current with LV winding shorted, and the corresponding intake is 1000W. calculate the percentage regulation and secondary terminal voltage on full load at 0.8 pf lagging. 7 Marks

UNIT-III

5 Three equal star connected induction inductors take 10kW at power factor 0.8 when connected to a 440V, three phase and 3 wire supply. Give the connection diagram of two single phase watt meters to measure the power in the circuit. Allocate the reading of each wattmeter. Find the line currents if one of the inductors is short circuited. Draw the vector diagrams of the currents and voltages under the condition. 14 Marks

(OR)

6 a) Explain briefly the generation of three phase voltages. 6 Marks

b) Derive the expression for power in a three phase star connected system in terms of phase values and line values of voltages and currents. 8 Marks

UNIT-IV

7 a) 3 phase, 6 pole, 50Hz induction motor has a slip of 1% at no load and 3% at full load. Find: 9 Marks

i) Synchronous speed ii) No load speed
iii) full load speed iv) frequency of rotor current at standstill
v) frequency of rotor current at full load.

b) What is meant by slip in an induction motor? Develop an expression for frequency of rotor currents in it. 5 Marks

(OR)

8 a) What is a distribution factor? What is its effect? Derive an expression for distribution factor. 8 Marks

b) A 4 pole alternator has an armature with 25 slots and 8 conductors and rotates at 1500rpm and flux per pole is 0.05Wb. Calculate the **emf** generated, if winding factor is 0.96 and all conductors are in series. 6 Marks

UNIT-V

9 a) Explain briefly permanent magnet stepper motor. 10 Marks

b) List the applications of stepper motors. 4 Marks

(OR)

10 a) Explain double field revolving theory in detail. 8 Marks

b) Enumerate applications and disadvantages of single phase induction motor. 6 Marks

CODE No.:14BT40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive the expressions for finding out normal and tangential stresses on an oblique plane in a rectangular element subjected to normal stress p_1 and p_2 and shear stress q. Also prove that no shear stress acts on principal planes. 14 Marks

(OR)

2 The state of stress in a two dimensionally stressed body is as shown in the Fig.1. Determine the principal stresses, principal planes and maximum shear stress. Also determine the normal and tangential stresses on plane AC. 14 Marks

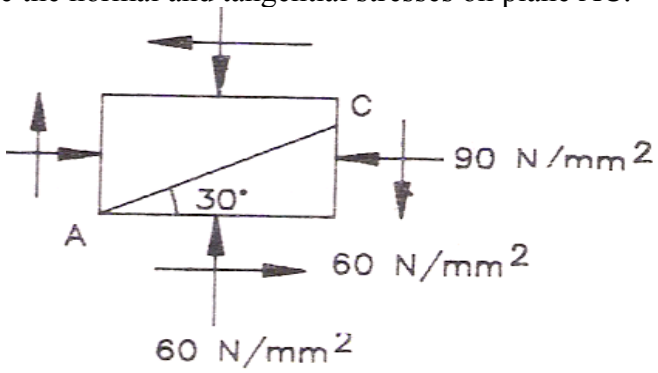

Fig.1

UNIT-II

3 Find the deflections at points C and D for a beam loaded as shown in Fig.2, using Macaulay's method. EI is constant. 14 Marks

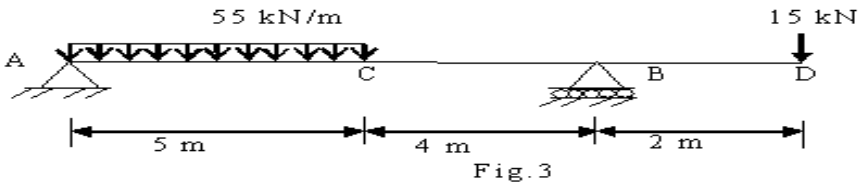

Fig.2

(OR)

4 Compute the maximum slope and deflection for the beam shown in Fig.3, using Moment-Area method. *EI*=16,000 kNm^2. 14 Marks

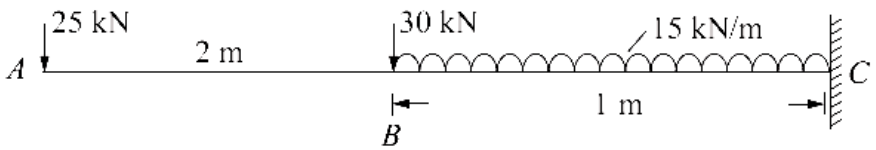

Fig.3

UNIT-III

5 A hollow cast-iron column whose outside diameter is 220mm and has a thickness of 20mm is 5.4m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a factor of safety of 2.7. Find the ratio of Euler's to Rankine's loads. Take $E_{cast\ iron}$ = 107GPa and Rankine's constant = 1/1650 for both ends pinned case and the crushing strength of the material as 565 MPa. **14 Marks**

(OR)

6 A 5m long circular column having fixed ends has 240mm external diameter and 20mm thickness. The column carries a load of 160kN at an eccentricity of 25mm from its longitudinal axis. Determine (i) stresses in the extreme fibres of the cross-section and (ii) maximum eccentricity so as to have no tension anywhere in its cross section. The modulus of elasticity of the material is 82 GPa. **14 Marks**

UNIT-IV

7 A cantilever of span 4m is supported at the free end to the level of fixed end. It carries a concentrated load of 20kN at the centre of the span. Calculate the reaction at the prop and draw the S.F and B.M diagrams. **14 Marks**

(OR)

8 A fixed beam is loaded as shown in Fig.4. Calculate the fixed end moments and deflection at mid-span of the beam. Take EI = 3000 kNm^2. **14 Marks**

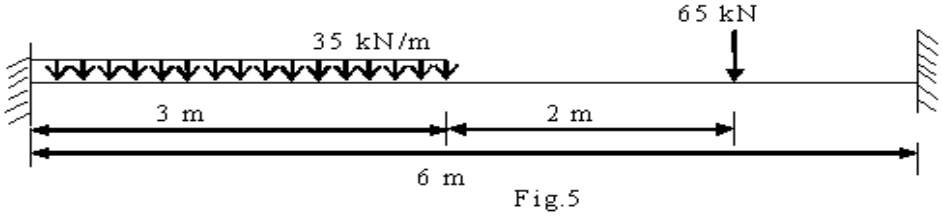

Fig.5

Fig.4

UNIT-V

9 A solid circular shaft is subjected to a bending moment of 70kNm and a torque of 30kNm. Design the diameter of the shaft according to: **14 Marks**

i) The Maximum Principal Stress Theory.
ii) The Maximum Shear Stress Theory.
iii) The Maximum Distortion Energy Theory.

Take Poisson's ratio = 0.29, the stress at elastic limit of the material is 255MPa and the factor of safety = 2.75.

(OR)

10 A beam of rectangular section 180mm wide and 260mm deep is used over a simply supported span of 6.6m to support two concentrated loads of 8kN each at 3m from either support. The plane of loads makes an angle of 34° with the vertical plane of symmetry. Find the direction of the neutral axis and the maximum bending stresses in the beam. **14 Marks**

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CODE No.:14BT40102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Classify the types of foundation and describe them with neat sketches.	14 Marks
		(OR)	
2		Write the general features of partition walls with neat sketches.	14 Marks

UNIT-II

3	a)	What are the requirements of an ideal damp-proofing material?	7 Marks
	b)	Write in detail about the treatment of buildings against dampness by interposing damp-proofing courses in a structure at various positions.	7 Marks
		(OR)	
4	a)	Write a note on constituents of paint and characteristics of a good paint.	7 Marks
	b)	Distinguish between: (i) Plastering and painting (ii) Painting and varnishing	7 Marks

UNIT-III

5	a)	Write down the safety measures to be followed in construction of industrial structures.	7 Marks
	b)	Write the features of Workmen's Compensation Act of 1923 and subsequent amendments.	7 Marks
		(OR)	
6	a)	What are the objectives of material management? Write the functions of material management departments.	7 Marks
	b)	Describe various types of hoisting equipment employed in construction projects.	7 Marks

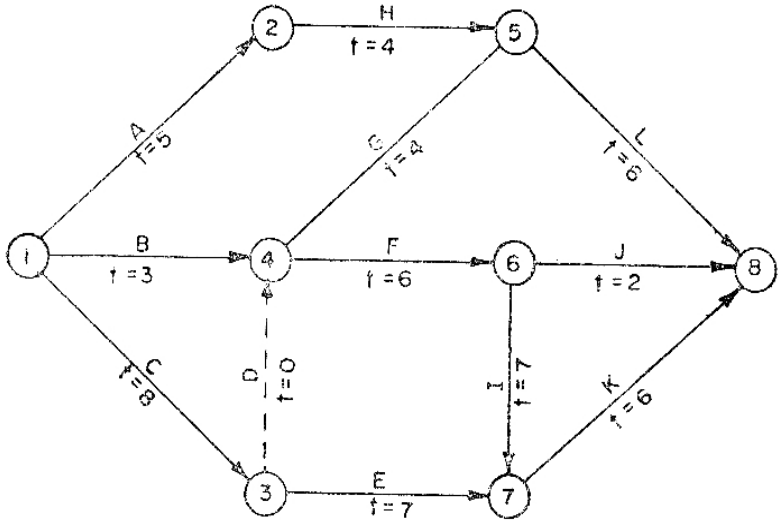
UNIT-IV

7	a)	Discuss the role of management in project execution.	7 Marks
	b)	Explain the methods of planning and programming.	7 Marks
		(OR)	
8		Differentiate between CPM network and PERT network. Illustrate your answer by drawing the two types of networks for a housing construction project.	14 Marks

UNIT-V

9		The network of a certain project is shown in the following figure, with the estimated durations of various activities. Determine the following:	14 Marks

i) Earliest event time and latest event time.
ii) Earliest and latest start and finish times of each activity.
iii) Total and free floats for each activity.
iv) Critical path for the network.



(OR)

10 a) Explain the determination of the probability of meeting the scheduled date of completion of a project. 5 Marks

b) If the expected time along the critical path of a project is 27 weeks and the standard deviation along it is 6 weeks, determine the probability of completing the project with in 5 Marks

(i) 21 weeks (ii) 24 weeks (iii) 36 weeks

c) On a network, calculations yield a project length of 60 days with a variance of 9 days. Estimate the number of days required to complete the project with a probability of 98%. 4 Marks

CODE No.:14BT40103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

SURVEYING

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Describe the role of errors in survey measurements. 7 Marks

b) A 20m chain was found to be 8cm too long after measuring a distance of 1500m. The same chain at the end of day's work, after chaining a total length of 2500m was found to be12cm too long. What is the correct distance chained, if the chain was correct at the commencement of the work? 7 Marks

(OR)

2 a) Derive an expression to determine the area by coordinate method. 7 Marks

b) A series of offsets were taken at 3m intervals in the following order from a chain line to a curved boundary: 0, 2.2, 1.6, 2.8, 2.4, 1.0, 2.5, 0 meters. Find the area between chain line and curved boundary by trapezoidal rule. 7 Marks

UNIT-II

3 a) Give comparison between a prismatic compass and a Surveyor's compass. 7 Marks

b) Following are the bearings taken in a closed compass traverse 7 Marks

Line	F.B.	B.B.
AB	$S37^0 30'E$	$N37^0 30'W$
BC	$S43^0 15'W$	$N44^0 15'E$
CD	$N73^0 00'W$	$S72^0 15'E$
DE	$N12^0 45'E$	$S13^0 15'W$
EA	$N60^0 00'E$	$S59^0 00'W$

Compute the interior angles and correct them for observational errors.

(OR)

4 a) Describe the characteristics of contours and explain the uses of contour maps. 7 Marks

b) An observer standing on the deck of a ship just sees a light house. The top of the light house is 42m above the sea level. Determine the distance of the observer from the light house. 7 Marks

UNIT-III

5 a) Describe various methods of traversing with the theodolite. 7 Marks

b) The back angles of part of a open traverse: At station: **B, 202°38' ; C, 169°15'; D, 158°36' ; E, 188°12'**. If the true forward bearing of AB is **36°26'**, find the true bearings of the remaining sides. 7 Marks

(OR)

6 Explain the uses of micro optic theodolites. 14 Marks

UNIT-IV

7 a) Explain the following. 6 Marks

(i) Fixed hair method.

(ii) Movable hair method.

b) The following observations were taken on a staff held vertically at distances measured from the instrument. Find the mean value of the constant, given that the additive constant was 0.25m. 8 Marks

Observations	Horizontal distance in m	Vertical angle	Stadia readings	
1	**60**	**0°0'**	**0.835**	**1.425**
2	**120**	**1°15'**	**1.140**	**2.345**
3	**180**	**1°40'**	**1.250**	**2.990**

(OR)

8 Explain the procedure involved in setting out a combined curve: 14 Marks

i) by means of a theodolite

ii) with a chain and tape only.

UNIT-V

9 Explain the working principle of Geodimeter with neat sketch. 14 Marks

(OR)

10 Explain the applications of electronic distance measuring systems. 14 Marks

CODE No.:14BT40104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

FLUID MECHANICS - II

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) A flat plate 2m x 2m is immersed in water flowing with a velocity of 5m/s. Find the forces of drag and lift as 0.05 and 0.2 respectively — 7 Marks

b) What is Von Karman momentum integral equation and where can it be applied. — 7 Marks

(OR)

2 Give the characteristics of boundary layer along a thin flat plate. — 14 Marks

UNIT-II

3 a) Derive dynamic equation for gradually varied flow. — 7 Marks

b) When does a hydraulic jump occurs? Also give its applications. — 7 Marks

(OR)

4 A trapezoidal channel with side slopes of 1 to 1 has to be designed to convey 12 m^3/s at a velocity of 2.5m/s so that the amount of concrete lining for the bed and sides is the minimum. Calculate the area of lining required for one meter length of canal. — 14 Marks

UNIT-III

5 A jet of water having a velocity of 30m/s strikes a series of radial curved vanes mounted on a wheel which is rotating at 200r.p.m. The jet makes an angle of 20^0 with the tangent to the wheel at inlet and leaves the wheel with a velocity of 5 m/s at an angle of 130^0 to the tangent to the wheel at outlet. Water is flowing from outward in a radial direction. The outer and inner radii of the wheel are 0.5m and 0.25m respectively. Determine vane angles at inlet and outlet, work done per unit weight or water and efficiency of the wheel. — 14 Marks

(OR)

6 a) Derive the expression for force exerted by a jet on an inclined plate moving in the direction of jet. — 7 Marks

b) A jet of water of diameter 10cm strikes a flat place normally with a velocity of 15m/s. The plate is moving with a velocity of 6 m/s in the direction of the jet and away from the jet. Find: — 7 Marks

i) The force exerted by the jet on the plate.

ii) Work done by the jet on the plate per second.

UNIT-IV

7 a) Under what headings the turbines can be classified. — 7 Marks

b) A pelton wheel has to be designed for the following data: — 7 Marks
Power to be developed = 6000kW. Net head available = 300m;
Speed = 550 r.p.m.; Ratio of jet diameter to wheel diameter = 1/10; and
overall efficiency = 85%. Find the number of jets, diameter of the jet, diameter of the wheel and the quantity of water required.

(OR)

8 Give the classification of hydro power plants. 14 Marks

UNIT-V

9 The impeller of a centrifugal pump has 1.2m outside diameter. It is used to lift 1800 liters of water per second against a head of 6m. Its vanes make an angle of 150^0 with the direction of motion at outlet and runs at 200r.p.m. If the radial velocity of flow at outlet is 2.5m/s find the manometric efficiency. Also find the lowest speed to start the pump, if the diameter of the impeller at inlet is equal to half the diameter at exit. 14 Marks

(OR)

10 a) What is airlift pump? 7 Marks

b) What is meant by priming and how do the small and large pumps are usually primed? 7 Marks

CODE No.:14BT40201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

SIGNALS AND NETWORKS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Check the properties of Linear, Time-Invariance and Causality for the systems given: 7 Marks
i) $Y(t) = X(t)\cos(t+1)$; ii) $Y(n) = X(n) + 3u(n+1)$;

b) State and prove sampling theorem. 7 Marks

(OR)

2 a) Test if the following systems are stable or not: 7 Marks
i) $Y(n) = \cos X(n)$ ii) $Y(n) = a^{X(n)}$

b) Determine the impulse response of the following casual system. 7 Marks
$Y(n) - Z\cos\theta\, y(n-2) + y(n-3) = X(n)$

UNIT-II

3 a) A series RL low pass filter with a cutoff frequency 1KHz is needed using R=5KΩ. Compute (i) L; (ii) |H(jw)| at 20KHz; (iii) < H(jw) at 20KHz. 7 Marks

b) A series RC circuit with R = 50Ω and C = 12μF has a sinusoidal voltage V=100sin100t V applied at t = 0. Find the current, voltage across resistor and voltage across capacitor. Assume zero initial conditions. 7 Marks

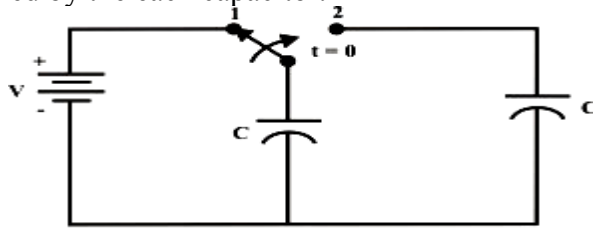
(OR)

4 a) A low pass T-Section filter has a nominal impedance of 500Ω and a cutoff frequency of 1MHz. Determine the frequency at which the characteristics Impedance of the section is: 7 Marks
i) 400Ω ii) 250Ω iii) 100Ω.

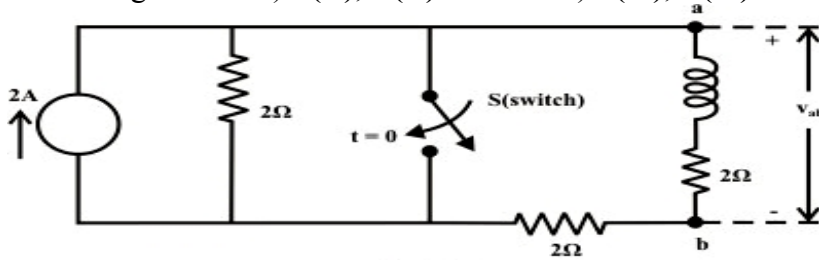
b) Derive the design equations for constant K high pass filter. 7 Marks

UNIT-III

5 a) Switch 'S' shown in fig is kept in position '1 'for a long time. When the switch is thrown in position ' 2 ', find at steady state condition 7 Marks
i) the voltage across the each capacitor ii) the charge across the each capacitor
iii) the energy stored by the each capacitor.

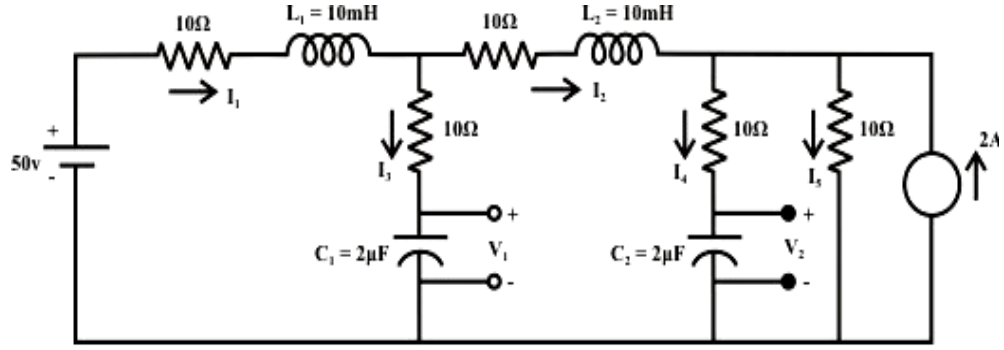


b) For the circuit of figure find: i) $\mathbf{i_1(0^-), i_L(0^-)}$ ii) $\mathbf{i_1(0^+), i_L(0^+)}$ 7 Marks

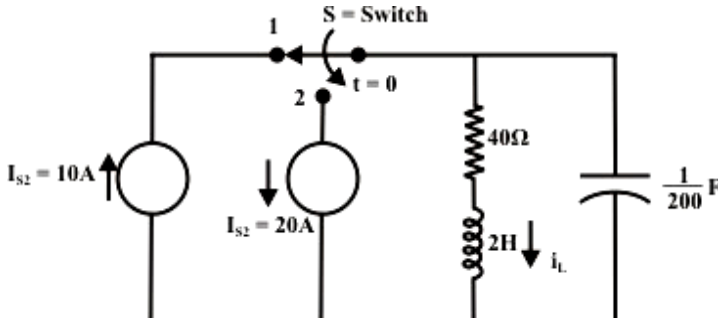


(OR)

6 a) At steady state condition, find the values of I_1, I_2, I_3, I_4, I_5, V_1 and V_2 for the circuit shown in figure — 7 Marks

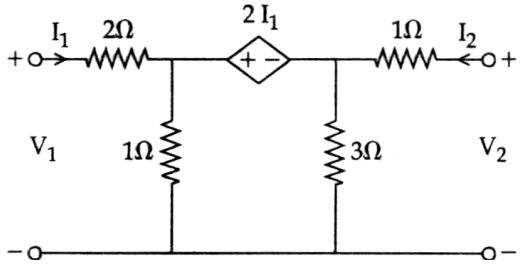


b) For the circuit shown in Fig, the switch ‘’was in position ‘1’ for a long time and then at it is kept in position ‘2’. Find: i) $\mathbf{i_L(0^-)}$ ii) $\boldsymbol{v_c(0^+)}$ iii) $\boldsymbol{v_R(0^+)}$ — 7 Marks



UNIT-IV

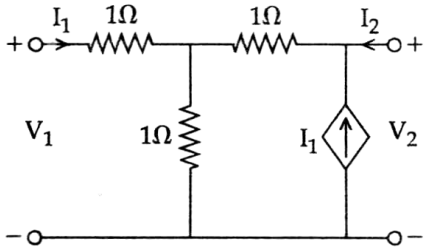
7 a) Find the y-parameters for the figure shown below. Find equivalent circuit using y-parameters and find whether the network is (i) reciprocal (ii) symmetrical — 8 Marks



b) For a two-port network to be reciprocal prove that AD-BC=1 where A, B, C, D are the network’s transmission parameters. — 6 Marks

(OR)

8 a) For the circuit shown in figure, find z-parameters hence calculate the transmission parameters. — 8 Marks



b) Determine input and output impedances of a generalised network in terms of hybrid parameters. — 6 Marks

UNIT-V

9 a) Find the network for the following function in Foster-I and Cauer-I form 7 Marks

$$Y(s) = \frac{(s+1)(s+3)}{(s+2)(s+4)}$$

b) Find the R-L network corresponding to the driving point impedance using Cauer form I and Cauer form II. 7 Marks

$$Y(s) = \frac{(s+2)(s+4)}{(s+6)(s+8)}$$

(OR)

10 Given $Y(s) = \frac{s^2 + Xs}{s^2 + 5s + 4}$ 14 Marks

i) What are the restrictions on X for Z(s) to be positive real function?

ii) Find X for Re [z (j) w] to have a second order at w=0

iii) Choose a numerical value for X and synthesize Z(s)

CODE No.:14BT40202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the typical lay-out of hydro-electric plant and explain the main components of it.	8 Marks
	b)	Classify hydro plants based on: i) Plant capacity ii) Construction and operation iii) Head of water available	6 Marks
		(OR)	
2	a)	Differentiate between the working of Francis and Kaplan turbine used in hydro power stations.	7 Marks
	b)	Define specific speed of a turbine. Explain the selection of a turbine based on specific speed.	7 Marks

UNIT-II

3		Draw schematic layout of TPS. Explain briefly four main circuits of the plant.	14 Marks
		(OR)	
4	a)	Explain in detail the principle operation of Impulse turbine in TPS.	7 Marks
	b)	How the fluidized bed combustion process can be done in thermal power plants?	7 Marks

UNIT-III

5	a)	What is a chain reaction? How it can be controlled?	6 Marks
	b)	What is a nuclear reactor and describe the various parts of a nuclear reactor?	8 Marks
		(OR)	
6	a)	Give the advantages and draw backs of combined operation of different power plants.	7 Marks
	b)	Discuss about the coordination of hydro-electric plant with ample storage combination with steam plants.	7 Marks

UNIT-IV

7		Draw the typical layout of a diesel electric power station and describe function of different components of plants.	14 Marks
		(OR)	
8	a)	What are the factors which affects the selection of gas turbine power plants?	7 Marks
	b)	Discuss the advantages of gas turbine plants over steam turbine plants and also give applications of gas turbine plants.	7 Marks

UNIT-V

9 a) Define the terms load factor and diversity factor and discuss their effect upon the cost of generation and design of power station. 7 Marks

b) A domestic lighting installation having fifteen 60 W lamps is operated as follows: 7 Marks

5 lamps from 6 p.m. till 8 p.m.
10 lamps from 8 p.m. till 10 p.m.
6 lamps from 10 p.m. till 12 p.m.

i) Determine the connected load, the maximum demand, the demand factor and the daily load factor.

ii) Also determine the improved load factor if a 2 kW immersion heater is used from 1 p.m. till 5 p.m. and a 2 kW heater from 8 p.m. till 11 p.m.

(OR)

10 a) Explain Diminishing value method of depreciation. What are its drawbacks? 7 Marks

b) A supply company offers the following alternative tariffs: 7 Marks

i) Standing charges of Rs 75 per annum plus 300 paisa/kWh.

ii) First 300 kWh at 200 paisa/kWh; and additional energy at 50 paisa /kWh. If the annual consumption is 1800 kWh, which tariff is more economical and by how much?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Describe the construction and working of PMMC instrument and derive the equation for deflection if the instrument is spring controlled.	14 Marks
		(OR)	
2	a)	Explain the working principle of moving iron type voltmeter and derive the expression for its deflecting torque and controlling torque.	7 Marks
	b)	What are the different types of error? Explain how to eliminate errors in instrument.	7 Marks

UNIT-II

3	a)	Explain measurement of reactive power in three phase balanced and un-balanced loads.	7 Marks
	b)	Explain working principle of LPF Wattmeter.	7 Marks
		(OR)	
4	a)	Describe the constructional details of an Electrodynamometer type wattmeter and derive the expression for torque when the instrument is used on AC.	7 Marks
	b)	Explain working principle of single phase energy meter with diagram.	7 Marks

UNIT-III

5	a)	Explain, what is Phase angle error and what factors does it depend.	7 Marks
	b)	A 100/5 A Current Transformer, at its rated load of 20VA has an iron loss of 0.18W and magnetizing current of 1.4A. It is supplying rated output to ammeter having a ratio of resistance to reactance of 4. Calculate: i) Ratio error ii) Phase angle error.	7 Marks
		(OR)	
6	a)	Derive the equation for Nominal ratio and Phase angle error in Potential transformer.	7 Marks
	b)	Explain the construction and working of Current Transformer and draw its phasor diagram.	7 Marks

UNIT-IV

7	a)	Draw the circuit of Schering bridge and write the formula to find unknown capacitance.	7 Marks
	b)	Draw the circuit of a wheatstone bridge and derive the conditions for balance.	7 Marks
		(OR)	
8	a)	Explain the suitable bridge used for the measurement of high resistance.	7 Marks
	b)	Writ a short notes on Megger and Q-meter.	7 Marks

UNIT-V

9	a)	Explain the principle and operation of D.C Crompton's potentiometer with neat circuit diagram.	7 Marks
	b)	Describe briefly the working of successive approximation digital voltmeter with the help of a block diagram.	7 Marks

(OR)

10	a)	Describe the different parts of CRT.	7 Marks
	b)	Calculate the velocity of the electron beam in an oscilloscope if the voltage applied to its vertical deflection plates is 2000V. Also calculate the cutoff frequency if the maximum transit time is 1/4 of a cycle. The length of horizontal plate is 50mm.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the **emf** equation of a single phase transformer and explain the no-load condition of a single phase transformer with phasor diagram.	7 Marks
	b)	Define Voltage regulation of a transformer. Derive the approximate voltage drop equation for lagging loads.	7 Marks

(OR)

2	a)	Draw and explain the phasor diagram of a transformer for inductive and capacitive loads.	7 Marks
	b)	The efficiency of 1000KVA, 11KV/220V, 50 Hz, 1-φ transformer is 98.5% at half full load at 0.8p.f leading and 98.8% at full load UPF. Determine: i) Iron losses. ii) Full load copper losses. iii) Find maximum efficiency KVA at UPF.	7 Marks

UNIT-II

3		A single phase 10 KVA 500/250v 50 Hz transformer has the following constants: reactances of primary and secondary are 0.2Ω and 0.5Ω, resistance of primary and secondary are 0.4Ω and 0.1Ω, resistance of the equivalent exciting current referred to primary R_0=1500Ω, reactance of the equivalent exciting current referred to primary X_0=750Ω. What would be the reading of the instruments when transformer is connected for open and short circuit test? Determine efficiency and regulation at full load 0.8 pf lagging.	14 Marks

(OR)

4	a)	Explain how separation of losses test is conducted on a transformer with a neat diagram.	7 Marks
	b)	Why is the polarity required for a transformer in parallel operation? Explain parallel operation of the transformers with equal and unequal voltage ratios.	7 Marks

UNIT-III

5		A 3-phase transformer is used to step down the supply voltage from 10000V to 440V. If the output capacity of the transformer is 132 kVA, find the secondary and primary currents of the transformer.	14 Marks

(OR)

6	a)	Why should the tap changer be connected near the neutral? What about delta connected transformer?	7 Marks
	b)	What is the difference between no load and no load tap changer?	7 Marks

UNIT-IV

7	a)	With neat diagram, explain the construction of Squirrel cage Induction Motor.	6 Marks

b) The rotor resistance and standstill reactance of a 3-phase Induction Motor are 0.015ohm and 0.09ohm per phase respectively. 8 Marks

i) What is the p.f. of the motor at start?

ii) What is the p.f. at a slip of 4%?

iii) If the number of poles is 4, the supply frequency is 50Hz and the standstill **emf** per rotor phase is 110V, find out the full load torque. Take full load slip as 4%.

(OR)

8 a) A 3-phase induction motor is wound for four poles and is supplied from a 50Hz system. Calculate: 7 Marks

i) the synchronous speed.

ii) the speed of the rotor when the slip is 4% .

iii) the rotor frequency when the speed of the rotor is 600 r.p.m.

b) Explain the various losses taking place in an Induction Motor. Also derive the relationship between rotor power input and rotor copper loss. 7 Marks

UNIT-V

9 a) Briefly explain cogging and crawling phenomenon. 8 Marks

b) Explain rotor resistance starting method of 3-phase slip ring Induction Motor with a neat diagram. 6 Marks

(OR)

10 a) Explain the working principle of Induction generator. 8 Marks

b) A 3-phase, 4 kW, 400V, 50 Hz, 4 P slip ring Induction Motor develops a maximum torque of 100 N-m. It has rotor resistance = 0.5 Ω/phase and rotor leakage reactance = 1.0 Ω/phase. If the rotor resistance is doubled then what will be the new value of maximum torque? 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

KINEMATICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What do you mean by constrained motion? What are the different types of constrained motions? Explain each type with examples and neat sketches. 8 Marks

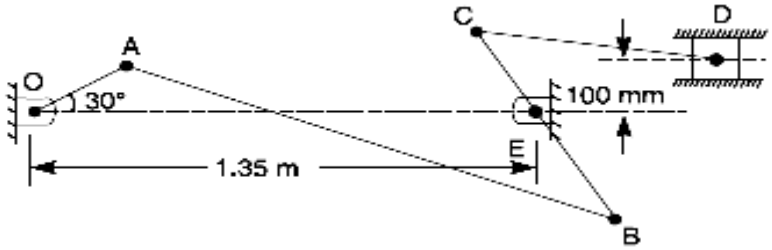
b) Define the following terms: 6 Marks
link, kinematic pair, kinematic chain and mechanism.

(OR)

2 What do you mean by inversion of mechanism? Explain with sketches all inversions of single slider crank chain. 14 Marks

UNIT-II

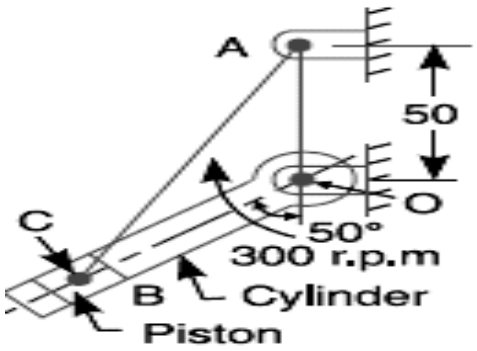
3 A mechanism, as shown in figure has the following dimensions: 14 Marks
OA = 200 mm; AB = 1.5 m; BC = 600 mm; CD = 500 mm and BE = 400 mm. Locate all the instantaneous centres. If crank OA rotates uniformly at 120 r.p.m. clockwise, find **(i)** the velocity of B, C and D, **(ii)** the angular velocity of the links AB, BC and CD.



(OR)

4 a) What is coriolis acceleration component? In which cases does it occur? How is it determined? 4 Marks

b) The kinematic diagram of one of the cylinders of a rotary engine is shown in figure bellow. The crank OA which is vertical and fixed is 50mm long. The length of the connecting rod AB is 125mm. The line of the stroke OB is inclined at 50° to the vertical. The cylinders are rotating at a uniform speed of 300 r.p.m., in a clockwise direction, about the fixed centre O. Determine: **(i)** acceleration of the piston inside the cylinder **(ii)** angular acceleration of the connecting rod. 10 Marks



UNIT-III

5 a) Prove that a point on one of links of a hart mechanism traces a straight line on the movement of its links. 7 Marks

b) How can we ensure that a Tchebicheff mechanism traces an approximate straight line? 7 Marks

(OR)

6 a) What is the condition for correct steering? Sketch and show the two main types of steering gears and discuss their relative advantages. 7 Marks

b) Sketch the polar velocity diagram of a Hooke's joint and mark its salient features. 7 Marks

UNIT-IV

7 a) Construct the displacement curve and deduce expressions for the velocity and acceleration of the follower when it moves with SHM. 7 Marks

b) Derive the relations for velocity and acceleration for a convex cam with a roller follower. 7 Marks

(OR)

8 Draw the profile of a cam operating a Knife-edged follower from the following data: 14 Marks

i) Follower to move outward through 40mm during 60° of a cam rotation;
ii) Follower to dwell for the next 45°
iii) Follower to return its original position during next 90°
iv) Follower to dwell for the rest of cam rotation.

The displacement of the follower is to take place with simple harmonic motion during both the outward and return strokes. The least radius of the cam is 50mm. If the cam rotates at 300 r.p.m., determine the maximum velocity and acceleration of the follower during the outward stroke and return stroke.

UNIT-V

9 a) Calculate (i) length of path of contact (ii) arc of contact (iii) the contact ratio, when a pinion having 23 teeth drives a gear having teeth 57. The profile of the gears is involute with pressure angle 20º, module 8mm and addendum equal to one module. 7 Marks

b) Derive an expression for the minimum number of teeth required on the wheel in order to avoid interference in involute gear teeth. 7 Marks

(OR)

10 The arm of an epicyclic gear train rotates at 100 r.p.m in the anti-clockwise direction. The arm carries two wheels A and B having 36 and 45 teeth respectively. The wheel A is fixed and the arm rotates about the centre of wheel A. Find the speed of wheel B. What will be the speed of B, if the wheel A instead of being fixed makes 200 r.p.m. clockwise? 14 Marks

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CODE No.:14BT40302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State Newton's equation of viscosity and give examples of its application.	7 Marks
	b)	How does vapor pressure affect fluid flow?	7 Marks
		(OR)	
2		A U-tube containing mercury has its right limb open to atmosphere. The left limb is full of water and is connected to a pipe containing water under the pressure, the centre of which is in level with the free surface of mercury. Find the pressure of water in the pipe above atmosphere, if the difference of level of mercury in the limbs is 5.08cm.	14 Marks

UNIT-II

3	a)	Briefly explain the classification of flows.	7 Marks
	b)	Define the Bernoulli's equation for rotational flow mentioning the assumptions.	7 Marks
		(OR)	
4	a)	State the assumptions made in the derivation of Bernoulli's equation. State the momentum equation and explain its significance.	7 Marks
	b)	A pipe bend tapers from a diameter of 500mm at inlet to a diameter of 250mm at outlet and the flow is turned through 75^0.The pressures at inlet and outlet are 3.5 N/m^2 and 2.5 N/m^2.If the pipe is converging oil of specific gravity 0.85, calculate the magnitude and direction of the resultant force on the bend when the oil flow rate is 0.5 m^3/s. The bend is in a horizontal plane.	7 Marks

UNIT-III

5	a)	Derive the Darcy-Weisbach equation for friction head loss in a pipe.	7 Marks
	b)	Water is flowing through a horizontal pipe line 1500m long and 200mm in diameter. Pressures at the two ends of the pipe lines are 12 kPa and 2kPa respectively. If f = 0.015, determine the discharge through the pipe in liters per minute. Consider only frictional loss.	7 Marks
		(OR)	
6	a)	Obtain an expression for force exerted by a jet of water on fixed and moving vertical plate in the direction of jet.	7 Marks
	b)	A jet of water of diameter 75mm moving with a velocity of 25m/s strikes a fixed plate in such a way that the angle between the jet and plate is 60°. Find the force exerted by the jet on the plate i) in the direction normal to the plate. ii) in the direction of jet.	7 Marks

UNIT-IV

7	a)	What is a surge tank? What are its uses in a hydraulic turbine installation?	7 Marks

b) A pelton wheel turbine develops a power of 1000kW under a head of 75m. If the head becomes 25m, what will be the power developed by the turbine. 7 Marks

(OR)

8 a) Explain the performance characteristic curves for different turbines. 7 Marks

b) A pelton wheel is receiving water from a penstock with a gross head of 510m. One third of gross head is lost in friction in the penstock. The rate of flow through the nozzle fitted at the end of the penstock is $2.2m^3$/sec. The angle of deflection of the jet is 1650 .Determine: 7 Marks

i) the power given by the water to the runner and

ii) hydraulic efficiency of the pelton wheel..

UNIT-V

9 Define a pump. Explain the principle and working of a centrifugal pump with a neat sketch. 14 Marks

(OR)

10 What are the components of hydro electric power plant? Explain with a neat sketch. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Enumerate the difference in working principle of two strokes and four stroke S.I. engine with neat sketches.	7 Marks
	b)	Explain in detail the valve opening and closing diagrams of S.I. engine to that of diesel engine and bring down their significance.	7 Marks
		(OR)	
2	a)	What are time loss factors in an engine? Discuss in detail.	7 Marks
	b)	Compare the actual fuel air cycle to that of an ideal standard air fuel cycle with neat sketches and explain the reasons for their difference of an Otto cycle.	7 Marks

UNIT-II

3	a)	Explain different stages of combustion in S.I. engines with the help of p-θ diagram.	7 Marks
	b)	Explain the phenomenon o f knocking in C.I. engines.	7 Marks
		(OR)	
4	a)	What is the effect of engine variables on knocking in S.I. engines? Explain.	7 Marks
	b)	How are S.I and C.I engine fuels rated?	7 Marks

UNIT-III

5		Discuss at least four various frictional power measurements methods for I.C. engines.	14 Marks
		(OR)	
6		The following observations are made in a trial of a single cylinder oil engine working on dual cycle. Compression ratio = 14, oil consumption = 10 kg/hr, calorific value of oil = 44,500kJ/kg, air consumption = 3.5 kg/min, speed = 2200r.p.m., torque on the brake drum = 201 Nm, mass of water circulated=20 kg/min, temperature rise of cooling water = 25°C, exhaust gas temperature=400°C, room air temperature = 22°C and Cp for exhaust gases=1.15 kJ/kgK. Determine: i) brake power ii) BSFC iii) brake thermal efficiency Also draw the heat balance sheet on minute basis.	14 Marks

UNIT-IV

7	a)	Explain briefly the working principles of i) Stirling engine ii) Stratified charge engine.	7 Marks
	b)	Discuss the advantages and disadvantage of duel fuel engines.	7 Marks
		(OR)	
8	a)	What are the advantages of HCCI engines over conventional engines? Discuss.	7 Marks
	b)	Where do you employ lean burn engines? Explain how they are different from normal engines.	7 Marks

UNIT-V

9	a)	Discuss the relative advantages and disadvantages of Reciprocating and Centrifugal compressors.	7 Marks
	b)	Derive an expression for adiabatic efficiency of a reciprocating compressor starting from the fundamentals.	7 Marks

(OR)

10	a)	Explain the working principle of an axial flow compressor. Give its advantages and applications.	7 Marks
	b)	Discuss the effect of inter-cooling in multi-stage compressors.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

MANUFACTURING TECHNOLOGY-II

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State relative merits and demerits of Cold working and Hot working.	7 Marks
	b)	Explain about stretch forming. How is it different from deep drawing?	7 Marks
		(OR)	
2	a)	Distinguish between forward and backward extrusion processes with neat sketches.	7 Marks
	b)	Differentiate between Open and Closed die forging processes.	7 Marks

UNIT-II

3	a)	Write short notes on :	(i) Embossing. (ii) Sheet bending.	7 Marks
	b)	Write short notes on :	(i) Spinning. (ii) Coining.	7 Marks
			(OR)	
4		With neat sketches, explain about deep drawing and stretch forming processes.		14 Marks

UNIT-III

5		What do you understand about Thermoforming and Thermosetting materials?	14 Marks
		(OR)	
6		Write a short notes on: (i) Extrusion of Plastics. (ii) Blow Moulding.	14 Marks

UNIT-IV

7		Describe all the elements of Water Jet Machining process and its working principle with a neat sketch.	14 Marks
		(OR)	
8		Explain the elements of Ultrasonic Machining process with a neat sketch. Also explain the process of Abrasive Jet Machining.	14 Marks

UNIT-V

9	a)	Compare and contrast Electro Chemical Grinding with Conventional Grinding operation.	7 Marks
	b)	Elaborate Electric Discharge Grinding with neat sketch.	7 Marks
		(OR)	
10	a)	Sketch and explain the working of wire EDM.	7 Marks
	b)	Explain the advantages of wire EDM over conventional EDM.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Amplitude modulation. Present the time domain and frequency domain mathematical expressions for baseband, unmodulated carrier and amplitude modulated signals with neat diagrams.	7 Marks
	b)	Derive the power and bandwidth of an amplitude modulated wave assuming $m(t)=m\cos(2\pi f_m t)$. Also compute the power efficiency of an AM wave.	7 Marks
		(OR)	
2	a)	Explain the generation of AM waves using square law modulator and switching modulators.	7 Marks
	b)	Give the time domain and frequency domain description of DSB-SC signals with neat diagrams. Further mention the advantage of DSB-SC over AM.	7 Marks

UNIT-II

3	a)	Justify why Quadrature null effect is not a problem in coherent demodulation of SSB as compare to that of DSB-SC.	6 Marks
	b)	Illustrate how do you generate SSB signal using filter method.	8 Marks
		(OR)	
4	a)	Explain with necessary diagrams the generation of VSB signals.	7 Marks
	b)	Discuss the time domain and frequency domain representation of both SSB and VSB signals.	7 Marks

UNIT-III

5	a)	Derive the expression for a single tone FM signal in terms of Bessel function $J_n(\beta)$.	8 Marks
	b)	A modulating signal $\mathbf{5\cos 30000\pi t}$ angle modulates a carrier voltage $\mathbf{10\cos 8\pi 10^6 t}$. Determine the bandwidth for FM signal, if K_f = 15 KHz/volt. Find K_p for PM assuming same bandwidth.	6 Marks
		(OR)	
6	a)	Describe the indirect method (Armstrong) of FM generation with suitable example.	8 Marks
	b)	An Angle modulated wave is described by $\mathbf{\Phi(t) = 10\cos[3x10^6\pi t + 10\cos 2000\pi t]}$. Calculate i) Power of the modulated signal. ii) The maximum frequency deviation. iii) The maximum phase deviation.	6 Marks

UNIT-IV

7	a)	With a neat diagram, explain the operation of a Super heterodyne receiver.	7 Marks
	b)	Define the terms i) Selectivity ii) Sensitivity with respect to a receiver. Also describe the notion of image frequency.	7 Marks

(OR)

8	a)	Write short notes on Preemphasis and Deemphasis in FM Modulation systems.	7 Marks
	b)	Derive the SNR in coherent detection and envelope detection of AM signals.	7 Marks

UNIT-V

9	a)	With neat block diagram, explain the generation and detection of PPM signals**.**	8 Marks
	b)	Draw the wave forms of PAM, PPM and PWM signals for square wave modulating signal.	8 Marks

(OR)

10	a)	Explain the generation and detection of PAM signals with neat schematics.	8 Marks
	b)	Illustrate TDM multiplexing scheme with neat sketch**.**	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain with suitable circuit diagram, the operation of transformer coupled transistorized amplifier.	8 Marks
	b)	Explain the essential difference between the RC coupled and direct coupled amplifier.	6 Marks
		(OR)	
2	a)	Give the equation of overall upper and lower cut off frequencies of multistage amplifiers.	10 Marks
	b)	Why capacitive coupling is used to connect a signal source to an amplifier?	4 Marks

UNIT-II

3	a)	Derive the expression for voltage gain and output resistance for a common source JFET amplifier.	8 Marks
	b)	Explain about the effect of coupling and bypass capacitors with respect to frequency response of an amplifier.	6 Marks
		(OR)	
4	a)	How a small-signal high frequency model is different from a low-frequency model? Explain it briefly.	6 Marks
	b)	Explain the following terms with respect to the frequency response of an amplifier: i) Mid frequency region ii) cutoff frequency iii) Band width iv) Low and High frequency regions.	8 Marks

UNIT-III

5	a)	Explain why RC Oscillators are preferred for low frequencies? Draw a neat Circuit diagram of Phase Shift Oscillator using BJT and derive the expression for minimum h_{fe} required to sustain oscillations.	11 Marks
	b)	Give the classification of oscillators.	3 Marks
		(OR)	
6	a)	Draw the circuit diagram of a current series feedback and derive expressions for output resistance and input resistance.	7 Marks
	b)	Show that Voltage shunt feedback amplifier transresistance gain, R_i, R_o are decreased by a factor $(1+A\beta)$ with feedback.	7 Marks

UNIT-IV

7	a)	In what way the design features of power transistors different from small signal transistors?	7 Marks
	b)	What reasons will you assign for higher conversion efficiency of Class B Amplifier as compared to Class A Amplifier?	7 Marks
		(OR)	
8	a)	What do you understand by cross-over distortion? How can it be eliminated in Class B operation?	6 Marks
	b)	Derive an expression for the efficiency of Class A Power Amplifiers.	8 Marks

UNIT-V

9		Draw the circuit of Class-C Tuned amplifier. Explain its operation and derive that the efficiency of the amplifier is 100% making necessary assumptions.	14 Marks
		(OR)	
10	a)	Why parallel resonance circuits are used in tuned amplifiers? Explain.	6 Marks
	b)	Draw the equivalent circuit of capacitance coupled single tuned amplifier and derive the equation for voltage gain.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and explain Coulomb's law.	7 Marks
	b)	Derive the boundary conditions for the tangential and normal components of electric fields at the boundary between two perfect dielectrics.	7 Marks
		(OR)	
2	a)	Deduce an expression for the capacitance of a parallel plate capacitor with two dielectrics of relative permittivities $\varepsilon_1$and ε_2 respectively interposed between plates.	7 Marks
	b)	Derive Poisson's and Laplace's equations starting from Gauss's law.	7 Marks

UNIT-II

3	a)	Prove that isolated magnetic charge does not exist.	7 Marks
	b)	Derive the expression for force between two current elements.	7 Marks
		(OR)	
4	a)	Distinguish between scalar and vector magnetic potential.	7 Marks
	b)	Explain about magnetic energy.	7 Marks

UNIT-III

5	a)	What is the inconsistency in Ampere's Law? How it is rectified by Maxwell?	7 Marks
	b)	Write Maxwell's equations in integral form and differential form for time varying fields.	7 Marks
		(OR)	
6	a)	Explain the concept of displacement current.	7 Marks
	b)	State and prove electrostatic boundary conditions.	7 Marks

UNIT-IV

7	a)	Define uniform plane wave. Give the relation between E and H in a uniform plane wave.	7 Marks
	b)	When the amplitude of the magnetic field in a plane wave is 2 A/m (i) Determine the magnitude of the electric field for the plane wave in free space. (ii) Determine the magnitude of the electric field when the wave propagates in a medium which is characterized by $\sigma = 0$, $\mu = \mu_0$.	7 Marks
		(OR)	
8	a)	Derive expression for reflection and transmission coefficients of an EM wave when it is incident normally on a dielectric.	7 Marks
	b)	Explain the significances of Poynting theorem and Poynting vector.	7 Marks

UNIT-V

9	a)	Derive the equation for the input impedance of a transmission line.	7 Marks
	b)	Write short notes on reflection coefficient, standing wave ratio and transmission coefficient.	7 Marks
		(OR)	
10	a)	Explain the characteristics of Smith chart and its applications.	7 Marks
	b)	A transmission line of length 0.4 λ has a characteristic impedance of 100Ω and is	7 Marks

terminated in a load impedance of 200+***j*** 180**Ω**. Find out (i) Voltage reflection coefficient; (ii) VSWR; (iii) Input impedance of the line using Smith chart.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering,
Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show that the product of two even signals or of two odd signals is an even signal and that the product of an even and an odd signal is an odd signal.	8 Marks
	b)	Find and sketch the first derivatives of the following signals: (i) $x(t) = u(t) - u(t-a)$, $a > 0$ (ii) $x(t) = t[u(t) - u(t-a)]$, $a > 0$	6 Marks
		(OR)	
2	a)	Compute the output y(t) for a continuous-time LTI system whose impulse response h(t) and the input x(t) are given by $h(t) = e^{-\alpha t} u(t)$ and $x(t) = e^{\alpha t} u(t)$ for $\alpha > 0$.	8 Marks
	b)	List the properties of Causal, Stable and LTI Systems.	6 Marks

UNIT-II

3	a)	Expand the function f(t) by trigonometric Fourier series over the Interval (0,1). In this interval f(t) is expressed as f(t) = At.	7 Marks
	b)	Prove that discrete magnitude spectrum is symmetrical about vertical axis where as phase spectrum anti-symmetrical about vertical axis.	7 Marks
		(OR)	
4	a)	Find the Fourier transform of symmetrical gate pulse and sketch the spectrum.	8 Marks
	b)	State and prove following properties of Fourier transform. (i) Time shifting. (ii) Differentiation in frequency domain.	6 Marks

UNIT-III

5	a)	Find the Auto-Correlation of $f(t) = \cos(\omega_0 t)$ and sketch.	7 Marks
	b)	Derive the relation between PSDs of input and output for an LTI system.	7 Marks
		(OR)	
6	a)	What is sampling? Explain the need for sampling and clearly discuss the process of sampling low pass signals and derive conditions for optimum reconstruction of signal.	8 Marks
	b)	What is aliasing? Explain its effect on sampling.	6 Marks

UNIT-IV

7 a) A certain function $f(t)$ is known to have a transform $F(s) = \dfrac{6s^2 + 8s - 5}{s(2s^2 + 6s + 5)}$. Find $f(0+)$ and $f(\infty)$. 7 Marks

b) Find the inverse Laplace Transform of $X(s) = \dfrac{s^2e^{-2s} + 2e^{-3s}}{s^2 + 4s + 3}$. 7 Marks

(OR)

8 a) Find the unilateral Laplace Transform of the signal shown in the following figure. 7 Marks

b) Using Laplace Transform method, solve the following differential equation for the given initial conditions. 7 Marks

$\dfrac{d^2x(t)}{dt^2} + 5\dfrac{dx(t)}{dt} + 6x(t) = \delta(t) + 6u(t)$. with $x(0^-) = 1$ and $x'(0^-) = 2$.

UNIT-V

9 a) State and prove the convolution theorem of Z transform. 7 Marks

b) Find the Z transform of $\boldsymbol{x(n) = [a^n \cos w_0 n]u(n).}$ 7 Marks

(OR)

10 a) Find the impulse response and frequency response of the following discrete time system. 7 Marks

$$y(n) - y(n-1) + \frac{3}{16}y(n-2) = x(n) - \frac{1}{2}x(n-1)$$

b) Using partial fraction expansion method, determine $\boldsymbol{x(n), n \geq 0}$ if its unilateral Z transform $X(z)$ is given by $X(z) = \dfrac{8z^2}{1 - 6z + 8z^2}$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

SWITCHING THEORY AND LOGIC DESIGN

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about Error Detection Codes.	6 Marks
	b)	The solution to the quadratic equation $x^2-11x+22=0$ is $x=3$ and $x=6$. What is the base of the numbers?	4 Marks
	c)	Calculate the binary equivalent of 1/3 out to 8 places. Then convert from binary to Hexadecimal and then convert result to decimal. Is the answer is same, if not how close to the true value?	4 Marks

(OR)

2	a)	What is self complementing code? What are the advantages of this? Illustrate with an example code.	6 Marks
	b)	Perform the division in binary. 1011111 ÷ 101.	4 Marks
	c)	Express the following numbers in decimal i) $(10110.0101)_2$ ii) $(16.5)_{16}$ iii) $(26.24)_8$ iv) $(12.34)_6$	4 Marks

UNIT-II

3		Obtain the minimal SOP and POS of the following functions using K- Maps: i) $F_1(A,B,C,D)= \sum \mathbf{m}(1, 3, 7, 11, 15) + \sum \mathbf{d}(0, 2, 5)$ ii) $F_2(A,B,C,D)= \Pi \mathbf{M}(4, 5, 6, 7, 8, 12) + \Pi \mathbf{d}(1, 2, 3, 9, 11, 14)$	14 Marks

(OR)

4		Simplify the following Boolean function using Quine Mc'Clusky method: $F(A, B, C, D)= \sum \mathbf{m}(0, 1, 6, 7, 8, 9, 13, 14, 15)$.	14 Marks

UNIT-III

5	a)	Explain the operation of Ripple Carry Adder with a neat diagram.	6 Marks
	b)	Design a 3-bit binary to gray code converter.	8 Marks

(OR)

6	a)	Implement the function $f = \sum (0,2,3,5,7)$ using (8 : 1)MUX and (4 : 1) MUX.	8 Marks
	b)	Realize a full adder circuit using 3 x 8 decoder and OR gates.	6 Marks

UNIT-IV

7	a)	Write the truth tables and excitation tables of S-R, J-K, T and D flip-flops.	6 Marks
	b)	Design a 3-bit synchronous counter with control bit M=0 for UP counter and M=1 DOWN counter.	8 Marks

(OR)

8	a)	Design a decade asynchronous counter with timing diagrams.	8 Marks
	b)	Explain 4 bit Ring and Twisted ring counter with their truth tables.	6 Marks

UNIT-V

9	a)	Compare PAL and PLA.	6 Marks
	b)	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.	8 Marks

(OR)

10		Explain in detail procedure of asynchronous circuit design with an example.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the BJT simplified hybrid model for small signal analysis.	7 Marks
	b)	Derive the CE short circuit current gain at high frequencies.	7 Marks
		(OR)	
2	a)	Draw the circuit diagram and frequency response of an RC coupled amplifier. Further explain the role of coupling and bypass capacitors.	7 Marks
	b)	Derive the current gain of a CE amplifier with resistive load at high frequencies.	7 Marks

UNIT-II

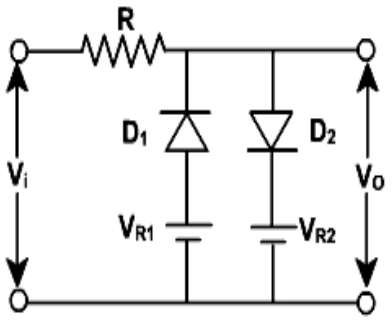
3	a)	An Amplifier with negative feedback gives an output of 12.5V with an input of 1.5V. When feedback is removed, it requires 0.25V input for the same output. Find : i) Value of voltage gain without feedback. ii) Value of β, if the input and output are in phase and β is real.	10 Marks
	b)	An Amplifier has a voltage gain of 1000. With negative feedback, the voltage gain reduces to 10. Calculate the fraction of the output that is feedback to the input.	4 Marks
		(OR)	
4	a)	Draw the circuit diagram of a RC phases shift oscillator using BJT. Derive the expression for frequency of oscillators.	10 Marks
	b)	Discuss the factors that affect the frequency stability of an oscillator.	4 Marks

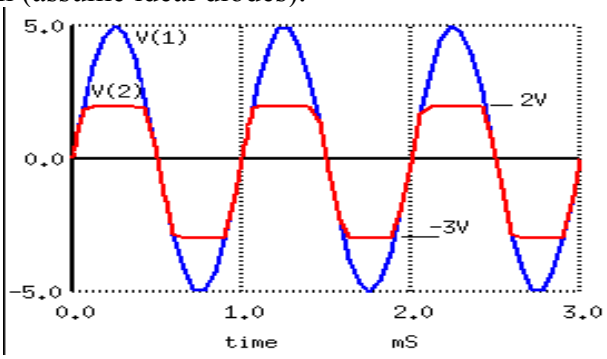
UNIT-III

5	a)	Distinguish between Class-A, Class-B and Class-AB amplifiers with neat diagrams.	7 Marks
	b)	Explain the operation of a class-B push-pull amplifier with neat diagrams.	7 Marks
		(OR)	
6	a)	Derive the conversion efficiency of a Class -A transformer coupled amplifier.	7 Marks
	b)	Describe the second harmonic distortion in power amplifiers.	7 Marks

UNIT-IV

7 a) Design a clipping circuit below which can give the output waveform for the input sinusoidal waveform shown (assume ideal diodes). 7 Marks





b) Explain the operation of a diode as a switch and define the forward and reverse recovery times. 7 Marks

(OR)

8 a) Derive the transfer function, sinusoidal and step response of a high pass RC circuit. 7 Marks

b) Draw the circuit diagram of a clamping circuit and explain its operation with neat waveforms. 7 Marks

UNIT-V

9 a) Distinguish between bistable, monostable and astable multivibrators and mention their applications. 7 Marks

b) Draw the circuit diagram of a monostable multivibrator realized with BJTs and explain its operation. 7 Marks

(OR)

10 a) Explain the triggering of bistable multivibrator circuit using diodes. 7 Marks

b) Draw the circuit diagram of a Schmitt trigger circuit and explain its operation and application as a comparator. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

DATA COMMUNICATIONS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about different standard organizations that govern data communications.	7 Marks
	b)	With the aid of suitable block diagram, explain about different circuits employed for data communications.	7 Marks
		(OR)	
2	a)	Write short notes on complex signals.	7 Marks
	b)	Describe relation between bit rate, bandwidth and baud for 16-PSK.	7 Marks

UNIT-II

3	a)	Write short notes on open wire transmission lines.	7 Marks
	b)	Explain in detail about different losses associated with metallic transmission lines.	7 Marks
		(OR)	
4	a)	With the aid of block diagram, explain in detail about optical fiber communications system.	7 Marks
	b)	Derive expression of critical angle. State Snells law and give its significance in optical fibers.	7 Marks

UNIT-III

5	a)	With aid of block diagram, explain in detail about single channel simplex PCM system.	7 Marks
	b)	A PCM system has following specifications: Minimum analog input frequency=4Khz Maximum decoded voltage at receiver =+/- 2.55V Minimum dynamic range= 46dB Determine: i) Minimum number of bits in PCM code. ii) Resolution. iii) Quantization error.	7 Marks
		(OR)	
6	a)	Describe statistical TDM and list out differences between statistical TDM and synchronous TDM.	7 Marks
	b)	A PCM-TDM system multiplexes 32 voice band channels each with a bandwidth of 0 KHz to 4KHz. Each sample is encoded with eight bit PCM code. Determine: i) Minimum sample rate. ii) Line speed in bps.	7 Marks

UNIT-IV

7	a)	What is pulse code modulation (PCM) line speed? For single-channel PCM	6 Marks

system with a sample rate, fs = 6000 samples per second and a 7-bit compressed PCM code, determine the line speed.

b) Explain the concept of wavelength division multiplexing. 8 Marks

(OR)

8 a) Discuss in detail about Basic Telephone Call procedures. 8 Marks

b) Compare development in communication using Paging system, Cordless telephone system and Cellular telephone systems. 6 Marks

UNIT-V

9 a) Explain the concept of frequency allocation in 2nd generation of cellular telephone systems. 8 Marks

b) Explain in detail about Error-Correction mechanisms. 6 Marks

(OR)

10 a) Explain the handoff strategies employed in the design of a mobile communication system. 8 Marks

b) Explain the following: 6 Marks

i) Frequency reuses distance.

ii) Cell splitting.

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

COMPUTER ORGANIZATION

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the following arithmetic operations in binary using signed-2's complement representation for negative numbers: (+12) + (+13), (-12) + (+13), (+12) + (-13) and (-12) + (-13). Use eight bits to accommodate each number together with its sign.	8 Marks
	b)	What is a bus? Draw the diagram to show how functional units are interconnected using a bus and explain the same.	6 Marks
		(OR)	
2	a)	With the help of a neat sketch, explain floating point addition- subtraction.	10 Marks
	b)	Give a brief description on logic micro operations.	4 Marks

UNIT-II

3	a)	Discuss about Wilke's Micro programmed model with flow chart.	7 Marks
	b)	Discuss about the design issues of instructions and its elements in detail.	7 Marks
		(OR)	
4	a)	Suppose a machine encodes instructions in 32 bits according to the following format. Also, suppose the encoding must accommodate 164 op-codes and 50 registers. op-code, Source Registers, Destination Registers, Immediate field. What is the greatest number of bits that are required to represent the immediate field? If the Immediate field encodes a 2's complement integer, what range of values can be represented with these bits?	7 Marks
	b)	Write about Hardwired control unit in detail.	7 Marks

UNIT-III

5	a)	Design parallel priority interrupt hardware for a system with eight interrupt sources.	8 Marks
	b)	A DMA module is transferring the characters to memory using cycle stealing, from a device transmitting at 9600 bps. The processor is fetching instructions at the rate of 1MIPS. By how much will the processor be slowed down due to DMA activity?	6 Marks
		(OR)	
6		Give the block diagram of interface between a processor and peripheral devices and explain its operations.	14 Marks

UNIT-IV

7	a)	Explain Direct Associative, Set Associative and Fully Associative mapping with an example in cache memories.	7 Marks
	b)	Compare and contrast various Read Only Memories (ROM).	7 Marks
		(OR)	
8	a)	List various secondary storage memories and explain any one of them.	7 Marks
	b)	A cache has 8 lines and what would be the address of cache line to transfer 12th block of Main Memory if the cache using Direct mapping management technique.	7 Marks

UNIT-V

9	a)	Distinguish between Arithmetic pipeline and Instruction pipeline.	7 Marks
	b)	Discuss the characteristics of multiprocessors.	7 Marks
		(OR)	
10	a)	Explain Inter Process Arbitration in detail.	7 Marks
	b)	An unpipelined processor has a cycle time of 25ns. What is the cycle time of a pipelined version of the processor with 5 evenly divided pipeline stages, if each pipeline latch has a latency of 1ns?	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

DATABASE MANAGEMENT SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the Advantages of a DBMS?	6 Marks
	b)	Draw an ER-diagram corresponding to customers and loans. Explain various rotations used in it.	8 Marks
		(OR)	
2	a)	What are the main five functions of a database administrator? Explain.	7 Marks
	b)	Construct an ER-diagram to a model online book store.	7 Marks

UNIT-II

3	a)	How distinct tuples are in a relation instance with cardinality? Explain.	7 Marks
	b)	Differentiate between relation schema and relation instance. What are domain constraints?	7 Marks
		(OR)	
4	a)	Describe the set operations of relational algebra.	7 Marks
	b)	Distinguish tuple relational calculus and domain relational calculus.	7 Marks

UNIT-III

5	a)	What is a group function? List and explain how to use group functions in SQL with appropriate examples.	8 Marks
	b)	Explain the structure of SQL SELECT statement with suitable example.	6 Marks
		(OR)	
6	a)	What is meant by the closure of functional dependencies? Illustrate with example.	6 Marks
	b)	What is normalization? Explain in detail about various normal forms.	8 Marks

UNIT-IV

7		What is lock based protocols? Explain them in detail.	14 Marks
		(OR)	
8	a)	Discuss about two phase commit protocol.	6 Marks
	b)	Illustrate dead lock and conflict serializability with suitable example.	8 Marks

UNIT-V

9	a)	What is an index structure? Explain how to use hash table as an index structure for a database.	8 Marks
	b)	When does a collision occur in hashing? Illustrate various collision resolutions techniques.	6 Marks
		(OR)	
10	a)	Discuss in detail about primary file organization.	7 Marks
	b)	By considering relevant example, show insertion and deletion operations on a B-Tree.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

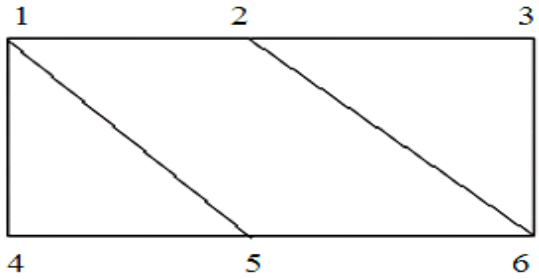
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the non-recursive algorithm for finding the Fibonacci sequence and derive its Time complexity.	7 Marks
	b)	List the two different types of recurrence.	7 Marks
		(OR)	
2	a)	Compare Big-oh notation and Little-oh notation. Illustrate with an example.	7 Marks
	b)	Explain the representations of disjoint set union with examples.	7 Marks

UNIT-II

3	a)	Write an algorithm for finding Bi-connected components and also analyse its time complexity.	8 Marks
	b)	Explain Quick Sort Method with an example.	6 Marks
		(OR)	
4	a)	Solve the Recurrence Relation for the merge sort time complexity.	7 Marks
	b)	Explain BFS algorithm and implement for the following graph.	7 Marks



UNIT-III

5	a)	Explain single source shortest path problem with example.	7 Marks
	b)	Explain Prim's algorithm with a suitable example.	7 Marks
		(OR)	
6	a)	What do you mean by forward and backward approach of problem solving in dynamic programming? List the features of dynamic programming.	7 Marks
	b)	Describe the travelling salesman problem and explain how it is solved using dynamic programming.	7 Marks

UNIT-IV

7		Write the LC Branch and Bound solution for the 0/1 Knapsack problem. Also analyze its complexity.	14 Marks
		(OR)	
8	a)	Write an algorithm of 8-queens problem using backtracking.	7 Marks
	b)	Explain the method of reduction to solve travelling sales person problem using Branch and Bound.	7 Marks

UNIT-V

9		What are deterministic and non-deterministic algorithms? Distinguish them and illustrate with examples.	14 Marks

(OR)

10	a)	State and prove Cook's theorem.	7 Marks
	b)	Explain the strategy to prove that a problem is NP hard.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

OBJECT ORIENTED PROGRAMMING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the difference between Procedure Oriented Programming and Object Oriented Programming with the help of suitable programs/code.	7 Marks
	b)	Write short notes on OOP Concepts.	7 Marks
		(OR)	
2		Discuss about all the Java buzzwords in detail.	14 Marks

UNIT-II

3	a)	List the similarities and differences of classes and interfaces.	7 Marks
	b)	Explain with a suitable example, how Java resolve calls to overridden methods at runtime.	7 Marks
		(OR)	
4		Create a class product to perform the product of the natural numbers in the first package pack1. In the second package pack2, create a class square to find the square of the given number. Now, create another package named pack3 and create a class product_square to perform the product of the square of the given numbers by importing the packages pack1, pack2 and using their methods.	14 Marks

UNIT-III

5	a)	Explain about the significance of Exception Handling in OOP.	7 Marks
	b)	Discuss about the Exception Hierarchy in detail.	7 Marks
		(OR)	
6	a)	Write a Java Program to demonstrate the use of ' try, catch and throw '. Explain.	7 Marks
	b)	Write short note on built in Exceptions in Java.	7 Marks

UNIT-IV

7	a)	What is Multithreading? Explain with suitable Java code.	7 Marks
	b)	Explain the concept of Event Listeners with the help of suitable Java program.	7 Marks
		(OR)	
8	a)	Discuss about AWT class hierarchy.	7 Marks
	b)	What is an Event? Explain about event handling in detail.	7 Marks

UNIT-V

9	a)	Explain the life cycle of a Servlet and their methods in detail.	7 Marks
	b)	Write a servlet program to demonstrate parameter passing from HTML script using get method.	7 Marks
		(OR)	
10		Create a table 'book' with attributes book_no, book_title, Year_pub, cost, publisher. Establish database connectivity and design a GUI to add, delete and display entries of the table.	14 Marks

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CODE No.:14BT41501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

COMPUTER GRAPHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Computer Graphics? Explain the application of Computer Graphics.	7 Marks
	b)	Explain in detail about the Random Scan Method.	7 Marks
		(OR)	
2	a)	Explain about the Non zero winding number rule.	7 Marks
	b)	Explain about the Midpoint Circle algorithm.	7 Marks

UNIT-II

3		Derive the window-to-view port transformation equation by first scaling the window-to-the-size of view point and then translating the scaled window- to-the view port position.	14 Marks
		(OR)	
4		Explain in detail about the Cohen Sutherland Line Clipping algorithm.	14 Marks

UNIT-III

5	a)	What is meant by 3D object representation? What are the two ways of representing an object?	7 Marks
	b)	Compare the characteristics of Beizer and B-spline curves.	7 Marks
		(OR)	
6	a)	Give a detailed note about Hermite interpolation.	7 Marks
	b)	What are the elements of geometry vector proposed by Bezier for curve generation?	7 Marks

UNIT-IV

7	a)	List the three basic rotation matrices for rotation about the three principle axis. Explain about their nature of operation.	7 Marks
	b)	Describe briefly about 3D Composite transformation.	7 Marks
		(OR)	
8	a)	Write the transformation matrix to rotate a point (x,y,z) about z-axis through an angle θ in the clock wise direction.	7 Marks
	b)	Write three dimensional homogenous matrix to rotate by π degrees about the line passing through the points (0,0,0) and (1,0,1).	7 Marks

UNIT-V

9	a)	Explain the steps involved in Z-buffer algorithm. Explain the memory requirements for the implementation of Z-buffer.	7 Marks
	b)	Discuss how the BSP-tree method is implemented for visible surface detection.	7 Marks
		(OR)	
10	a)	Compare and contrast depth buffer and depth sort method.	7 Marks
	b)	Classify the visible surface detection algorithms and explain about each class.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

CONTROL SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

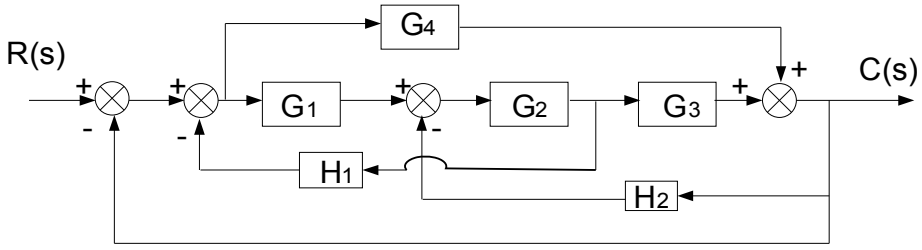
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

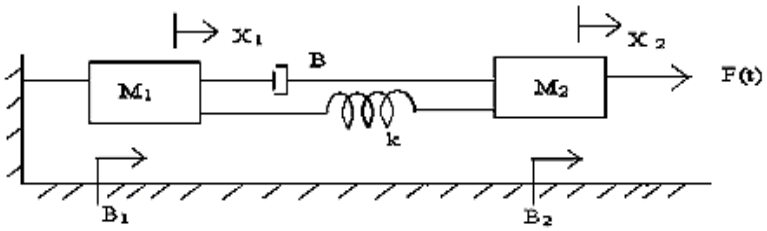
1 a) Write the advantages and disadvantages of open-loop and closed-loop control systems. 7 Marks

b) Draw the signal flow graph for the given block diagram. Obtain the transfer function C(s)/R(s) by using mason's gain formula. 7 Marks



(OR)

2 a) Determine the transfer function $\frac{X_2(S)}{F(S)}$. 7 Marks

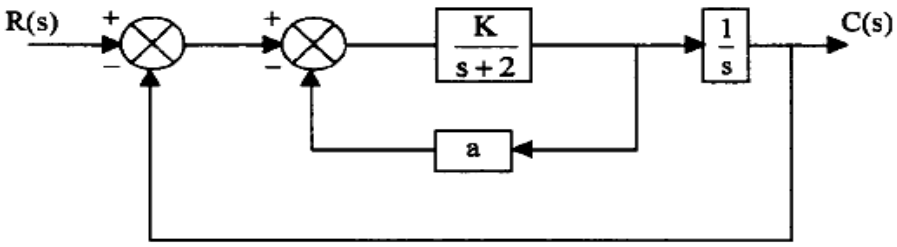


b) Derive the transfer function of AC servomotor. 7 Marks

UNIT-II

3 a) Write a short note on PID controller. 7 Marks

b) Determine the values of 'K' and 'a' such that the damping factor is 0.6 and a settling time of 1.67 sec. Also find the step response of the system. 7 Marks



(OR)

4 a) Derive the Step response equation for standered first order system. 7 Marks

b) Consider the unit step response of a unity feedback control system whose open loop transfer function is $G(s) = \frac{1}{s(s+1)}$ .obtain the rise time, peak time, maximum over shoot and settling time(2% criterian). 7 Marks

UNIT-III

5 a) Determine the stability of the control system with characteristics equation **$s^5 + 4s^4 + 8s^3 + 8s^2 + 7s + 4 = 0$** using Routh Hurwitz Criterion. 7 Marks

b) A unity feedback system with forward path transfer function $G(s) = \frac{K(s+1)}{s^3 + ps^2 + 2s + 1}$ oscillates with frequency 2 rad/ sec . Find values of K and P. 7 Marks

(OR)

6 a) What are rules in construction of root loci? 5 Marks

b) For a unity feedback system with open loop transfer function $G(S)H(S) = \frac{K}{S(S+4)(S+6)}$, find the range of K for which the system will be stable using RH – Criterion. 9 Marks

UNIT-IV

7 Sketch the bode plot of the system with open loop transfer function **$G(s)=1/s^2(1+s)(1+2s)$**. Find gain margin and phase margin of the system. 14 Marks

(OR)

8 a) State and Explain Nyquist stability criterion to determine the stability of a system. 6 Marks

b) Sketch the polar plot and determine gain margin and phase margin for open loop transfer function of unity feedback system **$G(s) = 1/s(s+2)(s+4)$**. 8 Marks

UNIT-V

9 a) Obtain state variable representation of a field control DC motor. 6 Marks

b) Determine whether the following system is completely state controllable and observable using kalman's test. 8 Marks

$$A = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 0 & 1 \\ -1 & -3 & -3 \end{bmatrix} \quad B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \quad C = \begin{bmatrix} 0 & 1 & -1 \end{bmatrix}$$

(OR)

10 a) Find the Eigen value and Eigen vectors of the system represented with state space matrix A. Also derive diagonal matrix for the system. $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 0 & 0 & 3 \end{bmatrix}$ 7 Marks

b) What are the advantages of state variable analysis? Also write the properties of state transition matrix. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

PULSE AND DIGITAL CIRCUITS

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the relation between rise time and upper cut-off frequency of RC low pass circuit.	7 Marks
	b)	Derive the conditions for good integrator.	7 Marks
		(OR)	
2	a)	Derive the expression for the percentage tilt of the output of high pass circuit with large time constant excited by a symmetrical square wave with zero average value.	7 Marks
	b)	1 kHz square wave output from an amplifier has rise time t_r = 350ns and tilt = 5%. Determine the upper and lower 3-db frequencies.	7 Marks

UNIT-II

3	a)	Explain how a sine wave may be converted into a square wave using a clipping circuit.	7 Marks
	b)	With help of a neat circuit diagram and waveforms, explain the working of a positive clamping circuit.	7 Marks
		(OR)	
4	a)	Design and draw a diode clipper circuit to clip the given input voltage of 10sinwt at +3Vand -5V level. Sketch the waveforms neatly.	7 Marks
	b)	State and prove clamping circuit theorem.	7 Marks

UNIT-III

5	a)	With the help of a neat circuit diagram, explain the operation of an astable multivibrator.	7 Marks
	b)	Design a monostable multivibrator with pulse width T = 100μsec.	7 Marks
		(OR)	
6		Draw the free running collector-coupled astable multivibrator circuit and explain its operation with necessary waveforms.	14 Marks

UNIT-IV

7	a)	Derive the relation between $\mathbf{e_s}$,$\mathbf{e_t}$,$\mathbf{e_d}$.	7 Marks
	b)	Distinguish between voltage and current time base generator circuits.	7 Marks
		(OR)	
8	a)	Explain the following terms: i) Firing of SCR. ii) Turning of SCR.	6 Marks
	b)	Draw and explain the operation of Boot strap time base generator circuit with characteristics.	8 Marks

UNIT-V

9		With the help of a neat circuit diagram and waveforms, explain the operation of four diode sampling gate and six diode sampling gate	14 Marks
		(OR)	
10		With the help of neat circuit diagram and truth table, explain	14 Marks

i) DTL OR gate ii) RTL OR gate iii) DTL NAND gate iv) RTL NAND gate.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

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

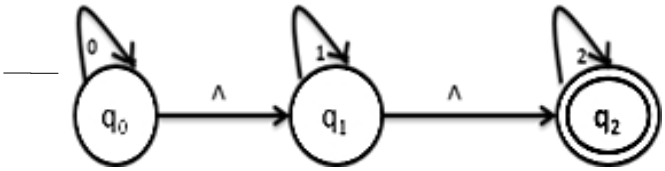
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design NFA for the language having strings that contain 011 as substring over input = {0, 1} and convert into DFA. 14 Marks

(OR)

2 Prove that if L be a set accepted by NFA, then there exists a DFA that accepts L. Construct the equivalent NFA without ^-moves 14 Marks



UNIT-II

3 Let $\mathbf{r_1}$ and $\mathbf{r_2}$ be arbitrary regular expressions over some alphabet. Find a simple (the shortest and with the smallest nesting of * and +) regular expression which is equal to each of the following regular expressions. 14 Marks

(i) $\mathbf{(r_1 + r_2 + r_1r_2 + r_2r_1)^*}$

(ii) $\mathbf{(r_1(r_1 + r_2)^*)^+}$

(OR)

4 Find a regular expression corresponding to the language of all strings over the alphabet { a, b } that contain exactly two a's. 14 Marks

UNIT-III

5 Define PDA and prove that if L is a context free language, then there exists a PDA M such that L=N (M). 14 Marks

(OR)

6 Explain the term Chomsky Normal Form and convert the following grammar to CNF. 14 Marks

S→aB|Aa A→aS|bAA A→a B→bS|aBB|b

UNIT-IV

7 Draw a transition diagram for a Turing machine accepting the language. 14 Marks

$\{1^n2^n3^n \mid n>0\}$

(OR)

8 Define Turing machine. State different types of Turing machines and explain universal Turing machine. 14 Marks

UNIT-V

9 Explain halting problem on Turing machines. 14 Marks

(OR)

10 Prove the un-decidability of post correspondence problem. 14 Marks

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CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2016

OPERATING SYSTEMS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat sketch, explain traditional UNIX system structure.	7 Marks
	b)	Explain the services provided by operating systems.	7 Marks
		(OR)	
2	a)	Explain the two models used by cooperating processes for Inter Process Communication.	10 Marks
	b)	What is the drawback of SJF scheduling algorithm?	4 Marks

UNIT-II

3	a)	Explain the critical section problem.	7 Marks
	b)	Explain the solution for Dining Philosophers problem.	7 Marks
		(OR)	
4	a)	Explain the resource allocation graph algorithm.	7 Marks
	b)	Explain Banker's algorithm.	7 Marks

UNIT-III

5	a)	Consider paging system with the page table stored in memory. If a memory reference takes 180 nano seconds, how long does a paged memory reference take? If we add TLB's and 70% of all page table references are found in the TLB's, what is the effective memory reference time?	7 Marks
	b)	What is segmentation? Explain segmentation hardware.	7 Marks
		(OR)	
6	a)	Discuss hardware support required to support demand paging.	7 Marks
	b)	Explain LRU approximation page replacement algorithm.	7 Marks

UNIT-IV

7		Explain the directory and disk structure used for sharing files.	14 Marks
		(OR)	
8	a)	Explain the different ways of accessing the disk storage.	7 Marks
	b)	What is the criterion for selecting disk scheduling algorithm?	7 Marks

UNIT-V

9	a)	Explain in detail about Application I/O interface.	7 Marks
	b)	Explain various steps involved in the I/O Request.	7 Marks
		(OR)	
10	a)	List the principles of protection in operating system.	7 Marks
	b)	Explain how access matrix can be used for providing protection.	7 Marks

CODE No.:14BT3ES01 SVEC-14 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

ENVIRONMENTAL SCIENCES

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the scope of environmental studies	7 Marks
	b)	What are the pros and cons of mining activity?	7 Marks
		(OR)	
2	a)	Write note on deforestation.	7 Marks
	b)	What are the adverse effects of pesticides?	7 Marks

UNIT-II

3	a)	What is meant by Ecological Succession? Explain.	8 Marks
	b)	Write note on structure and functions of grass land ecosystem.	6 Marks
		(OR)	
4	a)	What is meant by biodiversity? Explain genetic and species diversity.	8 Marks
	b)	Discuss the hot spots of biodiversity in India.	6 Marks

UNIT-III

5		Describe the sources, effects and control measures of air pollution.	14 Marks
		(OR)	
6	a)	Discuss the controlling methods of thermal pollution.	7 Marks
	b)	Write note on nuclear hazards.	7 Marks

UNIT-IV

7	a)	Discuss the Air (Prevention and Control of Pollution) Act, 1981.	7 Marks
	b)	What are the major problems in the path of sustainable development in India?	7 Marks
		(OR)	
8	a)	Discuss the waste land reclamation process.	7 Marks
	b)	What is meant by environmental legislation? Explain.	7 Marks

UNIT-V

9	a)	Explain the concept of family welfare programme in India.	7 Marks
	b)	Write note on HIV/AIDS.	7 Marks
		(OR)	
10	a)	What is meant by EIA? Explain it.	7 Marks
	b)	Prepare a detailed report on the pond ecosystem which you have visited as part of environmental field visit.	7 Marks

CODE No.:14BT4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		List the major barriers to communication. Why are these barriers?	14 Marks
		(OR)	
2		In your opinion, how important is network in communication? What are the different layers of networks through which communication may be effected?	14 Marks

UNIT-II

3		Identify the different types of non verbal communication and explain how they complement or distract verbal communication.	14 Marks
		(OR)	
4		If there is a crisis in a company/organization, how is it dealt with?	14 Marks

UNIT-III

5	a)	What is a formal written report? Discuss its characteristic features in detail.	7 Marks
	b)	Discuss in detail the classification of reports.	7 Marks
		(OR)	
6		As the purchase officer of a company write a complaint to Uniflex limited, New Delhi pointing out the damage which was discovered after checking the consignment containing Compact Disc sent to you by the supplier.	14 Marks

UNIT-IV

7		You are a team leader of a project. Explain the benefits of giving team presentations instead of presentations by individuals.	14 Marks
		(OR)	
8		What are the do's and don'ts of a presentation?	14 Marks

UNIT-V

9		What must one keep in mind when setting career goals?	14 Marks
		(OR)	
10		What are the different types of résumés? How is a résumé different from a CV? Which format is used when? Explain with examples.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

PROFESSIONAL ETHICS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is meant by professional conscience and right of conscientious refusal?	6 Marks
	b)	Explain the expected confidentiality to be maintained by the engineer while he shifts to another organization similar in service as the previous one.	8 Marks
		(OR)	
2	a)	Explain the vital role of consensus and controversy while considering moral autonomy in engineering ethics.	6 Marks
	b)	Write short notes on Senses of engineering ethics.	8 Marks

UNIT-II

3	a)	What are the prima facie duties?	6 Marks
	b)	List and explain various models of professional roles.	8 Marks
		(OR)	
4	a)	What are the pleasures offered by engineering?	6 Marks
	b)	Explain in detail the specific virtues of professional responsibility.	8 Marks

UNIT-III

5	a)	Why engineering projects are viewed as experiments?	8 Marks
	b)	Enumerate the Code of Ethics of engineers.	6 Marks
		(OR)	
6	a)	Discuss on 'Engineers as Responsible Experimenters'.	6 Marks
	b)	What is meant by informal consent when bringing an experimental product to the market?	8 Marks

UNIT-IV

7	a)	What is meant by expert authority?	6 Marks
	b)	What is the role of the trade unions in “collective bargaining”? How far they useful? Explain with suitable examples.	8 Marks
		(OR)	
8	a)	What are the basic principles of 'professional rights' with reference to ethical theories?	6 Marks
	b)	What is meant by 'contractual employee rights' and 'non-contractual employee rights'? Explain with suitable examples.	8 Marks

UNIT-V

9	a)	“Engineers shine better as managers”. Discuss.	6 Marks
	b)	What is known as technology transfer? Why is it so critical in defense / aerospace industries?	8 Marks
		(OR)	
10	a)	How do professional societies help in conflicts involving engineers in moral issues?	6 Marks
	b)	What expectations from engineers are required to serve for the highest standards of professional obligations?	8 Marks

CODE No.:14BT5HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Define demand. What are the factors that influence the demand?	14 Marks
	(OR)	
2	Define elasticity of demand. How are the price, income, cross elasticities and advertising elasticity measured?	14 Marks

UNIT-II

3	Explain and illustrate isoquants and isocost curves.	14 Marks
	(OR)	
4	Explain: i) Total, Average and Marginal cost ii) Fixed cost *Vs* Variable cost	14 Marks

UNIT-III

5	Define "Market" and explain different types of markets and their features.	14 Marks
	(OR)	
6	What do you mean by Price? What are the various methods of pricing?	14 Marks

UNIT-IV

7	What is Accounting? Explain various Accounting Principles.	14 Marks
	(OR)	
8	Journalize the following transactions in the books of M/S Kothari & Sons for April 2015: April 1 : Commenced business with Rs.40,000. April 4 : Bought goods for cash Rs.4,000. April 7 : Sold goods Rs.700. April 10: Bought goods from M/S Bhandari Bros. Rs.3,000. April 14: Purchased machinery of Rs.5,000 from M/S Kirloskar Bros. April 16: Paid for transportation of machinery Rs.500 and installation charges Rs.300 on it. April 20: Paid quarterly interest on borrowed amount of Rs.5,000 at 12% p.a. April 24: Supplied goods to M/S Kunal &Sons Rs.3,500. April 27: Paid to M/S Bhandari Bros. Rs.3,000 in full settlement of account. April 28: M/S Kunal & Sons refunded goods worth Rs.300. April 29: Received commission Rs.250. April 30: Paid conveyance to manager Rs.450.	14 Marks

UNIT-V

9 Explain advantages and disadvantages of computerized accounting. 14 Marks

(OR)

10 The following data was extracted from the books of M/s Rama & Co. for the year 2015-16: 14 Marks

Dr.		Cr.	
Particulars	Rs.	Particulars	Rs.
Purchases	8,00,000	Capital	9,00,000
Sales returns	20,000	Sales	20,00,000
Sundry Debtors	6,00,000	Purchase returns	30,000
Opening stock	1,80,000	Sundry Creditors	4,00,000
Machinery	12,00,000	Bank loan	1,00,000
Bills receivables	2,40,000	Bills payable	50,000
Furniture	2,00,000	Commission received	80,000
Salaries	1,75,000	Overdraft	25,000
Interest charges	50,000		
Wages	60,000		
Direct expenses	60,000		
Total	35,85,000	Total	35,85,000

Adjustments:

1. Outstanding wage Rs.20,000
2. Prepaid salaries Rs.20,000
3. Create bad debts Rs.5,000
4. Closing stock Rs.4,00,000
5. Charge depreciation @ 10% on Machinery and 20% on furniture.

You are required to prepare the following:

i) Trading and profit and loss account for the period ended March 31, 2016.

ii) Balance sheet as on March 31, 2016.

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

MANAGEMENT SCIENCE

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Briefly describe the evolution of management thought. 7 Marks

b) What is SWOT analysis? Explain its significance. 7 Marks

(OR)

2 a) Explain the contributions of F.W.Taylor to Management Science. 7 Marks

b) What do you understand by social responsibility? Discuss the social responsibilities of a management. 7 Marks

UNIT-II

3 a) Explain the principles that help designing a good layout. 7 Marks

b) Explain the functions of marketing. 7 Marks

(OR)

4 a) How do you carry out work measurement? Explain the basic steps involved. 7 Marks

b) A fraction defective control chart has a mean value of 0.01. The sample size is always maintained at 100 units. Calculate the control limits and find out whether the following samples are in control or not. 7 Marks

Sample Number	Number of defectives observed
1	2
2	3
3	4

UNIT-III

5 a) What is personnel management? What are its features and functions? 7 Marks

b) Explain the following concepts with appropriate examples. 7 Marks

i) Job description ii) Job specification

(OR)

6 a) Explain briefly Maslow's theory of motivation. 8 Marks

b) Differentiate between McGREGOR's theory X and theory Y. 6 Marks

UNIT-IV

7 a) What is PERT and what are the applications of PERT? 7 Marks

b) A project is composed of seven activities whose time estimates are as follows. 7 Marks

Activity		1-2	1-3	1-4	2-5	3-5	4-6	5-6
Time in weeks	T_o	2	2	4	1	3	2	5
	T_m	2	5	6	1	6	6	8
	T_p	8	8	20	1	15	10	17

i) Draw a PERT network diagram.
ii) Calculate slack of each event.
iii) Identify the critical path.
iv) Find the duration of the project.

(OR)

8	a)	Discuss briefly about Network Logic.	7 Marks
	b)	List out the rules for Network construction.	7 Marks

UNIT-V

9	What are intellectual property rights (IPR)? How do we obtain them? How IPR are protected?	14 Marks

(OR)

10	Briefly describe the process of business outsourcing.	14 Marks

CODE No.:14BT40502 SVEC-14 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

DATABASE MANAGEMENT SYSTEMS

[Information Technology, Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the advantages of a Database System over Traditional file System.	7 Marks
	b)	Explain three schema architecture, the Logical and Physical data independence.	7 Marks
		(OR)	
2	a)	Define E-R diagram. List various notations used in E-R diagram.	6 Marks
	b)	Explain the Conceptual Design with E-R Model.	8 Marks

UNIT-II

3	a)	Explain the procedure for converting ER to Relational with an example.	8 Marks
	b)	What is a view? What is Materialized View? Create a view on EMP Table and finally drop it.	6 Marks
		(OR)	
4	a)	Consider the following relations lives(person-name,street,city) works(person-name, company-name,salary) located-in(company-name,city) manages(person-name,manager-name) Write relational algebra expressions for the following queries i. Find the name of all employees who work for the CITY Bank Company. ii. Find all employees who live in the same city as the company they work for. iii. Find all persons who do not work for CITY Bank.	6 Marks
	b)	Explain the division and set-difference operations with an example.	8 Marks

UNIT-III

5	a)	What do you mean by NULL values? How NULL values can be compared? Explain with suitable examples.	6 Marks
	b)	What are Nested Queries? Write about Correlated Nested Queries.	8 Marks
		(OR)	
6		What is the need for normalization? Explain first, second and third normal forms with an example.	14 Marks

UNIT-IV

7	a)	Explain the ACID Properties of a Transaction with suitable example.	8 Marks
	b)	Explain 2PL Protocol in detail.	6 Marks
		(OR)	
8	a)	Explain View Serializabilty.	6 Marks
	b)	Explain validation Based Protocol in detail.	8 Marks

UNIT-V

9 a) Define the following terms with examples. 8 Marks
   i) Search key
   ii) Dense Index
   iii) Spare Index
   iv) Multilevel Index

   b) What is meant by transaction rollback? Why is it necessary to check for cascading rollback by giving an example? 6 Marks

(OR)

10 a) Discuss any two basic file organizations. 8 Marks

   b) Explain the procedure for searching and inserting records in B+Tree. 6 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the algorithm to generate Fibonacci sequence using recursion and analyze the time complexity of it.	7 Marks
	b)	Give the pseudo code for finding maximum element in the array without violating pseudo conventions.	7 Marks
		(OR)	
2	a)	Given **n** Boolean variables x_1, x_2, x_3,…,x_n , we wish to print all possible combinations of the truth values they can assume. Write the algorithm to accomplish this.	7 Marks
	b)	Compare various time complexity notations.	7 Marks

UNIT-II

3	a)	Give a proof that shows that the recurrence relation $T(n) = mT\left(\frac{n}{2}\right) + an^2$ is satisfied by $t(n) = O(n^{\log m})$ for < 4.	7 Marks
	b)	Explain with an example how spanning trees are used in construction roads with example.	7 Marks
		(OR)	
4	a)	Define cut-vertex and write the algorithm to find cut-vertices in the given graph.	7 Marks
	b)	The sequences $X_1, X_2, ...X_l$ are sorted sequences such that $\sum_{i=1}^{l} \mid X_1 \mid = n$. Show how to merge these *l* sequences in time (*nlog l*).	7 Marks

UNIT-III

5		Consider n=4 and (q1,q2,q3,q4)=(do,if,int,while) and the values for p's and q's are give as p(1:4)=(3,3,1,1) and q(0:4)=(2,3,1,1,1). Construct the Optimal binary search Tree.	14 Marks
		(OR)	
6		Write and explain the general method of Greedy Technique in detail.	14 Marks

UNIT-IV

7	a)	Explain the general method of Branch and Bound.	7 Marks
	b)	Explain the principles of LIFO Branch and bound.	7 Marks
		(OR)	
8	a)	Write a recursive backtracking Algorithm for the sum of Sub Sets problem.	7 Marks
	b)	Draw the Search Tree to color the Graph with the Three colors: Red, Blue, Green.	7 Marks

UNIT-V

9	a)	Show that the clique optimization problem reduces to the clique decision problem.	7 Marks
	b)	Obtain a nondeterministic algorithm of complexity $O(n)$ to determine whether there is a subset of n numbers $\boldsymbol{a_i}$, $\boldsymbol{1 \le i \le n}$, that sums to $\boldsymbol{m}$.	7 Marks

(OR)

10	a)	Show that CNF satisfiability reduces to clique decision problem.	7 Marks
	b)	Explain about node cover decision problem with example.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 Explain the load combinations involved in the analysis of moving loads on beams. A **udl** of intensity 30 kN/m of length 5m cross a girder of span 18m. Calculate the maximum shear force and maximum bending moment at a section 8m from left support. 14 Marks

(OR)

2 A tain of 5 wheel loads crosses a span of 30m as shown in Fig.1. Calculate the positive shear and negitive shear at mid span and obsulute maximum bending moment any where in the span. 14 Marks

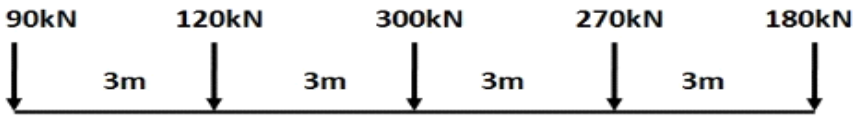

Fig.1

UNIT-II

3 Analyze the continuous beam shown in Fig.2 by slope deflection method and sketch the BMD. 14 Marks

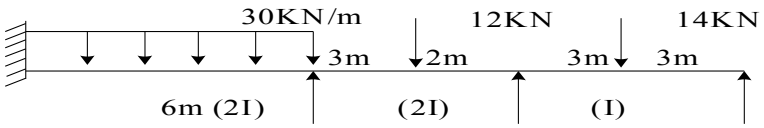

Fig.2

(OR)

4 Analyze the continuous beam shown in Fig.3 using moment distribution method of analysis and Sketch the SFD and BMD. 14 Marks

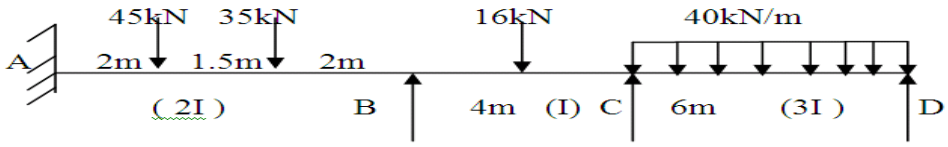

Fig.3

UNIT-III

5 Determine the end moments for the members of the rigid frame shown in Fig.4 by Kani's method. Draw the BMD. 14 Marks

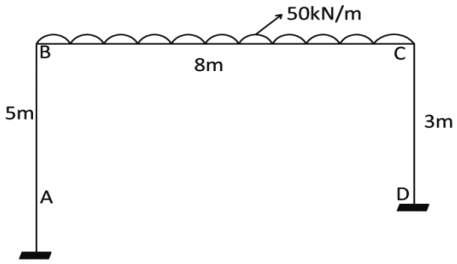

Fig.4

(OR)

6 Define strain energy and derive the expression for strain energy due to bending moment. Determine the deflection at point A for the frame shown in Fig.5. Take E = 2.1×10^5 kN/mm². Members AB and AD have cross sectional area of 8000mm² and member AC has an area of 4000mm². 14 Marks

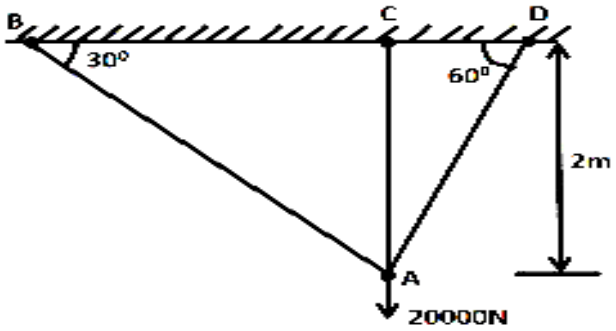

Fig.5

UNIT-IV

7 Analyze the building frame shown in Fig.6 for vertical loads using approximate methods. 14 Marks

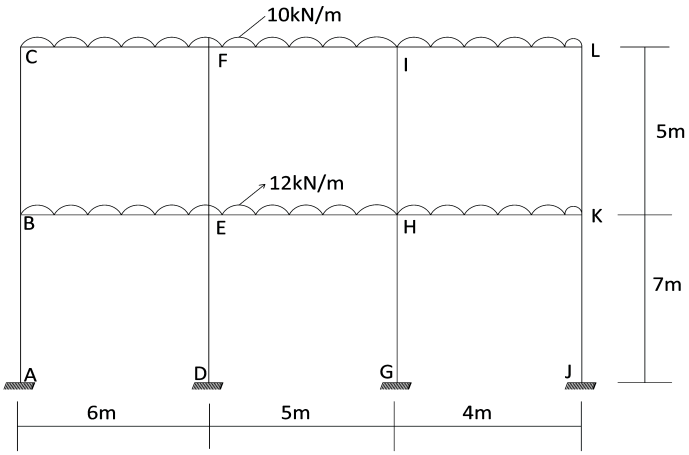

Fig.6

(OR)

8 Analyze the building frame shown in Fig.7 using portal method. 14 Marks

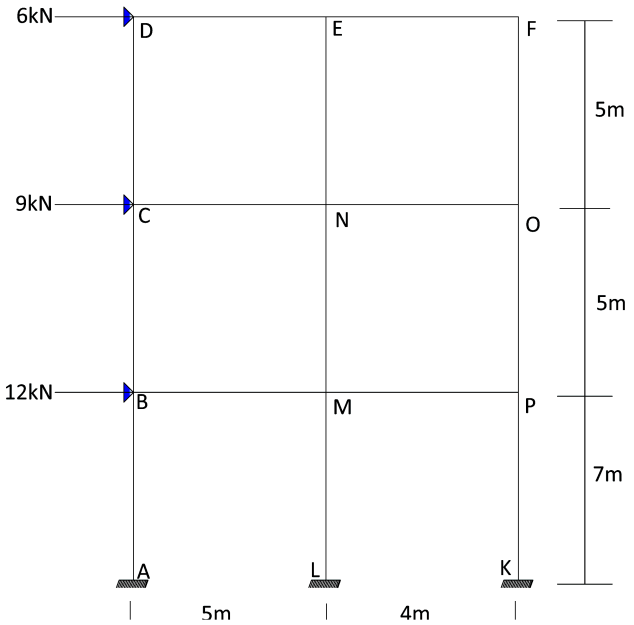

Fig.7

UNIT-V

9 Find the degree of static and kinematic indeterminacy for the structure as shown in Fig.8**.** 14 Marks

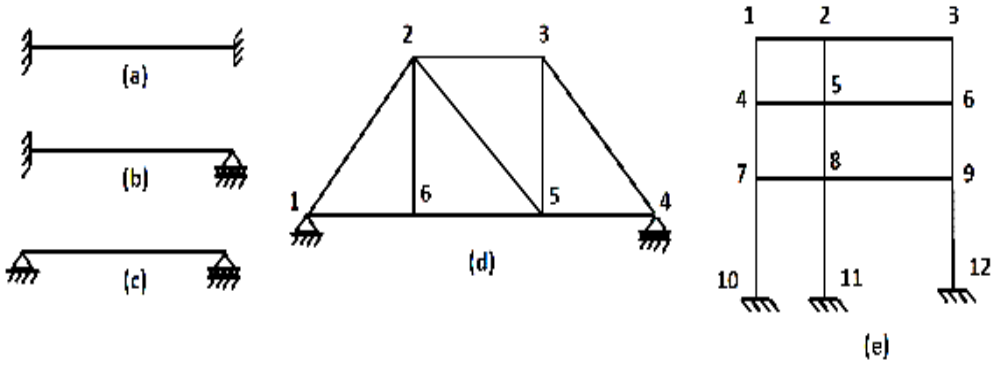

Fig.8

(OR)

10 Analyze the rigid frame shown in Fig.9 by direct flexibility matrix method**.** 14 Marks

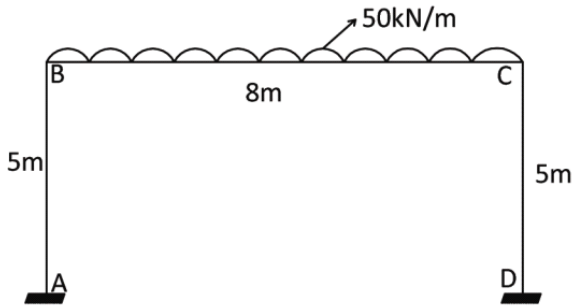

Fig.9

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

REINFORCED CEMENT CONCRETE STRUCTURES-I

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain briefly with the help of sketch : 14 Marks
i) Balanced Section
ii) Under reinforced section and
iii) Over reinforced section

(OR)

2 a) What are the roles and responsibilities of the designer? 8 Marks
b) What are the main design considerations during design of RC structures? 6 Marks

UNIT-II

3 Design the reinforcement for a RCC beam to resist an ultimate moment of 200 kN-m, using Fe415 steel and M20 concrete. Due to architectural constraint the width is restricted to 230mm. 14 Marks

(OR)

4 Design a reinforced concrete beam of size 230mm x 450mm subjected to an ultimate moment of 160kN-m. The grade of concrete used is M25 grade and Fe415 steel bars. 14 Marks

UNIT-III

5 Design a short rectangular column of size 300mm x 500mm to carry an ultimate load of 1500kN. The column is subjected to an ultimate moment of 180kN-m in major axis. Use M25 concrete and Fe 415 Steel. 14 Marks

(OR)

6 Design a circular column to carry an axial load of 2000kN. The column has an effective length of 3m. The ends of the column are effectively held on position but not against rotation. Use M 20 concrete and Fe 415 steel. 14 Marks

UNIT-IV

7 A Square column 400mm x 400mm carries an axial load of 1200kN. Design a square footing for the column. The safe bearing capacity of the soil is 150kN/m^2. Use M20 concrete and Fe 415 steel. 14 Marks

(OR)

8 Design a reinforced concrete rectangular combined footing located 3.6m apart. The size of the two columns is 500mm x 500mm. Each column carries an axial load of 1500kN. The safe bearing capacity of the soil is 200kN/m^2. Use M20 concrete and Fe 415 steel. 14 Marks

UNIT-V

9 Design a one way RC slab supported on masonry walls with a clear span of 3.75m, to support a live load of 4kN/m^2 and finishes of 1.5kN/m^2. Use M 20 concrete and Fe 415 steel. 14 Marks

(OR)

10 Design a two way slab over a room 4m x 6m is simply supported on all four sides on 230mm walls. The live load on the slab is 3kN/m^2 and finishes of 1.5kN/m^2. Use M 20 concrete and Fe 415 steel. 14 Marks

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WATER SUPPLY ENGINEERING

[Civil Engineering]

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

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 a) Discuss briefly the need for protected water supplies for communities. 7 Marks

b) Distinguish between surface sources and underground sources from quality and quantity considerations. 7 Marks

(OR)

2 a) Discuss the factors that influence the fluctuations in per capita demand and mention various factors governing the rate of demand. 7 Marks

b) The census records of a city show population as follows. 7 Marks

Workout probable population after two decades, selecting any two methods.

Year	1970	1980	1990	2000
Population	25000	28000	35000	41000

UNIT-II

3 a) What are Intakes? Naming the different types of intakes, explain any one type with a neat sketch. 7 Marks

b) Explain different methods of jointing C.I. pipes. 7 Marks

(OR)

4 a) Explain with neat sketches about various methods of layouts of distribution networks with significance of each method. 7 Marks

b) Mention any two valves that are used in a distribution system and explain briefly their functions and location. 7 Marks

UNIT-III

5 a) Considering river as a source of water supply, sketch the various units in a water treatment plant and explain the functions of each unit. 7 Marks

b) Derive an expression for surface loading for a rectangular sedimentation basin. Explain the significance of surface loading to settling velocity. 7 Marks

(OR)

6 a) With help of a sketch explain the working of a rapid sand filter. What are the advantages of RSF over SSF? 7 Marks

b) What do you mean by chlorination? Explain advantages of chlorination over other methods of disinfection. 7 Marks

UNIT-IV

7 a) Explain different methods of aeration used in water treatment. 7 Marks

b) What is hardness? Explain the methods used for removal of hardness. 7 Marks

(OR)

8 a) Explaining the problems caused by colour, outline the methods adopted for removal of color in drinking water. 7 Marks

b) With help of sketches explain the working principles of reverse osmosis and adsorption. 7 Marks

UNIT-V

9 a) Sketch “Ferrule and Goose neck” and explain functions of each. 7 Marks

b) Present a general layout of water supply in single storey buildings. 7 Marks

(OR)

10 a) Brief the principles involved in laying pipelines in the premises of buildings. 7 Marks

b) What do you understand by "Pressure release valve" and "Check Valve"? 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

SOIL MECHANICS

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Derive the relation between unit weight (γ), degree of saturation (S), void ratio (e) and unit weight of water (γ_w). 6 Marks

b) A soil sample has a water content of 30% at full saturation. The specific gravity of solids is 0.65. Find out its void ratio, dry unit weight, bulk unit weight and quantity of water required for saturation of 100 m^3 of soil. 8 Marks

(OR)

2 a) Describe the Indian Standard soil classification system. 8 Marks

b) The following results refer to a liquid limit test: 6 Marks

Number of blows	33	23	18	11
Water content (%)	41.5	49.5	51.5	55.6

The plastic limit is 23.5 %. Determine the plasticity index and toughness index for the soil.

UNIT-II

3 a) What are the properties of the flow nets? 6 Marks

b) A falling head permeability test was carried out on a 12.7cm long sample of silty clay. The diameter of the sample and the stand pipe were 10cm and 1.0cm respectively. The water level in the stand pipe was observed to fall from 85cm to 55cm in 17minutes. Determine the co-efficient of permeability of the soil and height of water level in the stand pipe after another 17minutes. 8 Marks

(OR)

4 In a deposit of silt, the water table which was at originally at a depth of 1m below ground level was lowered to 3m below ground level. The silt above water table was capillary-saturated. The saturated unit weight of silt was 20kN/m^3. What is the change in effective pressure at a depth of 0.0m, 1.0m and 3.0m? 14 Marks

UNIT-III

5 a) Derive an expression for the vertical stress at a point due to point load using Boussinesq's equation and clearly mention the assumptions made. 6 Marks

b) Two concentrated loads 250kN and 350kN spaced at 6m act on the ground surface. Find the increase in vertical stress at a depth 6m below its load and also at midpoint between the loads at the same depth. 8 Marks

(OR)

6 a) Explain the Indian Standard light compaction test to determine the compaction characteristics of a soil. 7 Marks

b) The standard Proctor compaction test was carried out on samples of soil and yielded the following results; 7 Marks

Water content (%)	9.5	12.5	14.2	15.9	17.5
Bulk density (kN/m^3)	18.5	21.0	21.75	21.2	20.5

Calculate the optimum moisture content and maximum dry density.

UNIT-IV

7 a) Differentiate between compaction and consolidation. 6 Marks

b) What is pre-consolidation pressure and describe the determination of pre-consolidation pressure. 8 Marks

(OR)

8 A normally consolidated clay layer 2m thick is sandwiched between two sand layers. The average overburden stress at the middle of clay layer can be taken as 60kN/m². Due to construction of a structure there is an increase in effective vertical stress of 40kN/m² at the middle of clay layer. The liquid limit of clay layer is 60% and the initial void ratio is 0.7. Estimate the consolidation settlement. 14 Marks

UNIT-V

9 a) Explain the classification of shear tests based on drainage conditions prevailing during testing. 6 Marks

b) Two samples of soil were subjected to triaxial shear test. The results are obtained as given below: 8 Marks

Test No.	Cell Pressure (kg/cm^2)	Axial stress at failure (kg/cm^2)
1	1.0	2.4
2	3.0	6.3

Determine the shear parameters analytically.

(OR)

10 a) Write the merits and demerits of triaxial shear test over the direct shear test. 6 Marks

b) The following results were obtained from undrained shear box tests on samples of silty clay: 8 Marks

Normal pressure (kN/m^2)	210	315	420
Shear stress (kN/m^2)	115	142	171

Determine the cohesion and angle of shearing resistance.

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What type of weather seasons you observe in India? Explain in brief. 7 Marks

b) The annual rainfalls in mm recorded at a rainfall station for a period of 19 years from 1970 to 1988 are 520, 615, 420, 270, 305, 380, 705, 600, 350, 550, 560, 400, 520, 435, 395, 290, 430, 1020 and 900 respectively. Plot the rainfall data as chronological chart, bar diagram and ordinate graph. 7 Marks

(OR)

2 a) Explain the various types of precipitation. 7 Marks

b) How does a Symon's rain gage works? Explain with sketch. 7 Marks

UNIT-II

3 a) How do various factors affect evaporation? 7 Marks

b) By means of which methods you can reduce evaporation? 7 Marks

(OR)

4 a) What is infiltration? Explain infiltration equation. 7 Marks

b) Explain evapotranspiration. 7 Marks

UNIT-III

5 a) Distinguish between: 7 Marks
i) Surface runoff and subsurface runoff ii) Direct runoff and base flow
iii) Overland flow and interflow

b) Explain: i) Mass curve of rainfall ii) Hyetograph 7 Marks

(OR)

6 a) Briefly explain the various factors affecting runoff. 7 Marks

b) Explain the stream flow measurement by area-velocity method. 7 Marks

UNIT-IV

7 a) Ordinates of a 4-h unit hydrograph are given. Using this derive the ordinates of a 2-h unit hydrograph for the same catchment. 7 Marks

Time(h)	0	4	8	12	16	20	24	28	32	36	40	44
Ordinates of 4-h UH(m^3/s)	0	18	74	120	140	120	88	50	25	15	5	0

b) Define unit hydrograph. Also give the uses and limitations of unit hydrograph. 7 Marks

(OR)

8 a) What are envelope curves? Explain. 7 Marks

b) Explain Modified Puls method. 7 Marks

UNIT-V

9 a) Explain: i) Sheet erosion ii) Channel erosion 7 Marks

b) Discuss sediment yield from watersheds. 7 Marks

(OR)

10 a) What is design life of storage reservoir project? How do you account for the sediment deposition in the reservoir while fixing its storage capacity? 7 Marks

b) Discuss various methods of reservoir sediment control. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

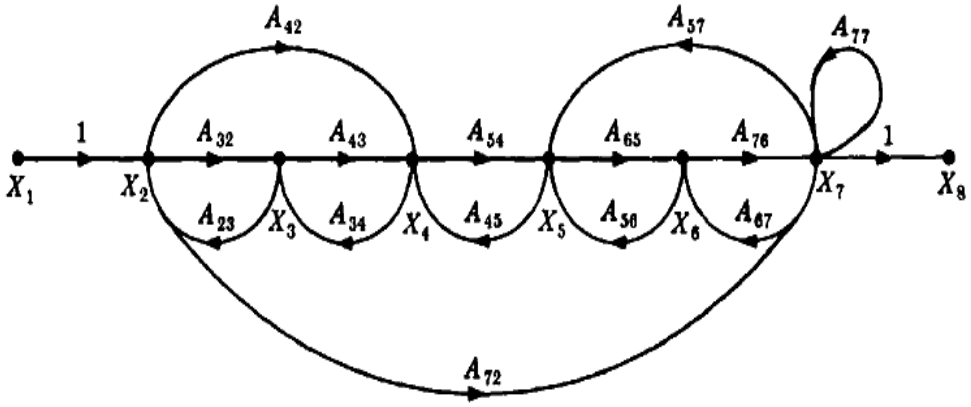
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

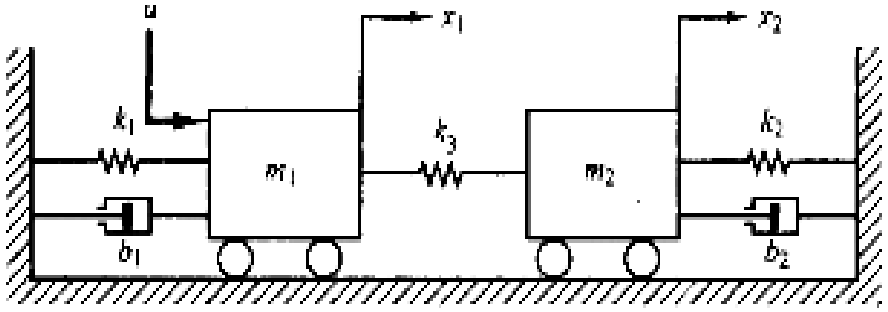
1 a) What is feedback? What is the effect of feedback on stability, sensitivity, overall gain and external disturbance? 7 Marks

b) Find the transfer function of the system using Mason's gain formula, whose signal flow graph is shown in figure below. 7 Marks



(OR)

2 Write the differential equations governing the mechanical system shown below. Draw the force voltage and force current electrical analogous circuits and verify it by using mesh and nodal analysis for the figure shown below and also determine its transfer function. 14 Marks



UNIT-II

3 a) Briefly discuss the time domain specifications of second order system and their significance. 7 Marks

b) A unity feedback system is characterized by the open-loop transfer function, 7 Marks

$G(s) = \dfrac{1}{s(0.4s+1)(0.15s+1)}$. Determine the steady state errors for unit-step, unit-ramp, and unit- acceleration inputs.

(OR)

4 a) Discus effect of proportional, integral and differential controller on system performance. 7 Marks

b) A unity feedback system is characterized by an open loop transfer function $G(s) = \frac{K}{s(s+10)}$. Determine the gain K, so that the system will have a damping ratio of 0.5. For this value of K determine settling time, peak overshoot and time to peak overshoot for unit step input. 7 Marks

UNIT-III

5 a) The open loop transfer function of a feedback control system is given by $G(s)H(s) = \frac{K}{s(s+4)(s^2+2s+2)}$, using Routh Criterion. Determine the range of K for which the system is stable. 7 Marks

b) Discuss the effect of adding the Poles and Zeros to given system on the root loci. 7 Marks

(OR)

6 Draw the complete root locus of the system with $G(s)H(s) = \frac{K(s^2+4s+5)}{s^2(s^2+6s+9)}$, determine the range of K for which system is stable. 14 Marks

UNIT-IV

7 Sketch the bode plot for the system $G(s) = \frac{Ks^2}{(1+s)(1+0.1s)(1+0.01s)}$, the system gain K for the gain crossover frequency ω_g to be 10 rad/s. Comment on the stability of the system for K=1. 14 Marks

(OR)

8 a) Draw the Nyquist plot and asses the stability of closed-loop system whose open loop transfer function is $G(s)H(s) = \frac{(6s+1)}{s^2(s+1)(3s+1)}$. 7 Marks

b) Write a note on minimum-phase and non minimum-phase systems. 7 Marks

UNIT-V

9 a) Construct state model for the following differential equation 7 Marks

$\mathbf{y_3 + 6y_2 + 11y_1 + 6y_0 = u_3 + 8u_2 + 17u_1 + 8u_0}$

b) Diagonalize the system matrix given as, 7 Marks

$$\begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{bmatrix}$$

(OR)

10 a) Derive an expression for the solution of Homogeneous state equations. 7 Marks

b) Determine the State Controllability and Observability of the system using Kalman's test. 7 Marks

$$A = \begin{bmatrix} 0 & 2 & 0 \\ 1 & 2 & 0 \\ -1 & 0 & 1 \end{bmatrix} \quad B = \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix} \quad C = \begin{bmatrix} 1 & 0 & 1 \end{bmatrix}$$

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a processor clock? How is the performance of a basic computer measured?	7 Marks
	b)	With the help of a block diagram, explain the connections between a processor and memory.	7 Marks
		(OR)	
2	a)	How is addition performed on two decimal digits in BCD?	7 Marks
	b)	Show the contents of registers E, A, Q and SC during the process of multiplication of two binary numbers 11110 (multiplicand) and 10100 (multiplier). Signs are not included.	7 Marks

UNIT-II

3	a)	Register **A** holds the 8-bit binary 11011001. Determine the **B** operand and the logic micro operation to be performed in order to change the value in **A** to 01101101.	7 Marks
	b)	Derive a combinational circuit that selects and generates any of 16 logic micro operations.	7 Marks
		(OR)	
4	a)	Explain the three different types of instruction formats used in basic computer.	8 Marks
	b)	Differentiate the characteristics of RISC and CISC.	6 Marks

UNIT-III

5	a)	Compare and contrast Micro programmed control unit and Hardwired control Unit.	7 Marks
	b)	Write about Micro Programmed control unit in detail.	7 Marks
		(OR)	
6	a)	A cache has 8 lines and what would be the address of cache line to transfer 12 block Main Memory if the cache using direct mapping management technique.	7 Marks
	b)	Compare and contrast various Read Only Memories (ROM).	7 Marks

UNIT-IV

7		Describe in detail each PIN of 8085 microprocessor.	14 Marks
		(OR)	
8	a)	Write sample instructions and their interpretations for control instruction of 8085 microprocessor.	7 Marks
	b)	Discuss in detail the addressing modes of 8085 micro processor.	7 Marks

UNIT-V

9	a)	Distinguish between vectored interrupts and non-vectored interrupts.	7 Marks
	b)	When large amount of data is to be transferred from CPU, Which I/O module can be used. Explain in detail about that I/O module.	7 Marks
		(OR)	
10		A certain disk interface accepts request to read a 1Kb block of data. It has 1Kb buffer on board its I/O interface, in which it stores the data as it comes off the drive. The interface is interrupt driven, and has DMA capability. Describe the likely sequence of events from the time the processor requests a block until the data has been transferred to main memory.	14 Marks

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

SYNCHRONOUS MACHINES

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about the integral slot winding and fractional slot winding. Discuss their merits and demerits.	6 Marks
	b)	An 8-pole alternator has an armature with 30 slots and 8 conductors per slot. The flux per pole is 0.08weber and machine rotates at 750rpm. Calculate EMF generated, if winding factor is 0.94 and all conductors in a phase are connected in series.	8 Marks

(OR)

2	a)	Distinguish between distributed and concentrated windings of synchronous machines.	7 Marks
	b)	Explain the effect of armature reaction on the performance of an alternator for a ZPF lagging power factor.	7 Marks

UNIT-II

3	a)	Describe the slip test method for measurement of X_d and X_q of synchronous machine.	7 Marks
	b)	Explain the Ampere-Turn method to find the voltage regulation of an alternator.	7 Marks

(OR)

4	a)	What are the merits and limitations of ZPF method?	6 Marks
	b)	The following test results are obtained from a 3 phase, 6000KVA, 6600V, star connected, 2 pole, 50Hz turbo alternator: With a field current of 125A, the open circuit voltage is 8000V at the rated speed; with the same field current and rated speed the short circuit current is 800A. At the rated full load, the resistance drop is 3%. Find the regulation of alternator on full load and at a p.f. of 0.8 lagging.	8 Marks

UNIT-III

5	a)	A 2MVA, 3-phase, star connected, 4 pole, 750rpm alternator is operating on 6000V bus bars. The synchronous reactance is 6ohm per phase. Find synchronizing power and torque for full load 0.8 power factor lagging.	7 Marks
	b)	Two similar 4 MVA alternators operate in parallel. The governor of first machine is such that the frequency drops from 50Hz at no load to 47.5Hz at full load. The corresponding drop for second machine is from 50Hz to 48Hz.How will they share a load of 6MW?	7 Marks

(OR)

6		Explain the effect of change in excitation and change in mechanical power input on load sharing of alternators operating in parallel.	14 Marks

UNIT-IV

7	a)	A synchronous motor having 40% reactance and a negligible resistance is to be	7 Marks

operated at rated load at (i) u.p.f. (ii) 0.8 p.f. lag (iii) 0.8 p.f. lead. What are the values of induced EMF? Indicate assumptions made, if any.

b) 500-V, 1-phase synchronous motor gives a net output mechanical power of 7.46kW and operates at 0.9p.f. lagging. Its effective resistance is 0.8Ω. If the iron and friction losses are 500W and excitation losses are 800W, estimate the armature current. Calculate the commercial efficiency. 7 Marks

(OR)

8 a) Explain the concept of hunting in synchronous motors. 7 Marks

b) A 3-φ, star-connected synchronous motor takes 48kW at 693V, the power factor being 0.8 lagging. The induced EMF is increased by 30%, the power taken remaining the same. Find the current and the p.f. The machine has a synchronous reactance of 2W per phase and negligible resistance. 7 Marks

UNIT-V

9 a) Explain the construction features of single phase induction motor. 6 Marks

b) The name plate of single phase IM, 4 pole Induction motor gives the following data: 8 Marks

Output = 410 W, Supply voltage = 230 V, Frequency = 50 Hz,
Input current = 3.2 A, Power factor = 0.7, speed = 1410 RPM.
Calculate:

i. The efficiency of the motor.
ii. The slip of the motor when delivering rated output.

(OR)

10 a) What is a reluctance motor? Explain its principle of operations. Explain the torque production mechanism in reluctance motors. 7 Marks

b) Explain the operation of variable reluctance stepper motor. 7 Marks

CODE No.:14BT50204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

TRANSMISSION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A 120MVA, 19.5kV generator has a synchronous reactance of 0.15p.u and it is connected to a transmission line through a transformer rated 150MVA, 230/18kV (star/delta) with X = 0.1p.u.

i) Calculate the p.u reactance by taking generator rating as base values — 5 Marks

ii) Calculate the p.u reactance by taking transformer rating as base values. — 5 Marks

iii) Calculate the p.u reactance for a base value of 100MVA and 220kV on H.Tside of transformer. — 4 Marks

(OR)

2 a) Derive the expression for capacitance of a two wire line. What is the effect of ground on the capacitance? — 8 Marks

b) A three phase 50Hz line consists of three conductors each of diameter 21mm. The spacing is a-b: 3m; b-c: 5m; c-a: 3.6m., find the inductive reactance per phase/km. — 6 Marks

UNIT-II

3 a) Define efficiency of transmission line. — 2 Marks

b) A 3-Φ transmission line delivers 20MW at a power factor of 0.8 lagging, 32KV. The transmission constants for the line considered as Π network are as follows: A=D=1; B = (1+j3)Ω; C = $2x10^{-4}$S. Determine the sending end voltage and current of the line. — 12 Marks

(OR)

4 A 3-Φ line, 10km long delivers 5MW at 11KV, 50Hz, 0.8 power factor lagging. The power loss in the line is 10% of the power delivered. The line conductors are situated at the corners of an equilateral triangle of 2m side. Calculate the voltage and the power factor of the sending end. — 14 Marks

UNIT-III

5 A cable of surge impedance of 100ohms is terminated in two parallel-connected, open-wire lines having surge impedances of 600 and 1000ohms respectively. If a steep-fronted voltage wave of 1000V travels along the cable, find from the first principles the voltage and current in the cable and the open-wire lines immediately after the travelling wave has reached the transition point. The line may be assumed to be of infinite length. — 14 Marks

(OR)

6 a) Discuss the behavior of a traveling wave when it reaches the end of (i) open circuited (ii) short circuited transmission line. Draw diagrams to show voltage and current on the line before and after the wave reaches the end. — 6 Marks

b) A surge of 25kV traveling on a line of natural impedance 500Ω arrives at a junction with two lines of impedances 500Ω and 50Ω respectively. Find the surge voltages and currents transmitted into each branch line. Also find the reflected surge voltage and current. — 8 Marks

UNIT-IV

7 a) Distinguish between disruptive critical voltage and visual critical voltage. Give expressions for the same. 7 Marks

b) A three phase overhead line is being supported by three disc type suspension insulator, the potential across the first and second insulators are 12 and 18kV respectively. Calculate : 7 Marks

i) the line voltage

ii) the ratio of capacitance between pin and earth to self-capacitance of each unit

iii) the string efficiency

(OR)

8 a) What is Corona? Discuss the various factors affecting Corona. 8 Marks

b) A string of 4 insulators has a self-capacitance equal to 10 times pin to earth capacitance. Find : 6 Marks

i) Voltage distribution of various units as a percentage of total voltage across the string.

ii) String efficiency.

UNIT-V

9 a) Write short notes on stringing charts. 6 Marks

b) A single core lead covered cable has a conductor diameter of 3cm with insulation diameter of 8.5cm. The cable is insulated with 2 dielectrics with permittivities 5 and 3 respectively. The maximum stresses in the two dielectrics are 38kV/cm and 26kV/cm respectively. Calculate the radial thickness of insulating layers and the working voltage of the cable. 8 Marks

(OR)

10 a) Show that the most economical size of the conductor in a cable is obtained when its sheath diameter is 2.718 times the core diameter. 7 Marks

b) Calculate the sag for a span of 200m if the ultimate tensile strength of conductor is 5788kg. Factor of safety is 2. Weight of conductor is 604Kg/km. 7 Marks

CODE No.:14BT50301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 The crank and connecting rod of a reciprocating engine are 20cm and 70cm respectively. The crank is rotating in C.W direction at 120 rad/sec. Find with the help of Klein's construction. 14 Marks

i) Velocity and acceleration of the piston
ii) Velocity and acceleration of the mid-point of C.R and
iii) Angular velocity and angular acceleration of C.R at the instant when the crank is at 30^0 to I.D.C.

(OR)

2 The following data relate to a horizontal reciprocating engine. 14 Marks

Weight of reciprocating parts = 125kg
Weight of connecting rod = 100kg
Length of stroke = 20cm
Length of C.R between centres = 40cm
Radius of gyration of C.R about an axis through centre of gravity = 12cm
Distance of centre of gravity of C.R from big end centre = 16cm
Engine speed = 750 r.p.m
Find the resultant inertia torque on the crank shaft when the crank has turned 30^0 from IDC.

UNIT-II

3 A punching machine makes 25 working strokes per minute and is capable of punching 25mm diameter holes in 18 mm thick steel plates having an ultimate shear strength 300Mpa.The punching operation takes place during 1/10 of a revolution of the crank shaft. Estimate the power needed for the driving motor, assuming a mechanical efficiency of 95 percent. Determine suitable dimensions for the rim cross-section of the fly wheel, having width equal to twice thickness. The fly wheel is to revolve at 9 times the speed of the crank shaft. The permissible coefficient of fluctuation of speed is 0.1. The fly wheel is to be made of cast iron having a density of 7250 kg/m^3. The diameter of the fly wheel must not exceed 1.4m owing to space restrictions. The hub and the spokes may be assumed to provide 5% of the rotational inertia of the wheel. 14 Marks

(OR)

4 An aero plane flying at 240km per hour turns towards left and completes a quarter circle of 60m radius. The mass of the rotary engine and the propeller of the plane amounts to 450 kg with a radius of gyration of 320mm. The engine speed is 2000r.p.m clock wise, when viewed from the rear. Determine the gyroscopic couple on the air craft and state its effect. In what way is the effect changed when. 14 Marks

i) The aero plane turns towards right.
ii) The engine rotates clock wise when viewed from front (nose end) and aero plane turns a) Left b) Right

UNIT-III

5 a) Which of the two assumptions-uniform intensity of pressure or uniform rate of wear, would you make use of in designing friction clutch and why? 7 Marks

b) A cone clutch with cone angle 200 is to transmit 7.5 kW at 750 r.p.m. The normal intensity of pressure between the contact faces is not to exceed $0.12N/mm^2$. The coefficient of friction is 0.2. If face width is $1/5^{th}$ of mean diameter, find: 7 Marks

(i) The main dimensions of the clutch.

(ii) Axial force required while running.

(OR)

6 A band and block brake having 12 blocks, each of which subtends an angle of 16^0 at the centre, is applied to a rotating drum of diameter 600mm. the blocks are 75mm thick. The drum and the flywheel mounted on the same shaft have a mass of 1800kg and have a combined radius of gyration of 600mm. the two ends of the band are attached to pins on the opposite sides of the brake fulcrum at distance of 40mm and 150mm from the fulcrum. If a force of 250 N is applied at a distance of 900mm from the fulcrum, find; 14Marks

(i) the maximum braking torque

(ii) the angular retardation of the drum

(iii) the time taken by the system to be stationary from the rated speed of 300 r.p.m.

Take coefficient of friction between the blocks and the drum as 0.3.

UNIT-IV

7 a) What is meant by effort and power of a governor? Find the expressions for the same in a porter governor. 7 Marks

b) The following data relate to a Hartnell governor M=1.5kg; a=100 mm; b=40mm; r1=70mm; r2=110mm; N1=260 r.p.m; and N2=275 r.p.m. The axis of rotation is 80 mm form the fulcrum. Calculate the rate of the spring and the equilibrium speed when the radius of the balls is 80 mm. 7 Marks

(OR)

8 a) Why is balancing necessary for rotors of high speed engines? 7 Marks

b) A circular disc mounted on a shaft carries three attached masses 4kg, 3kg and 2.5kg at radial distances 75mm, 85mm and 50mm and at the angular positions of 45^0, 135^0 and 240^0 respectively. The angular positions are measured counter-clockwise from the reference line along x-axis. Determine the amount of the counter mass at a radial distance of 75mm required for the static balance. 7 Marks

UNIT-V

9 A cylinder of mass M and radius 'r' rolls without slipping on a cylindrical surface of radius R. Find the natural frequency for small oscillations about the lowest position. 14 Marks

(OR)

10 a) Explain whirling speed of shaft. 6 Marks

b) Derive the expression for critical speed of shaft with a single disc considering damping. 8 Marks

CODE No.:14BT50302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What is meant by systems approach? Briefly explain the importance of systems approach to management. 14 Marks

(OR)

2 Explain the different functions of management with suitable examples. 14 Marks

UNIT-II

3 Discuss in detail various factors to be considered for the selection of a layout to setup a cement factory. 14 Marks

(OR)

4 Define reliability and give the procedure to calculate system reliability by assuming suitable data. 14 Marks

UNIT-III

5 a) Define and differentiate between production and productivity. 7 Marks
b) State and explain in brief steps in work study. 7 Marks

(OR)

6 In stop watch time study 14 Marks
i) Mean of observed time = 12.23 min
ii) Performance rating factor = 120
iii) Allowances = 30%
Determine standard time.

UNIT-IV

7 List out inventory and explain various inventory classification techniques. 14 Marks

(OR)

8 An organization has demand of 3200 units of a particular component per year. If the carrying cost is Rs. 2 per unit and ordering cost Rs. 50 per order. Calculate: 14 Marks
i) Economic order quality.
ii) Number of order per year.
iii) Time interval between two order.

UNIT-V

9 a) Enumerate the advantages and limitations of sampling plans. 7 Marks
b) Explain the functioning of a single sampling plan. 7 Marks

(OR)

10 Explain the construction and use of a variable control chart. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Enumerate the different mountings used on a Lancashire boiler. State briefly the function of each mounting. Sketch and describe any one of the mountings.	7 Marks
	b)	Give the operating principle of the Bourdon pressure gauge.	7 Marks
		(OR)	
2	a)	What is a boiler? Explain the classification of boilers.	7 Marks
	b)	What is the necessity for safety valves in a boiler?	7 Marks

UNIT-II

3	a)	Why is Rankine cycle modified? Derive an expression for the efficiency of modified Rankine cycle.	7 Marks
	b)	Derive an expression for draught produced in terms of height of chimney, ambient and flue gas temperatures. State clearly the assumptions made.	7 Marks
		(OR)	
4	a)	State the advantages of artificial draught over natural draught.	4 Marks
	b)	In a regenerative cycle the inlet conditions are 40bar and 400^0 C. Steam is bled at 10bar in regenerative heating. The exit pressure is 0.8bar. Neglecting pump work, determine the efficiency of the cycle.	10 Marks

UNIT-III

5	a)	Derive an expression for condition of maximum discharge through a nozzle.	7 Marks
	b)	A surface condenser is designed to handle 10000kg of steam per hour. The steam enters at 0.08bar absolute and 0.9 dryness and the condensate leaves at the corresponding saturation temperature. The pressure is constant throughout the condenser. Estimate the cooling water flow rate per hour, if the cooling water temperature rise is limited to 10^0C.	7 Marks
		(OR)	
6	a)	With the help of neat sketch explain working principle of Edward's air pump.	7 Marks
	b)	Dry saturated steam at 10 bar is expanded isentropically in a nozzle to 0.1bar. Find the dryness fraction of steam at the exit. Also find the velocity of steam leaving the nozzle when i) The initial velocity is negligible ii) The initial velocity of steam is 135 m/s.	7 Marks

UNIT-IV

7	a)	Describe the various methods of compounding in an impulse turbine.	7 Marks
	b)	In parson's reaction turbine running at 400rpm with 50% reaction develops 75kw per kg per second of steam. The exit angle of the blades is 20^0 and steam velocity is 1.4 times the blade velocity. Calculate: i) Blade velocity ii) Inlet angles of the blades.	7 Marks
		(OR)	
8	a)	Draw the velocity triangle for a 50% reaction turbine and derive the expressions for work done and blade efficiency.	7 Marks
	b)	In a de-lavel turbine, the steam issues from the nozzles with a velocity of 850m/s. The nozzle angle is 20^0. Mean blade velocity is 350m/s. The blades are equiangular. The mass flow rate is 1000 kg/min and friction factor is 0.8. Determine blade angles, axial thrust, power developed and blade efficiency.	7 Marks

UNIT-V

9		Explain with a sketch the working of a constant pressure open cycle gas turbine. In what way the actual cycle differs from the theoretical cycle?	14 Marks
		(OR)	

10 Explain using a neat sketch, the principle of operation of turbo jet engine. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

MACHINE TOOLS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	In an orthogonal cutting test with a tool of rake angle 10°, the following observations are made. Chip thickness ratio = 0.3, Horizontal component of force = 1300N, Vertical component of force = 1700N. From Merchant's theory, calculate various components of forces.	9 Marks
	b)	Explain various types of chips produced during metal cutting.	5 Marks
		(OR)	
2	a)	Explain orthogonal and oblique cutting.	6 Marks
	b)	What is machining time? Find the time required for one complete cut on a piece of work 350mm long and 50mm in diameter. Cutting speed is 35m/min and feed is 0.5mm/rev.	8 Marks

UNIT-II

3	a)	Explain various factors responsible for tool failure.	7 Marks
	b)	Sketch and explain the types of chucks used in the engine lathe.	7 Marks
		(OR)	
4	a)	Sketch and explain the working of two component tool dynamometer.	8 Marks
	b)	List the special operations done on engine lathe with respective diagrams.	6 Marks

UNIT-III

5	a)	Sketch and explain various parts of upright pillar drilling machine.	7 Marks
	b)	Sketch the block diagram of slotter and explain the main parts in it.	7 Marks
		(OR)	
6	a)	Explain any four operations performed in a shaping machine with diagrams.	7 Marks
	b)	Explain the nomenclature of a twist drill with a diagram.	7 Marks

UNIT-IV

7	a)	With a neat sketch explain a surface grinding machine.	8 Marks
	b)	Explain wheel balancing and wheel dressing.	6 Marks
		(OR)	
8	a)	Explain the specification and selection of a grinding wheel.	8 Marks
	b)	Compare grinding, lapping and honing.	6 Marks

UNIT-V

9	a)	Explain the different types of indexing used in a milling machine.	8 Marks
	b)	Explain cam milling process.	6 Marks
		(OR)	
10	a)	Distinguish a jig and a fixture.	6 Marks
	b)	Discuss the principles of location and clamping to be followed in jigs and fixtures.	8 Marks

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CODE No.:14BT50305 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

DESIGN OF MACHINE ELEMENTS-I

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Write general considerations in machine design. 7 Marks

b) Write short notes on the following: 7 Marks

i) Preferred numbers ii) BIS Codes of materials iii) Rational design

(OR)

2 a) Write basic stress equations for a bar subjected to tension, bending and torsion with neat schematic diagrams. 4 Marks

b) A mild steel shaft of 50 mm diameter is subjected to a bending moment of 2000Nm and a torque T. If the yield point of the steel in tension is 200MPa, find the maximum value of this torque without causing yielding of the shaft according to: 10 Marks

i. The maximum principal stress;
ii. The maximum shear stress; and
iii. The maximum distortion strain energy theory of yielding.

UNIT-II

3 a) What is stress concentration? What are the methods of reducing stress concentration? 4 Marks

b) A round shaft made of brittle material and subjected to a bending moment of 15Nm is shown in Fig.1**.** The stress concentration factor at the fillet is 1.5 and the ultimate tensile strength of the shaft material is 200N/mm^2. Determine the diameter **d**, the magnitude of stress at the fillet and the factor of safety. 10 Marks

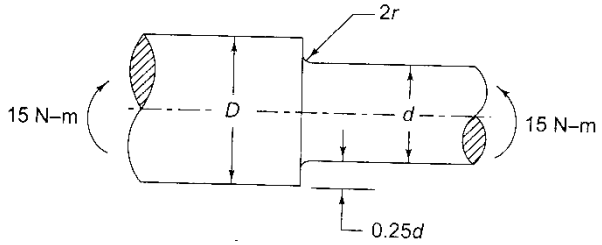

Fig.1

(OR)

4 a) What is endurance limit? What are the factors that affect endurance limit of machine part? 4 Marks

b) A rod of circular cross section is subjected to an alternating tensile force, varying from 20kN to 70kN. Determine the diameter of the rod, according to (i) Goodman method (ii) Soderberg method; using the following material properties: 10 Marks

Ultimate tensile strength = 1000 Mpa
Yield strength = 550 Mpa

Take factor of safety as 2. Neglect stress concentration effect and other correction factors.

UNIT-III

5 a) Define the following terms in connection with external threads: 6 Marks

i) thread angle ii) pitch

iii) major diameter iv) lead.

b) The inner diameter of cylindrical pressure vessel is 500mm and is subjected to an internal pressure of 2N/mm^2. The cylinder cover is fixed to the cylinder body by means of 16 bolts of M20 Size. Each bolt is initially tightened with a pre-load of 20kN. The yield strength of the bolt material is 320Mpa. Soft packing with through bolts is used for fixing the cover to the cylinder. Determine the factor of safety for the bolts. 8 Marks

(OR)

6 a) Differentiate between lap joints and butt joints. 4 Marks

b) Two plates of 15 mm thick are to be joined by means of a single riveted lap joint. The rivet diameter is 20 mm. Determine the strength of the joint, if the pitch of the rivets is 60mm. The permissible stresses are: σ_t=100 MPa, σ_c = 140 MPa, τ = 80MPa. 10 Marks

UNIT-IV

7 A shaft is supported on two bearings 750mm apart and transmits 15kW at 560rpm. A spur pinion of 150mm diameter is located at 125mm to the right of the left hand bearing and delivers power horizontally to the right. A spur gear of 500mm diameter is located at 150mm to the left of the right hand bearing and receives power from below. Determine the shaft diameter, assuming permissible shear stress for the shaft material as 45Mpa. 14 Marks

(OR)

8 a) How do you classify shaft couplings? 4 Marks

b) Design a muff coupling for a shaft transmitting 30kW at 300rpm. The material adopted for shaft is plain carbon steel (SAE 1040) and muff coupling is grey cast iron (FG 200).The key is also made of plain carbon steel. Design torque on the shaft may be taken as 1.15 times the average torque. 10 Marks

UNIT-V

9 Design a cotter joint of socket and spigot type, which may be subjected to a pull or push of 30kN. All the parts of the joint are made of the same material with the permissible stresses; 55MPa in tension, 70MPa in compression and 40MPa in shear. 14 Marks

(OR)

10 Design a knuckle joint to transmit 150kN. The design stresses may be taken as 75MPa in tension, 60MPa in shear and 150MPa in compression 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify the automobiles and explain with suitable examples.	7 Marks
	b)	Explain the working of Solex Carburettor with neat sketch.	7 Marks
		(OR)	
2	a)	What are the basic requirements of the fuel injection system of a diesel engine?	7 Marks
	b)	State different types of fuel nozzles. Explain briefly Multi- hole nozzle with a neat sketch.	7 Marks

UNIT-II

3	a)	What is the function of a radiator in a cooling system and explain the significance of fan behind the radiator?	7 Marks
	b)	Briefly explain the functional requirement of ignition coil and condenser in ignition system.	7 Marks
		(OR)	
4	a)	Explain the types of thermostat valve in a cooling system of an automobile with a simple sketch.	7 Marks
	b)	Briefly explain the working of capacitive ignition system with a simple sketch.	7 Marks

UNIT-III

5	a)	Explain briefly pollution control techniques in CI engines.	7 Marks
	b)	Describe with neat sketch, catalytic converter system.	7 Marks
		(OR)	
6	a)	State the necessity of alternate fuels for automobile engines.	7 Marks
	b)	State advantages and disadvantages of LPG over the use of petrol in an automobile engine.	7 Marks

UNIT-IV

7	a)	State and explain the principle of Ackermann steering mechanism.	7 Marks
	b)	Explain the working of a sliding- mesh gear box with a neat sketch.	7 Marks
		(OR)	
8	a)	Create the constant mesh gear box and explain the working principle in detail.	7 Marks
	b)	Outline the cone clutch and explain the working principle in detail.	7 Marks

UNIT-V

9	a)	Discuss the working of torsion bar spring and list out notable characteristics of torsion bar.	7 Marks
	b)	Explain the working of Mac Pherson strut suspension system with a neat sketch.	7 Marks
		(OR)	
10	a)	State the need of breaking system in automotive vehicles. How breaks are classified?	7 Marks
	b)	Explain with a neat sketch, working principle of hydraulic breaking system. List out advantages.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

ANTENNAS AND PROPAGATION

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive radar range equation and explain its importance.	7 Marks
	b)	Define the terms Radiation intensity, Beam width, Bandwidth and Beam efficiency.	7 Marks
		(OR)	
2	a)	Obtain the relations between the potentials and their sources.	7 Marks
	b)	What are retarded potentials? Explain its significance.	7 Marks

UNIT-II

3	a)	Derive the expressions for the field components of two element array and draw field Pattern (i) when $\mathbf{d = \lambda/2}$ and $\boldsymbol{\alpha = 0}$; (ii) when $\mathbf{d = \lambda/2}$ and $\boldsymbol{\alpha = 180^0}$**.**	7 Marks
	b)	Define array factor. Derive an expression for array factor.	7 Marks
		(OR)	
4	a)	Explain the principle of pattern multiplication.	8 Marks
	b)	Discuss the effects of uniform and non-uniform amplitude distributions in antenna arrays.	6 Marks

UNIT-III

5	a)	What is a traveling wave antenna? Explain the principle and operation of rhombic antenna with neat sketches.	7 Marks
	b)	Describe the construction and basic principles of operation of a helical antenna. i) Normal mode of operation. ii) Axial mode of operation.	7 Marks
		(OR)	
6	a)	Draw the schematic diagram of parabolic reflector with Cassegrain feed and explain different feed patterns.	7 Marks
	b)	Draw the diagram of pyramidal horn antenna and explain its operation, characteristics and applications.	7 Marks

UNIT-IV

7	a)	Describe different ranges for the measurement of antenna parameters.	7 Marks
	b)	Explain radiation pattern measurement techniques.	7 Marks
		(OR)	
8	a)	What is polarization and describe polarization measurement by power measurement approach?	7 Marks
	b)	What are the precautions to be taken to obtain and accurate pattern measurements?	7 Marks

UNIT-V

9	a)	Explain M-curves and their characteristics.	6 Marks
	b)	Explain space wave propagation mechanism in detail.	8 Marks
		(OR)	
10	a)	Write short notes on tropospheric propagation.	6 Marks

b) What is meant by the term fading? Explain about different types of fading. 8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the advantages of Digital Communication System.	6 Marks
	b)	Describe the electrical representation of binary digits and explain properties.	8 Marks
		(OR)	
2	a)	Explain the necessity of non-uniform quantization in a PCM system.	6 Marks
	b)	Draw the block diagram of DM system and explain.	8 Marks

UNIT-II

3	a)	Derive an expression for output signal to noise ratio in PCM.	10 Marks
	b)	A binary channel with bit rate R_b=40000 b/s is available for PCM voice transmission. Find appropriate values of the sampling rate F_s, the quantization levels L and the number of bits 'n' per quantization level. Assume F_m=3.6KHz.	4 Marks
		(OR)	
4	a)	For a sinusoidal modulating signal $m(t)=A\cos\omega_m t$; $\omega_m=2\pi f_m$. Show that the maximum output signal to quantization noise ratio in a DM system under the assumption of no slope over load is given by $(SNR)_0=[S/N_q]=3f^3s/8\pi^2f^2_m F_M$.	4 Marks
	b)	Write the comparison of PCM and DM systems.	10 Marks

UNIT-III

5	a)	Write a short note on eye pattern.	7 Marks
	b)	Explain about Correlative coding.	7 Marks
		(OR)	
6	a)	Describe the working principle of QPSK with the help of a neat diagram.	7 Marks
	b)	Derive the expression for Bit Error Probability for BPSK.	7 Marks

UNIT-IV

7	a)	Define and explain the terms: Information, Information Rate and Entropy.	6 Marks
	b)	Explain the algorithm of Shannon-Fano Encoding technique.	8 Marks
		(OR)	
8	a)	Explain the algorithm of Huffman Encoding technique.	6 Marks
	b)	Apply Huffman encoding procedure to the following set of messages having probabilities:	8 Marks

M1	M2	M3	M4
0.1	0.2	0.3	0.4

i) Construct a binary code.
ii) Determine the efficiency and redundancy.

UNIT-V

9	a)	Explain about burst error detecting and correcting codes.	8 Marks
	b)	Explain Cyclic codes.	6 Marks
		(OR)	
10		Write a short note on:	
		i) Linear block codes.	7 Marks
		ii) Comparison between coded and uncoded systems.	7 Marks

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CODE No.:14BT50403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain clearly about the CMOS logic families with simple logic examples?	7 Marks
	b)	Draw the transistor level representation for XNOR gate using CMOS logic style?	7 Marks

(OR)

2		Compare the different logic families used in digital logic circuits implementations.	14 Marks

UNIT-II

3		Prepare a 2-bit ALU module and its test bench. Let the module inputs A and B be 2-bit wide. D is the 2-bit output. C_i is the carry input and C_o is the carry output. F is the function select vector. If $F = 1$, $D = A + B$; If $F = 2$, $D = A + B + C_i$; If $F = 3$, $D = A - B$; If $F = 4$, $D = A-B - C_i$; If $F = 5$, $D = A$ OR B; If $F = 6$, $D = A$ AND B; If $F = 7$, $D = A$ X OR B.	14 Marks

(OR)

4	a)	Write a Verilog code for 4bit comparator using suitable modeling style.	7 Marks
	b)	Explain clearly about net data types used in Verilog HDL.	7 Marks

UNIT-III

5		A simple floating-point encoder converts 16-bit fixed-point data using four high order bits beginning with MSB. Design the logic circuit and write VHDL data-flow program.	14 Marks

(OR)

6	a)	Implement the full adder circuit using basic gates and explain its operation.	7 Marks
	b)	Design a 4 to 16 decoder using two 74×138 IC's.	7 Marks

UNIT-IV

7		Design a clocked synchronous state machine that checks a serial data line for even parity. The circuit should have two inputs, SYNC, and DATA, in addition to CLOCK, and Moore-type output, ERROR. Devise a state /output table that does the job using just four states, and include a description of each state's meaning in the table. Choose a 2-bit state assignment, write transition and excitation equations, and draw the logic diagram. In the circuit, it may be used D flip-flops, J-K flip-flops or one of each.	14 Marks

(OR)

8		Design a 4-bit binary synchronous counter using 74×74. Write VHDL program	14 Marks

for this logic. Using data flow style.

UNIT-V

9		A ROM chip of 4,096 × 8 bits has two chip select inputs and operates from a 5V power supply. How many pins are needed for the integrated circuit package? Draw a block diagram, and label all input and output terminals in the ROM.	14 Marks

(OR)

10	a)	Design an 8×4 diode ROM using 74×138 for the following data starting from the first location 1, 4, 9, B, A, 0, F, C.	7 Marks
	b)	How many 32K × 8 RAM chips are needed to provide a memory capacity of 256K bytes? Explain.	7 Marks

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LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following for a given Op-Amp i) CMRR ii) PSRR iii) Slew Rate iv) Input offset voltage	7 Marks
	b)	Explain the Op- Amp block diagram.	7 Marks
		(OR)	
2	a)	Discuss about AC analysis of Dual input balanced output amplifier.	7 Marks
	b)	Derive the output voltage of an Op-Amp based differential amplifier.	7 Marks

UNIT-II

3	a)	Draw and explain the operation of a current to voltage converter.	7 Marks
	b)	Draw the circuit of a log amplifier using two Op-Amps and explain its operation.	7 Marks
		(OR)	
4	a)	Draw a sample and hold circuit. Explain its operation and indicates its uses.	7 Marks
	b)	Show with the help of circuit diagram an op-amp used as i) scale changer ii) phase shifter iii) inverting adder iv) non-inverting adder. Draw an op-amp circuit whose output is $V_1+V_2-V_3-V_4$.	7 Marks

UNIT-III

5	a)	With a neat sketch explain the block diagram of a regulated power supply system.	10 Marks
	b)	Classify filters.	4 Marks
		(OR)	
6	a)	An ideal LPF having f_h = 5KHz is cascaded with HPF having f_l = 4.8KHz. Sketch the frequency response of the cascaded filter.	10 Marks
	b)	Define IC regulator and its characteristics.	4 Marks

UNIT-IV

7	a)	Explain the functional block diagram of PLL.	7 Marks
	b)	Explain the features of phase locked loop IC566.	7 Marks
		(OR)	
8		Explain the Monostable operation of 555 Timer IC with applications.	14 Marks

UNIT-V

9		With a neat block diagram, explain the operation of a successive approximation type A/D converter using an example.	14 Marks
		(OR)	
10	a)	Explain the 4-bit weighted resistor type D/A converter in detail.	7 Marks
	b)	Describe the various specifications of A/D converters.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Specify the condition for which high-pass RC circuit act as a differentiator. And also draw the input and output waveforms.	7 Marks
	b)	Why does a resistive attenuator need to be compensated? Explain different methods of compensation.	7 Marks

(OR)

2	a)	Draw and explain the operation of slicer circuit using diodes with the help of transfer characteristics.	7 Marks
	b)	Draw the basic circuit diagram of negative peak clamper circuit and explain its operation.	7 Marks

UNIT-II

3	a)	Define clipper. Explain the clipping using diodes.	7 Marks
	b)	Draw a transistor clipper and explain its operation.	7 Marks

(OR)

4	a)	Explain the effect of diode characteristics on clamping voltage.	6 Marks
	b)	Analyze the operation of a two level slicer with the aid of transfer characteristics.	8 Marks

UNIT-III

5	a)	For a monostable multivibrator, calculate the input pulse width for the design values of R_C =2 kΩ, R_B = 10 kΩ, C = 0.1 μF, V_{CC} = 10 V, V_{BE}(sat) = 0.8 V.	7 Marks
	b)	Explain the triggering in monostable multivibrator.	7 Marks

(OR)

6	a)	What is the function of commutating capacitors? What causes the rounded leading edge in the output waveforms of a multivibrator?	7 Marks
	b)	Design a transistor switch for the following specifications: V_{in} = ±3V square wave, V_{cc}=10V, I_c=1mA, h_{FE}=50. Assume Silicon transistor.	7 Marks

UNIT-IV

7	a)	Draw the circuit of simple current time-base generator and explain its operation with the help of neat waveforms and necessary equations. Also derive expression for sweep speed error(s), by considering the effect of internal resistance of inductor (R_L) and collector saturation resistance (R_{CS}) of the transistor.	10 Marks
	b)	Explain why an operational integrator is used in transistorized Miller sweep circuit.	4 Marks

(OR)

8	a)	What type of synchronization is used when the interval between pulses is less than or equal to the natural period of the wave form generator? Explain it briefly.	7 Marks
	b)	A UJT sweep operates with valley voltage (Vv) = 3V, peak voltage (Vp) =16V and η = 0.5. A sinusoidal synchronizing voltage of 2V peak is applied between bases and the natural frequency of the sweep is 1 KHz, over what range of sync	7 Marks

signal frequency will the sweep remain in 1:1 synchronism with the sync signal?

UNIT-V

9	a)	Explain bidirectional sampling gates.	6 Marks
	b)	Explain four diode and six diode sampling gates and their applications	8 Marks
		(OR)	
10	a)	Explain emitter coupled logic circuit.	5 Marks
	b)	Compare RTL, DTL and TTL logic families.	9 Marks

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MICROPROCESSORS AND INTERFACING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and discuss the read and write cycle timing diagrams of 8086 in minimum mode.	7 Marks
	b)	What is an assembler directive? Illustrate any five assembler directives with pseudo codes.	7 Marks
		(OR)	
2	a)	State and explain different instruction formats of 8086.	7 Marks
	b)	Write an assembly language program to find out whether a given byte is in the string or not. If it is in the string, find out the relative address of the byte from the starting location of the string.	7 Marks

UNIT-II

3	a)	What are the various interrupts in 8086? Explain which interrupts are generally used for critical events.	7 Marks
	b)	Draw and explain the block diagram of programmable interrupt controller 8259.	7 Marks
		(OR)	
4	a)	In what way interrupts are classified in 8086? Explain the different types of interrupt with examples.	7 Marks
	b)	What is the function of 8257 DMA controller with neat sketch?	7 Marks

UNIT-III

5	a)	Explain **mode 0** and **mode 1** operation of 8255.	7 Marks
	b)	Show four phase stepper motor interfacing circuit and discuss the function of each component in it.	7 Marks
		(OR)	
6		Explain keyboard interfacing with neat sketch.	14 Marks

UNIT-IV

7	a)	Discuss the mode instruction format of 8251 for synchronous and asynchronous mode of operation.	7 Marks
	b)	Classify and explain serial communication system.	7 Marks
		(OR)	
8	a)	List the features of 8251A.	7 Marks
	b)	Write short notes on RS232 protocol.	7 Marks

UNIT-V

9	a)	Write an 8051 ALP to find multiplication and division of two 8 bit numbers.	7 Marks
	b)	Write an 8051 ALP to move 10 bytes from on chip ROM to RAM starting at 9000.	7 Marks
		(OR)	
10	a)	Write the silent features of 8051 family of microcontroller.	7 Marks
	b)	Explain the architecture of 8051 microcontroller.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

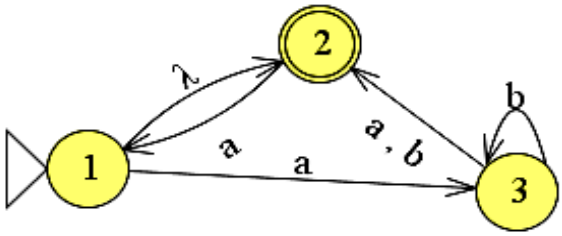
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define **δ** (Transition function) in Finite Automata. Define the POWER of a language. 4 Marks

b) Convert the given NFA to DFA. 10 Marks



(OR)

2 a) Given input alphabet Σ = {0, 1}. Construct DFA for {*w* | *w* is of length it atmost 5}. 7 Marks

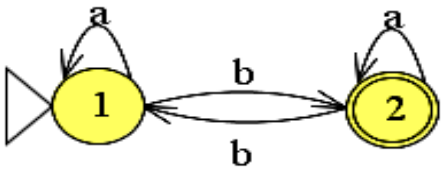
b) Construct DFA for **({p, q, r, s}, {0,1}, δ, p, {s})** where **δ** is 7 Marks

	0	1
p	q, s	q
q	r	q, r
r	s	p
s	-	p

UNIT-II

3 a) Let B be a language $\{0^n1^n \mid n \geq 0\}$. Is B a regular language? (Use PUMPING LEMMA). 7 Marks

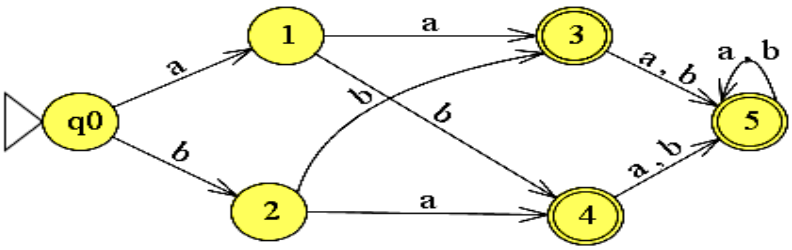
b) Convert the following automata to regular expression. 7 Marks



(OR)

4 a) Give a regular expression generating the language {W | the length of W is atmost 5} 6 Marks

b) Minimize 8 Marks



UNIT-III

5	a)	Write a grammer G to recognize all prefix expressions involving all binary arithmetic operators. Construct a parse tree for the sentence **'-*+abc/de'** using G.	7 Marks
	b)	Construct a context free grammar for **$\{0^m1^n \mid 1 \leq m, \leq n\}$.**	7 Marks
		(OR)	
6		Construct PDA for the language **$L = \{ww^R \mid W \text{ in } (a+b)^*\}$.**	14 Marks

UNIT-IV

7	a)	Define TURING MACHINE. Give few Applications of TURING MACHINE.	4 Marks
	b)	Design a TURING MACHINE for the language **$A = \{02n \mid n \geq 0\}$** consisting of all strings of 0's whose length is a power of 2.	10 Marks
		(OR)	
8	a)	Construct a TURING MACHINE over **$\Sigma = \{0, 1\}$ * for a, b** {W | W contain an equal number of 0's and 1's}.	8 Marks
	b)	Write short notes on equivalence of One Tape and Multi Tape TURING MACHINE.	6 Marks

UNIT-V

9	a)	What are Halting Problem and its significance in Automata languages?	5 Marks
	b)	State Rice's theorem and the properties of Recursively enumerable language.	9 Marks
		(OR)	
10	a)	Find a MATCH (if any) in the instance of PCP $\left(\frac{ab}{abab}\right)$.	10 Marks
	b)	Distinguish between Recursive and Recursively Enumerable languages.	4 Marks

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THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Construct DFA to accept the language L = {w|w is of even length and begins with 11}. 14 Marks

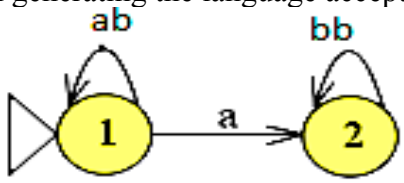
(OR)

2 Prove that, if L is accepted by an NFA with ε-transitions, then L is accepted by an NFA without ε- transitions. 14 Marks

UNIT-II

3 a) Using Pumping lemma, prove whether the following language is regular or Not? 7 Marks
$D = \{1^{n^2} \mid N \geq 0\}$

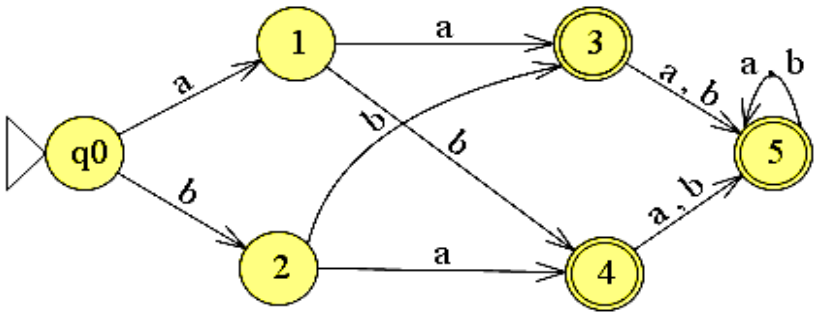
b) Write regular expression generating the language acceptor by 7 Marks



(OR)

4 a) Give a regular expression generating the language 6 Marks
{W | the length of W is atmost 5}

b) Minimize 8 Marks



UNIT-III

5 a) Given a CFG $E \rightarrow E + T / T$ 6 Marks
$T \rightarrow T * F / F$
$F \rightarrow (E) / a$
Give PARSE TREE and derivation (both LMD and RMD) for
i) a + a + a
ii) ((a))

b) Reduce the following grammar to CNF 8 Marks
$S \rightarrow aB / ab$
$A \rightarrow aAB/a$
$B \rightarrow ABb/b$

(OR)

6	a)	Determine whether the following grammar is ambiguous or not S→aSa / bsb / ϵ	6 Marks
	b)	Construct PDA that recognizer the language $\{a^i b^j c^k \mid \boldsymbol{i, j, k \geq 0}\}$	8 Marks

UNIT-IV

7	Compare Two-way infinite tape TM and multiple tracks TM.	14 Marks

(OR)

8	Construct a TM to perform copy operation.	14 Marks

UNIT-V

9	Show that it is undecidable for arbitrary CFG's G_1 and G_2 whether $L(G_1) \cap L(G_2)$ is a CFL.	14 Marks

(OR)

10	Prove that for two recursive languages L_1 and L_2 their union and intersection is recursive.	14 Marks

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

UNIX INTERNALS

[Computer Science and Engineering, Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about the components of the System Kernel with neat block diagram.	7 Marks
	b)	Discuss about the buffer header and buffer pool.	7 Marks
		(OR)	
2	a)	Explain in detail about the process utilities.	7 Marks
	b)	Discuss about the Networking commands.	7 Marks

UNIT-II

3	a)	What is a shell? What are its responsibilities? Explain.	7 Marks
	b)	How to redirect the input and output of a Linux programs? Explain with example.	7 Marks
		(OR)	
4	a)	Write a shell script program for AND list and OR list and also explain how it works.	7 Marks
	b)	How can you define functions in the shell script and with example?	7 Marks

UNIT-III

5	a)	How to keep the kernel **inode** structure small? Explain.	7 Marks
	b)	Write and explain the current structure of a directory entry of System V. what is the maximum number of files that a file system can contain.	7 Marks
		(OR)	
6	a)	Write an algorithm to open file table for the kernel process.	7 Marks
	b)	With the help of a pseudo code explain how to change the directory structure.	7 Marks

UNIT-IV

7	a)	Describe in detail about the kernel data structure for a process.	7 Marks
	b)	How the kernel checks and handles the signals when a process returns from kernel mode to user mode?	7 Marks
		(OR)	
8	a)	Discuss the procedure to send signal from one process to another process.	7 Marks
	b)	List and explain the steps involved in file locking.	7 Marks

UNIT-V

9	a)	Explain about the semaphores.	7 Marks
	b)	Explain about socket attributes and socket addresses.	7 Marks
		(OR)	
10	a)	Discuss about the process pipes and pipe call.	7 Marks
	b)	Discuss about the message queues in Inter process communication.	7 Marks

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

ELECTRONIC INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the circuit diagram and operation of a true RMS reading voltmeter.	7 Marks
	b)	Explain how true RMS responding voltmeters are free from waveform errors.	7 Marks
		(OR)	
2	a)	With a neat diagram, explain about successive approximation DVM.	7 Marks
	b)	Describe the working of an integrating type digital voltmeter.	7 Marks

UNIT-II

3	a)	Draw and explain the circuit of a digital frequency meter.	7 Marks
	b)	Describe the errors associated with frequency counter.	7 Marks
		(OR)	
4	a)	Describe with the help of suitable circuit diagram, how multiple ratio measurements are carried out using digital frequency meter.	7 Marks
	b)	What is the function of time base selector and explain its operation.	7 Marks

UNIT-III

5		With a neat block diagram, explain the operation of CRO in detail.	14 Marks
		(OR)	
6	a)	Write a short note on CRO probes.	6 Marks
	b)	What is meant by Lissajous figure? Explain how phase measurement is performed using CRO.	8 Marks

UNIT-IV

7	a)	What is wave analyzer? Explain with a diagram.	7 Marks
	b)	Draw the block diagram of heterodyne wave analyzer and explain its operation.	7 Marks
		(OR)	
8	a)	Explain with suitable diagram, the working of an X-Y recorder. Describe its applications.	7 Marks
	b)	Explain about CD/DVD recorders.	7 Marks

UNIT-V

9	a)	Define grounding and draw the symbol of common return, chassis return and ground return.	7 Marks
	b)	Explain about shock hazard protection using earth ground.	7 Marks
		(OR)	
10	a)	Explain with the help of a diagram, an ESD grounded work bench and ground strap.	7 Marks
	b)	How the electrostatic voltage does vary with humidity? Explain with examples.	7 Marks

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

INDUSTRIAL INSTRUMENTATION-I

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out the different types of comparator and compare them.	7 Marks
	b)	Sketch and explain the working of a Vernier caliper used for internal and external length measurements?	7 Marks
		(OR)	
2	a)	Describe the construction and working of the following: i) Length Bars ii) Dial Gauges.	7 Marks
	b)	What are optical flats? Describe their construction and theory. How comparative lengths are measured using optical flats?	7 Marks

UNIT-II

3	a)	What is an Analytical Balance? Derive an expression for its sensitivity. Discuss the salient features of Analytical balances.	7 Marks
	b)	Explain the construction and working of hydraulic load cells. Discuss their advantages and disadvantages.	7 Marks
		(OR)	
4	a)	Explain how the torque of rotating shafts can be measured by the following methods. Explain their advantages and disadvantages. i) Stroboscope method ii) Digital method.	8 Marks
	b)	Explain the construction and working of Eddy Current Brake. What are its advantages and limitations?	6 Marks

UNIT-III

5	a)	Define Absolute Pressure and Gauge Pressure. Compare various types of Manometers used for measurement of Static Pressure.	7 Marks
	b)	What is SPL? Describe with a neat block diagram, the working of a Sound Level Meter, with reference to function and output of each block.	7 Marks
		(OR)	
6	a)	Explain the construction, principle and working of a Gauge which is most suitable for measurement of very low pressures, with a neat sketch.	7 Marks
	b)	Compare various types of Pressure Sensors used for measuring Moderate Pressure.	7 Marks

UNIT-IV

7	a)	What are the most conventional types of linear velocity transducers? Explain the measurement of linear velocity using any Two such transducers.	7 Marks
	b)	How a variable reluctance transducer used for displacement measurement is adopted for acceleration measurement. Discuss with suitable diagrams.	7 Marks
		(OR)	
8	a)	Describe the working of Gyroscope.	7 Marks
	b)	With a neat diagram, explain the working of Potentiometric type Accelerometer.	7 Marks

UNIT-V

9	a)	Define Relative Humidity. Describe measurement of Humidity using Commercial type Dew Point Meter, with a neat diagram.	7 Marks
	b)	Compare Friction Tube type, Saybolt's type and Cone and Plate type Viscometers.	7 Marks

(OR)

10	a)	What is Density? Explain the construction, principle and working of Buoyancy Effect Densitometer, with a neat diagram.	7 Marks
	b)	Define Viscosity, Kinematic Viscosity and Specific Viscosity. Explain the measurement of viscosity using Searle's Rotating Cylinder method, with a neat diagram.	7 Marks

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LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss D.C. characteristics of op-amp in detail.	7 Marks
	b)	Show that the output of the subtractor is proportional to the difference between the two input voltages.	7 Marks
		(OR)	
2	a)	An op-amp has a differential gain equal to 100dB and CMRR is 120dB. If the two input voltages are 3μV and 2μV respectively, calculate the differential mode output and common mode output voltages.	7 Marks
	b)	Draw the circuit for Dual input balanced output configuration differential amplifier. Derive expression for I_{CQ} and V_{CQ}.	7 Marks

UNIT-II

3	a)	Draw and explain the operation of op-amp based non-inverting comparator.	6 Marks
	b)	Design a second order butterworth high pass filter having lower cut-off frequency 1KHz.	8 Marks
		(OR)	
4	a)	Draw and explain the operation of Antilog amplifier.	6 Marks
	b)	Design a first-order high pass filter at a cut-off frequency of 400Hz and a pass-band gain of 1.	8 Marks

UNIT-III

5	a)	List out the applications of PLL and explain any two applications.	7 Marks
	b)	Design a 555 timer astable multivibrator operating at 20KHz with 40% duty cycle.	7 Marks
		(OR)	
6	a)	Explain the operation of dual slope A/D converter.	7 Marks
	b)	Draw and explain VCO working principle and derive an equation for its free running.	7 Marks

UNIT-IV

7	a)	Discuss the characteristics of ECL.	4 Marks
	b)	Explain sinking current and sourcing current of TTL output. Which of the parameters decide the fan-out and how?	10 Marks
		(OR)	
8		Explain in detail about CMOS steady state electrical behavior.	14 Marks

UNIT-V

9	a)	Explain the various language elements in Verilog.	8 Marks
	b)	Write a Verilog program for an active high 3 to 8 decoder.	6 Marks
		(OR)	
10	a)	Explain the structural modeling in Verilog.	8 Marks
	b)	Write a Verilog program for 4:1 multiplexer.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

COMPUTER NETWORKS

[Information Technology]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about twisted pair cables and coaxial cables with neat diagram.	6 Marks
	b)	Explain in detail TCP/IP reference model.	8 Marks
		(OR)	
2	a)	Write about magnetic media and fiber optic cables with neat diagram.	7 Marks
	b)	Write short notes on different guided media transmission media.	7 Marks

UNIT-II

3	a)	Explain about limited contention protocol.	6 Marks
	b)	Explain CSMA/CA protocol and write its advantages.	8 Marks
		(OR)	
4	a)	What is framing? Describe various framing techniques in data link layer.	7 Marks
	b)	Explain the procedure used in CRC for detection for detection of errors.	7 Marks

UNIT-III

5	a)	Explain about congestion prevention policies.	7 Marks
	b)	Explain about IPv6 Header format.	7 Marks
		(OR)	
6	a)	Compare and contrast virtual -circuit and datagram subnet.	7 Marks
	b)	Specify the techniques used to achieve the good QOS.	7 Marks

UNIT-IV

7	a)	Discuss about the performance issues in Transport Layer.	7 Marks
	b)	Explain Flow control and buffering mechanisms in Transport Layer.	7 Marks
		(OR)	
8	a)	What is UDP? Compare UDP with TCP protocol.	6 Marks
	b)	Explain about connection establishment procedure in Transport Layer.	8 Marks

UNIT-V

9	a)	What are the major components in E-mail system?	7 Marks
	b)	Explain about dynamic web document.	7 Marks
		(OR)	
10		What is Cryptography? Explain about various substitution techniques in Cryptography.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

SOFTWARE ENGINEERING

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between Personal software Process (PSP) and Team software Process (TSP) models.	7 Marks
	b)	Summarize the evolutionary development models and its problems in detail.	7 Marks
		(OR)	
2	a)	What are the principles that involved for modeling activity for software development?	7 Marks
	b)	What is the use and phases of unified process model in software development?	7 Marks

UNIT-II

3	a)	What are the Objectives of Requirement Analysis?	4 Marks
	b)	Identify functional and non-functional requirements for Automated Ticket Issuing System in railways.	10 Marks
		(OR)	
4	a)	What is requirement engineering?	4 Marks
	b)	Briefly write about Behavioral models.	10 Marks

UNIT-III

5	a)	What are the various elements of data design?	7 Marks
	b)	Write the steps involved in Interface design.	7 Marks
		(OR)	
6	a)	What are the common activities in design process?	7 Marks
	b)	What do you mean by software design pattern? Explain in detail.	7 Marks

UNIT-IV

7	a)	Explain different test strategies for Object Oriented Software.	9 Marks
	b)	What is validation testing? Explain why it is important.	5 Marks
		(OR)	
8	a)	What are the various testing strategies for Conventional Software?	9 Marks
	b)	Differentiate between verification and validation.	5 Marks

UNIT-V

9		List out and explain various software quality concepts	14 Marks
		(OR)	
10	a)	Explain various aspects of risk estimation.	7 Marks
	b)	Write a short note on risk avoidance and risk monitoring.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

OPERATING SYSTEMS

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

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the Simple Interrupt Processing.	7 Marks
	b)	Explain the user mode and kernel mode operations.	7 Marks
		(OR)	
2	a)	Explain the five State Transition diagrams.	7 Marks
	b)	Explain context switching and mode switching.	7 Marks

UNIT-II

3	a)	Explain the Dining Philosophers Problem.	7 Marks
	b)	Describe how the `swap()` instruction can be used to provide mutual exclusion that satisfies the bounded-waiting requirement.	7 Marks
		(OR)	
4	a)	What is a deadlock? What are the necessary conditions to deadlock occur?	7 Marks
	b)	Explain Deadlock Recovery methods.	7 Marks

UNIT-III

5	a)	Why are Segmentation and Paging sometimes combined into one scheme?	4 Marks
	b)	How many page faults occur for LRU algorithm for the following reference string with four page frames? 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2.	10 Marks
		(OR)	
6	a)	Explain the concept of Demand Paging.	7 Marks
	b)	What is Thrashing? What are the causes of thrashing?	7 Marks

UNIT-IV

7	a)	Explain about the various file access methods.	7 Marks
	b)	What are the advantages of the variant of linked allocation that uses a FAT to chain together the blocks of a file?	7 Marks
		(OR)	
8	a)	Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130 Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for SSTF disk-scheduling algorithm?	7 Marks
	b)	Explain about the various tertiary storage devices.	7 Marks

UNIT-V

9	a)	Explain handshaking with an example.	7 Marks
	b)	Explain interrupt driven I/O cycle with a diagram.	7 Marks
		(OR)	
10	a)	How does the principle of least privilege aid in the creation of protection systems?	7 Marks
	b)	Discuss the strengths and weaknesses of implementing an access matrix using access lists that are associated with objects.	7 Marks

CODE No.:14BT51502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

SYSTEMS SOFTWARE

[Computer Science and Systems Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about System Software and machine architecture.	7 Marks
	b)	List out registers used in SIC M/c architecture along with their use.	7 Marks
		(OR)	
2	a)	Write a program in both SIC and SIC/XE to copy a character string 'system software' to another character string.	7 Marks
	b)	Explain the simplified instructional computer programming examples.	7 Marks

UNIT-II

3	a)	Give the features of MASM assembler.	7 Marks
	b)	Discuss on program relocation with examples.	7 Marks
		(OR)	
4		Distinguish between one pass and multi pass assemblers.	14 Marks

UNIT-III

5	a)	Write an algorithm for Pass-1 of a linking loader.	7 Marks
	b)	Explain the operation of bootstrap loader.	7 Marks
		(OR)	
6		Discuss the design of an absolute loader.	14 Marks

UNIT-IV

7	a)	Explain the data structures used in macro processor with example.	7 Marks
	b)	Describe the following: i) Conditional macro expansion. ii) Recursive macro expansion.	7 Marks
		(OR)	
8	a)	Write shortly about user interface criteria.	7 Marks
	b)	Explain with a neat diagram, the structure of an editor.	7 Marks

UNIT-V

9		Discuss in detail on functions and capabilities of an interactive debugging system.	14 Marks
		(OR)	
10		Write short notes on : i) User interface. ii) Editing process.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Regular Examinations November - 2016

DIGITAL SIGNAL PROCESSING

[Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find whether the given signal is energy or power signal. Justify your answer 4 Marks
$x(t)=A[u(t) - u(t - 10)]$.

b) Given a sequence $x(n) = [u(n) - u(n - 3)]$ find 6 Marks
i) $y_1(n) = x(4 - n)$ ii) $y_2(n) = x(2n - 3)$

c) Determine the Nyquist rate for the following signal 4 Marks
$x(t) = \cos(400\pi t)\sin(600\pi t)$

(OR)

2 a) Determine the z-transform and its ROC of the given sequence $x(n)=\{1,2,5,7,0\}$. 4 Marks

b) Compute the response of the system; 10 Marks

$y(n)=0.7y(n - 1) - 0.12y(n - 2) + x(n - 1) + x(n - 2)$

to the input $x(n) = n\,u(n)$. Is the system stable?

UNIT-II

3 a) Determine the magnitude and phase spectra of the periodic signal 8 Marks
$x(n) = 4\sin\left(\frac{\pi(n-2)}{3}\right)$ using Fourier series.

b) Assume that a complex multiply takes 1*ps* and that the amount of time to compute a DFT is determined by the amount of time it takes to perform all of the multiplications. 6 Marks
i) How much time does it take to compute a 1024-point DFT directly?
ii) How much time is required if an FFT is used?

(OR)

4 Given sequence $x_1(n)=\{1,2,1\}$; $x_2(n)=\{1,2,3\}$ compute the circular convolution in time domain and verify the result using DIF-FFT algorithm. 14 Marks

UNIT-III

5 Design a digital Butterworth filter that satisfier the following constraint using bilinear transformation. Assume T=1s. 14 Marks

$$\left\{\begin{array}{ll} 0.9 \le |H(e^{jw})| \le 1 & 0 \le w \le 0.25 \\ |H(e^{jw})| \le 0.2 & 0.6\pi \le w \le \pi \end{array}\right\}$$

(OR)

6 Realize the following IIR system functions in the cascade and parallel forms 14 Marks

$$H(z) = \frac{2 + 5z^{-1} + 12z^{-2}}{(1 + \frac{1}{2}z^{-1} - \frac{1}{4}z^{-2})(1 + \frac{1}{4}z^{-1} + \frac{1}{8}z^{-2})}$$

UNIT-IV

7 Design a high pass digital FIR filter using Kaiser window satisfying the specifications given below: 14 Marks

Pass band cut-off frequency =3.2KHz, stop band cut-off frequency=1.6KHz,
Pass band ripple = 0.1dB, stop band attenuation=40dB
and sampling frequency F= 10KHZ.

(OR)

8 a) How will you develop direct form realization of third and fourth order functions of linear phase FIR systems? 10 Marks

b) Why do FIR filters have inherent linear phase characteristics? 4 Marks

UNIT-V

9 Write short critical notes on each of the following concepts, using diagrams where appropriate to illustrate your answers: 14 Marks

i) Harvard architecture ii) Pipelining iii) Multiplier-accumulator
iv) Special instruction memory v) Data and program memory

(OR)

10 a) In a non pipeline machine, the instruction fetch, decode and execute take 35ns, 25ns and 40ns respectively. Determine the increase in throughput if the instruction steps were pipelined. Assume a 5ns pipeline overhead at each stage and ignore other delays. 7 Marks

b) Explain the simplified architecture of TMS320C6X DSP processor with block diagram. 7 Marks

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the basic functional units of a simple computer.
b) Explain the representations of floating point numbers in detail.

2. a) Design a 4-bit combinational circuit decrementer using four Full-Adder circuits.
b) Explain about data manipulation instructions.

3. What is the difference between a microprocessor and a micro program? Is it possible to design a microprocessor without a micro program? Are all micro programmed computers also microprocessors? Explain.

4. a) Explain super scalar processor.
b) Explain pipeline processing.

5. a) Discuss briefly about virtual memory. .
b) Give the advantages of the following memories:
i) ROM
ii) RAM
iii) EPROM.

6. a) Explain working principles of USB.
b) Briefly compare the characteristics of SCSI with PCI.

7. a) Describe the various characteristics of multiprocessors.
b) What is cache coherence? Explain.

8. Explain in detail Power PC architecture.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the advantages of closed loop control systems over open loop control systems.

2. Derive the Transfer Function for a.c. servomotor.

3. A unity feedback system has an open loop transfer function **G(s) = 25/s(s+8)**.
Determine its damping ratio, peak overshoot and time required to reach the peak output.
Now a derivative component having T.F. of s/10 is introduced in the system.
Discuss its effect on the values obtained above.

4. Sketch the root locus of the unity feedback system whose open loop transfer function is

$$G(s) = \frac{1}{s(s+2)(s+4)(s+5)}$$

5. a) What are the advantages of frequency response?
b) Explain about frequency domain specification.

6. Sketch the Nyquist plot and determine gain margin and phase margin of a given open loop transfer function and comment on stability.
$G(s)H(s) = (1+4s) / s^2(1+s)(1+2s)$

7. Design a compensating network for $G(s) = \frac{k}{s(1+0.2s)(1+0.01s)}$, so that its phase margin at least will be 40^0 and steady state error will be in the final position will not exceed 2% of final velocity of 50m/sec.

8. a) Define controllability of observability and give physical examples.
b) Derive the transfer function if the static model is $\dot{x} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} x + \begin{bmatrix} 1 \\ 0 \end{bmatrix} u;\ y = \begin{bmatrix} 1 & 0 \end{bmatrix} x$.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is EUDL? Determine the EUDL, for a 10m span simply supported beam, which is supposed to carry moving loads of 18kN and 20kN separated by 2m. The loads move from left to right.

b) A 20kN/m UDL of length 4m crosses a simply supported beam of span 10m. Determine the maximum B.M and SF at $3/8^{th}$ of the span due to the moving UDL.

2. Using the influence line diagrams, find

i) the maximum B.M

ii) the maximum positive and negative shears at 4m from the left support A of a simply supported girder of span 10m, when a train of 4 wheel loads of 10kN, 15kN, 30kN and 30kN spaced at 2m, 3m and 3m respectively cross the span with the 10kN load leading.

3. Analyze the continuous beam shown in Fig.1 by moment distribution method, if support B yields by 10mm. Take EI = $1x10^{12}$N-mm^2 throughout. Draw the B.M diagram.

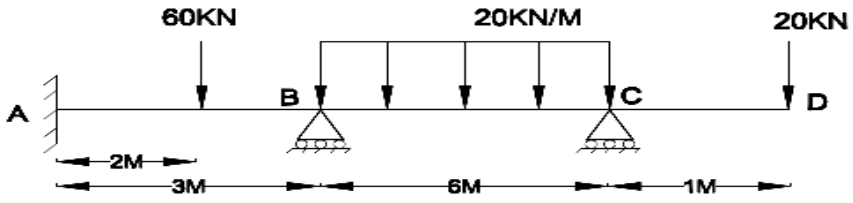

Fig.1

4. Analyze the continuous beam shown in Fig.2, using Slope-Deflection method draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

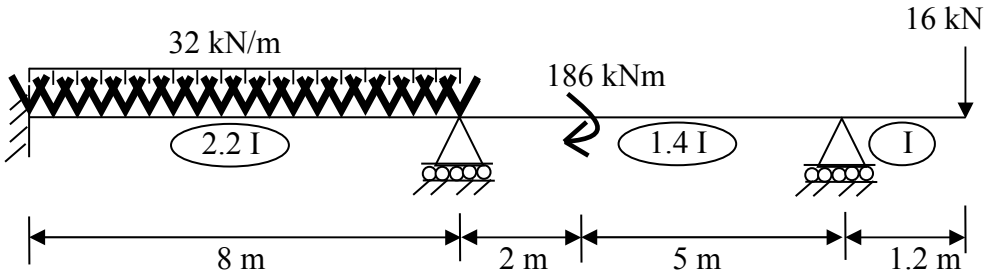

Fig.2

5. Analyze the continuous beam shown in Fig.3, using Kani's method. Draw shear force and bending moment diagrams.

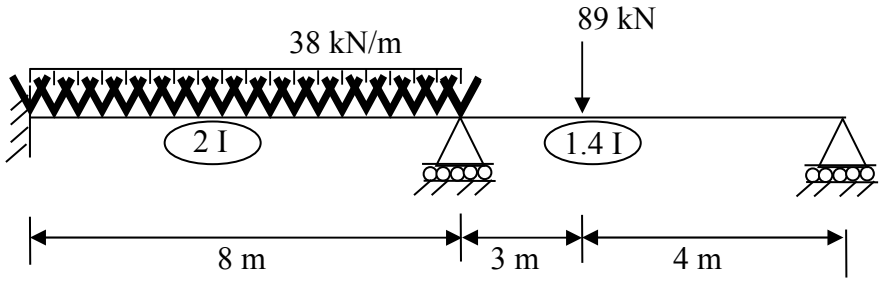

Fig.3

6. Find the vertical and horizontal deflections of the joint E of the truss shown in Fig.4. The sectional area of each member is 1600 mm^2. Take E = 200 kN/mm^2.

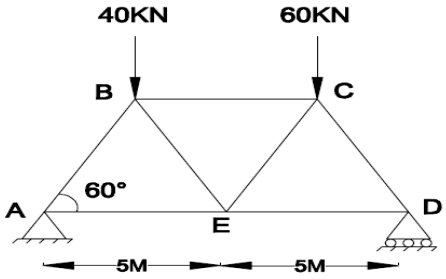

Fig.4

7. Determine the axial force in the members of the frame shown in Fig.5. The cross sectional area of bars AB and AC is **2a** and that of other members is **a**.

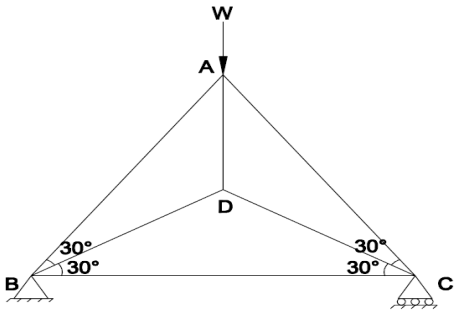

Fig.5

8. Analyze the frame shown in Fig.6 by Cantilever method. Assume that all the columns have equal area of cross section for the purpose of analysis.

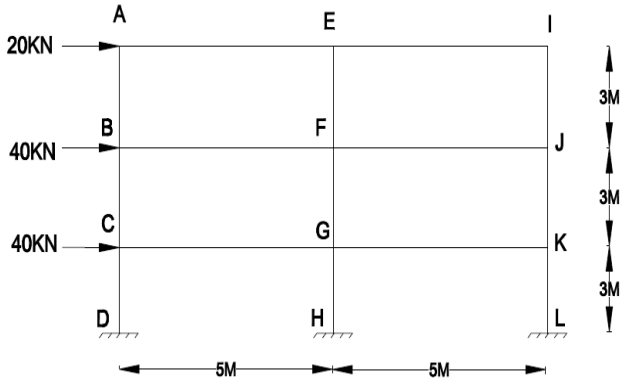

Fig.6

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a doglegged stair case in a room with clear dimensions 2.5 m × 5.2 m and the storey height is 3.2 m. Adopt the live load is 3 kN/m^2. Use M 20 Concrete and Fe 415 steel. Draw the reinforcement details.

2. Design a combined footing for two square columns of sizes 450mm and 500mm which are 4m apart and carry axial loads of 1000 kN and 1200 kN respectively. The maximum projection beyond the face of each column is restricted to 500mm. The safe bearing capacity of the soil is 200 kN/m^2. Use M20 grade concrete and Fe 415 grade steel.

3. Design an under reamed pile foundation when the vertical load of 180 kN is being transmitted from the column. The soil is silty and close to ground water table. Use standard specifications for grades of steel and concrete.

4. a) Explain the types of retaining wall.
b) Explain the structural design of a retaining wall with reference to the relevant IS code.

5. Design the roof dome and top ring beam of an overhead water tank of capacity 8 lakh litres. Use M20 grade concrete and Fe 415 grade steel. Sketch the details of the reinforcement.

6. Design a rectangular tank resting on ground with internal dimensions as 7m × 5.5m × 2.75m high. Take the free board as 300mm. Use M20 grade concrete and Fe 415 grade steel.

7. Design a circular beam of diameter 5m supported by six square columns of side 230mm. The beam is subjected to uniformly distributed load of 40 KN/m. Use M 20 grade of concrete and Fe 415 steel. Draw the reinforcement details.

8. A concrete beam 250mm wide and 350mm deep is prestressed by means of 12 wires of 5mm diameter located at 65mm from the bottom of the beam and 3 wires of 5mm diameter at 25mm from top. Assuming the prestress in steel as 850 N/mm^2, calculate the stresses at the extreme fibres of the mid span section when the beam is supporting its own weight over a simply supported span of 6m. If a live load of 5 KN/m (Uniformly distributed load) is applied, evaluate the maximum working stress in concrete.

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CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define hydrology. Describe the hydrologic cycle.
b) Describe the various forms of precipitation.

2. a) Describe the three methods of determining the average depth of rainfall over an area.
b) The average annual rainfall of 5 rain gauges in a basin are 89, 54, 45, 41 and 55 cm. If the error in the estimation of basin mean rainfall should not exceed 10%, how many additional gauges should be installed in the basin?

3. a) Define infiltration. Explain the various infiltration indices.
b) Explain the stream flow measurement by area-velocity method.

4. a) What is a flow mass curve? How is it constructed?
b) What are the uses of a flow duration curve?

5. a) What is the unit hydrograph and what are the uses of unit hydrograph?
b) The direct runoff hydrograph resulting from a 5.0cm of effective rainfall of 6hrs duration is given below. Determine the area of the catchment and the ordinates of the 6hrs unit hydrograph.

Time (hrs)	0	6	12	18	24	30	36	42	48	54	60	66	72
Direct runoff (m^3/s)	0	25	175	320	360	310	230	165	105	60	30	10	0

6. a) What are the methods of estimating design flood? What are their limitations?
b) Derive the Muskingum routing equation and the expressions for the routing coefficients C_0, C_1, C_2.

7. a) Explain the following terms with examples:
i) Aquifer ii) Aquifuge iii) Aquiclude iv) Aquitard.
b) Define porosity, specific yield and specific retention.

8. a) Describe recuperation test for an open well.
b) In a recuperation test on an open well, the water level was depressed by 4m and it was observed to rise by 2.5m in 90 minutes. What is the specific capacity of the well? What would be the yield from the well under a depression head of 3m, if the diameter of the well is 7.5m?

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the clay minerals? How does clay adsorb water? Explain.
b) The porosity of a soil is 0.35. If specific gravity = 2.66, calculate (i) saturated unit weight (ii) saturated moisture content and (iii) moisture content when moist unit weight - 17.6 kso/m^3.

2. a) Explain with the help of particle size distribution curves for the following types of soils.
i) Well graded ii) Uniformly graded iii) Gap graded
b) Draw a typical plasticity chart used in I.S. Classification system. Show the different soil groups on the chart.

3. a) Derive an equation for coefficient of permeability of fine grained soils.
b) A soil deposit consists of three horizontal layers of equal thickness. The coefficient of permeability for the top layer is 3 **x** 10^{-5}cm/sec, for the middle layer 4 **x** 10^{-3}cm/sec and the bottom layer 6 **x** 10^{-2}cm/sec. Determine the average permeability in the vertical and horizontal directions.

4. a) A stratified soil deposit consists of two layers. The top layer is 2.5m thick having a bulk density of 17kN/m^3 and the bottom layer is 3.5m thick having a saturated density of 21kN/m^3. The water table is at a depth of 3.5m from the surface and the zone of capillary saturation is 1m above the water table. Draw the diagrams showing the variation of total, neutral and effective stresses.
b) Discuss properties and uses of a flow net.

5. a) Discuss the essential differences between Boussinesq's and Watergoard's theories. For which condition both these theories yield approximately the same value of vertical stress.
b) Two railway wagon lines in a harbour yard are located 6m centre to centre. The average load per meter 5mn in the lines are 100 and 80kN/m. Find the vertical stress induced by this loading at a depth of 2m beneath each load and half way between them.

6. a) Describe standard proctor test and modified proctor test. How would you decide the type of the test to be conducted in the laboratory?
b) What are the different methods of compaction adopted in the field? How would you select the type of roller to be used?

7. Explain the following terms: (i) Coefficient of compressibility (ii) Coefficient of volume change (iii) Normally consolidated soil (iv) Over consolidated soil (v) Under consolidated soil (vi) Secondary consolidation

8. a) Explain the unconfined compression test to determine the shear parameters.
b) The following results were obtained in a shear box test. Determine the shear parameters.

Normal load (kg)	10	20	30	40
Shear load at failure (kg)	11.0	15.2	19.3	23.5

CODE No.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Write weathering processes and its importance in dams and reservoirs.

2. Describe different properties of minerals and how hardness and fracture properties of minerals affect the strength of rocks.

3. What do you understand by word metamorphism? Describe the different metamorphic processes. Describe fully any two metamorphic rocks giving their physical properties, mineral composition, engineering properties and petrogenesis.

4. Write about classification of faults and add a note on how these is dangerous geological structures in different constructions.

5. What is a seismic vulnerability and explain different seismic zones of India? What safe measures will you consider in building constructions?

6. Explain the principle, procedure and interpretation part of the seismic refraction method and its importance in civil engineering applications.

7. What are dams and how are they classified? Discuss fully the geological investigations for an arch dam.

8. Draw the neat sketch of traffic tunnel and label its parts. Write about head race and tail race pressure tunnels.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the switching characteristics of power MOSFETs.
b) Compare the features of power MOSFETs with BJTs.

2. Draw the circuit of synchronized UJT triggering (Ramp triggering) of SCR. Describe its working relevant to voltage wave form.

3. a) List the advantage and disadvantages of one-quadrant converter over two-quadrant converter.
b) Explain the operation of a single-phase half wave converter with RL load and derive the expression for output voltage, current and input power factor.

4. a) With the help of circuit diagram and necessary wave forms, explain the operation of single phase half controlled bridge converter with RL load and derive the load voltage and load current for firing angle(α)=30^0.
b) Discuss briefly the importance of freewheeling diode in converter circuits.

5. Explain the operation of three-phase semi converter with RL load with neat sketches.

6. Explain the principle of operation of single phase voltage controller with RL load. Draw necessary waveforms. Derive the expression for output voltage and current.

7. Derive the expression I_{max} and I_{min} currents for a Type-A chopper with RL load.

8. a) Explain the operation of a parallel inverter and mention its merits.
b) Calculate the output frequency of a series inverter circuit with the parameters L=10mH, C=0.1μF. Also determine attenuation factor.

CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain different types of armature windings.
b) Derive an expression for the EMF induced in an alternator.

2. a) What are the causes of harmonics? Explain the measures to suppress harmonics.
b) With neat diagrams, explain the determination of synchronous reactance.

3. a) Explain the experimental determination of X_d and X_q by using slip test and also draw the phasor diagram.
b) Write a short note on the ZPF method.

4. a) Explain the effect of change in excitation on an alternator with and without load.
b) Explain the procedure for the determination of X''_d, X'_d and X_d in an alternator and draw its equivalent circuits.

5. a) Show that the locus of stator current for a constant output of 3phase synchronous motor connected to a constant voltage, constant frequency bus-bar is a circle.
b) Explain following:
i) Hunting.
ii) Starting methods of synchronous motor.

6. a) Explain the construction and working principle of single phase induction motor.
b) Draw and explain the torque-slip characteristics of shaded pole induction motor.

7. a) Explain the working principle and applications reluctance motor.
b) Explain the characteristics of AC and DC series motor.

8. Write a short note on following:
i) Stepper motor.
ii) Synchronous motor.
iii) Servo motors.

CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for capacitance of an unsymmetrical three phase system regularly transposed.
b) What is the effect of ground on transmission line capacitance?

2. a) Explain the classification of transmission lines.
b) Explain why ABCD parameters are used for evaluating performance of a transmission line.

3. Explain the terms surge impedance, surge impedance loading and velocity of propagation of waves with respect to the transmission lines.

4. Discuss the phenomenon of reflection and refraction in traveling waves. Derive the expressions for reflection and refraction coefficients when a traveling wave is terminated through a resistance.

5. What do you understand by positive, negative and zero sequence impedances? Discuss them with reference to synchronous generators, transformers and transmission lines.

6. a) By mean of an example, show how grading of units is done for suspension insulators.
b) Explain about the properties that any insulating materials should posses.

7. a) Derive the expression for sag when the supports are at unequal heights.
b) Explain how stringing chart is useful in erecting the transmission line.

8. a) By means of a diagram, describe the construction of a underground cable.
b) The inner and outer diameter of a cable are 3cm and 8cm respectively. The cable is insulated with two materials having permittivity of 5 and 3.5 with corresponding stresses of 38kV/cm and 30kV/cm. Calculate the radial thickness of each insulating layer and the safe working voltage of the cable.

CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A two stage steam turbine receives steam at 38bar and 350^{0}C. The expansion in the first turbine is carried out until the steam is just dry saturated. Before entering the second turbine the steam is reheated at constant pressure to original temperature of 350^{0}C. The steam expands in the LP turbine to a condenser pressure of 0.03 bar, Calculate: i) work output in kJ/kg ii) heat supplied per kg of steam iii) specific steam consumption iv) the cycle efficiency. The process of expansion may be considered isentropic and feed pump work neglected.

b) What is the concept of mean temperature of heat addition?

2. a) What are the advantages of artificial draught over natural draught?

b) The following data refer to a boiler plant consisting of an economizer, a boiler and a super heater. Mass of water evaporated per hour=5940kg, mass of coal burnt per hour=675kg, L.C.V. of coal=31600 kJ/kg, pressure of steam at boiler stop value=14bar, temperature of feed water entering the economizer=32^{0}C, temperature of feed leaving the economizer=115^{0}C, dryness fraction of steam leaving the boiler and entering super heater=0.96, temperature of steam leaving the super heater= 260^{0}C,

specific heat of superheated steam=2.33. Determine: i) Percentage of heat in coal utilized in economizer, boiler and super heater; ii) Overall efficiency of boiler plant.

3. a) Define the term 'steam nozzle'. Explain various types of nozzles.

b) Derive an expression for the steam discharged through nozzle.

4. a) What are the various losses generally occur in a steam turbine?

b) Write the difference between the impulse and reaction turbine with particulars.

5. a) Write a short note on 'bleeding of steam turbines'.

b) Explain the State point locus and reheat factor.

6. a) Write a short note on fuels used for gas turbines.

b) State the merits of gas turbine over I.C. engines and steam turbines.

7. a) Explain the Closed Cycle Gas Turbine with the help of neat sketch.

b) In a gas turbine power plant, operating on a Joule cycle, air is compressed from 1 bar and 15°C through a pressure ratio of 6. It is then heated to727^{0}C in a combustion chamber and expanded back to a pressure of 1 bar. Calculate the work done, cycle efficiency and work ratio. Assume isentropic efficiencies of the turbine and compressor as 90% and 85% respectively.

8. a) Explain turbo jet working with neat diagram. Write down advantages and disadvantages of turbo jet engines.

b) The following data pertains to a turbo jet flying at an altitude of 9500m speed of the turbo jet = 800km/h; Propulsive efficiency = 55%; Overall efficiency of the turbine plant = 17%; Drag on the plane = 6100N; density of air at 9500m altitude = 0.17kg/m^3 ; Assuming calorific value of the fuels used as 46000kJ/kg. Calculate: i) Absolute velocity of the jet. ii) Volume of air compressed per min. iii) Diameter of the jet. iv) Power output of the unit.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What are free-body diagrams of a mechanism? How are they helpful in finding the various forces acting on the various members of the mechanism?

2. The rotor of a marine turbine has a moment of inertia of 750 kg/m² and rotates at 3000 r.p.m clockwise when viewed from aft. If the ship pitches with simple harmonic motion having a periodic time of 16 seconds and an amplitude of 0.1 radian, find the
   i) Maximum angular velocity of the rotor axis.
   ii) Maximum value of the gyroscopic couple.

3. What is the advantage of a self-expanding shoe brake? Derive the relation for the friction torque for such a brake.

4. a) Define crank effort and piston effort.
   b) A vertical single cylinder engine has a cylinder diameter of 250mm and a stroke of 450mm. the reciprocating parts have a mass of 180kg. The connecting rod is 4 times the crank radius and the speed is 360 r.p.m. When the crank has turned through an angle of 45° from top dead centre, the net pressure on the piston is 1.05MN/m². Calculate the effective turning moment on the crank shaft for this position.

5. a) How does a Porter governor differ from that of a Watt governor?
   b) A Porter governor has each of its arms of 175mm length pivoted on the axis of the governor. The radii of rotation of the balls at the minimum and the maximum speeds are 105mm and 140mm respectively. The mass of the sleeve is 20kg and of each ball is 5kg. Determine the range of speed when friction at the sleeve is 15N.

6. a) Find the magnitudes of the unbalanced primary and secondary forces in V-engines. Deduce the expressions when the lines of stroke of the two cylinders are at 60° to each other.
   b) Explain the concept of balancing of multiple rotating masses lying in a single plane.

7. a) Explain Dunkerly's method.
   b) A 22mm wide and 45mm deep steel bar is freely supported at two points that are 800mm apart and carries a load of 180kg midway between them. Determine the natural frequency of the transverse vibration, neglecting the weight of the bar.

8. What is the criterion for selection of materials for vibration control? Explain its dynamic properties.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify the various types machine design.
b) What is the procedure adopted in the design of machine elements.

2. a) What is Factor of Safety? What is its importance in design?
b) Define Endurance Limit. How does this dependent on the size of a component?

3. A rod is subjected to an axial load which varies from 2.5kN to 8.5kN. The endurance limit and the yield point of the material are 150MPa and 350MPa respectively. Taking a factor of safety of 10, determine the diameter of the rod.

4. Design a triple riveted double cover butt joint to connect to plates of thickness 12mm. The permissible stresses in tension, shear and crushing are 75MPa, 50MPa and 125MPa respectively.

5. a) What is the difference between ordinary bolt and a stud bolt? Give one application for each of them.
b) A 20kg balancing mass is to be attached to the crank web of an IC engine using two bolts. The speed of the engine is 500 r.p.m. The location of centre of mass of the balancing mass may be taken to be at a distance of 225mm from the axis of the crank shaft. Design the bolts, taking the permissible tensile stress in the bolt material as 60MPa.

6. a) Describe the purpose of gib in cotter joint. What are the applications of cotter joints?
b) Design a knuckle joint to transmit 140kN, with permissible stresses in tension; shear and compression are 75MPa, 60MPa and 150MPa respectively.

7. A mild steel shaft transmits 20kW at 200 r.p.m. It carries a central load of 900N and is simply supported between the bearings 2.5 metres apart. Determine the size of the shaft, if the allowable shear stress is 42MPa and the maximum tensile or compressive stress is not to exceed 56MPa. What size of the shaft will be required, if it is subjected to gradually applied loads?

8. a) What are the various ways to prevent the relative rotary motion between the shaft and a mounting on it?
b) Design a muff coupling to connect two shafts which are to transmit 7.5kW at 2000 r.p.m.

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms:
i) Gain ii) Radiation density iii) Beam width
iv) Antenna efficiency v) Effective length
b) Explain the Retarded potential.

2. a) Find the radiation resistance of a Hertizian dipole of length **λ/80**, **λ/100**.
b) Prove that the radiation resistance in a half wave dipole is 73Ω.

3. a) What is array factor? Find the array factor of two element array.
b) What is a uniform linear array and what are their applications?

4. a) Explain the Normal mode and Axial mode operation of helix.
b) Sketch the current distributions of a folded dipole and account for its input impedance, when the two legs have unequal diameter.

5. a) Compare active and passive corner reflectors. What are retro reflectors?
b) Calculate the diameter and effective aperture area of a parabolic reflector required to produce a beam-width of 15^0 between first nulls at a frequency of 10GHz.

6. a) With neat diagram, explain the absolute method of measuring the gain of an antenna.
b) Discuss dielectric and metal lens antennas and their applications.

7. a) Prove that the radius of curvature of raypath in tropospheric propagation is inversely proportional to the rate of change of dielectric constant with height.
b) Obtain the maximum spacing between a transmitter of height 100m and a receiver of height 80m used in tropospheric propagation.

8. a) Derive the relationship between MUF and critical frequency.
b) Discuss experimental determination of virtual heights and critical frequencies.

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression of voltage given for a dual input, balanced output differential amplifier.
b) Explain the principle of operation of a current mirror circuit.

2. a) Write short notes on frequency compensation technique.
b) Explain any 4 DC characteristics of op-amplifier.

3. a) Draw the circuits of transresistance and transconductance amplifiers in detail with neat sketches.
b) With neat sketches, explain the working of AC and DC inverting amplifiers.

4. a) What do you mean by a precision rectifier?
b) Explain the working of a full wave rectifier using op-amplifier.

5. a) Explain how an all pass filter can be realized.
b) Design a wide band pass filter having $f_l = 400Hz$, $f_h = 2KHz$ and pass band gain of four. Determine the Q of the filter.

6. a) With the block diagram of IC555, explain its application as a monostable multivibrator.
b) Explain AM and FM detection using PLL.

7. a) Draw and explain the principle of operation of single and dual slope ADCs.
b) Give the standard DAC and ADC specifications with the normal values.

8. a) Draw and explain the circuit diagram of a sample and hold circuit. What type of capacitor should be used in S/H circuits?
b) Write notes on applications of analog switches and multiplexers.

CODE No.:10BT50404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Design a 4-input CMOS OR-AND-INVERTER gate. Draw the logic diagram and function table.
b) Explain in detail about CMOS dynamic electrical behavior.

2. a) Design a TTL three state NAND gate and explain the operation with the help of function table.
b) Compare CMOS logic families.

3. a) Explain different delays in VHDL.
b) Explain about design flow in VHDL.

4. a) Explain in detail about simulation.
b) Write a VHDL program in behavioral style to generate a clock with off time and on time equal to 10ns.

5. a) Design a full adder using two half adders. Write VHDL data flow program for the above implementation.
b) Design a 16-bit ALU using 74X381 and 75X182 ICs.

6. Explain the operation of dual parity encoder and write a VHDL code for the corresponding.

7. a) Write VHDL code for 4-bit up-down counter with synchronous reset and clear inputs.
b) Explain the working of ring counter and write VHDL code for 4-bit ring counter.

8. a) Design a 8 x 4 diode ROM using 74X138 for the following data starting from the first location. **B, 2, 4, F, A, D, E, F**.
b) Explain the internal structure of 64K x 1 DRAM. With the help of timing waveforms describe the DRAM access.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the force on a charge of -100mC located at P(2, 0, 5) in free space due to another charge 300μC located at Q(1, 2, 3).
b) State and express Gauss's law in both integral and differential forms.

2. a) Explain the following terms:
i) Linear
ii) Isotropic
iii) Homogenous
b) Derive the expression for parallel plate capacitance.

3. a) Define vector magnetic potential.
b) Find magnetic field strength H, on the Z- axis at a point P(0,0,h) due to a current carrying circular loop $x^2 + y^2 = A^2$ in Z=0 plane.

4. a) Explain Faradays law for time varying fields.
b) In a free space E = 20 cos (ωt - 50 x) a_y v/m.
Calculate:
i) Jd.
ii) H.

5. a) Prove that in a uniform plane wave propagation in X-direction has no longitudinal components of electric and magnetic fields.
b) Derive the expression for skin depth of a good conductor.

6. a) State and prove Poynting vector and Poynting theorem.
b) Define:
i) Surface Impedance.
ii) Total Internal Reflection.

7. a) What is electrostatic discharge?
b) Write short notes on high power electromagnetic.

8. Write short notes on:
i) Grounding.
ii) Cable shielding.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the working of differential amplifier and derive the expression for CMRR.
b) Explain the DC characteristics of an operational amplifier.

2. a) Draw the circuit diagrams of a voltage to current converter if the load is
i) Floating and ii) grounded.
b) What are the limitations of an ordinary op-amp differentiator? Draw the circuit of a practical differentiator which eliminates these limitations.

3. a) Explain the operation of Schmitt trigger using 555 timer with its circuit diagram
b) Draw the circuit of a 565 PLL IC and explain its working.

4. a) Write a detailed note on CMOS logic families.
b) Write a short note on CMOS dynamic electrical behaviour.

5. a) Compare CMOS, TTL and ECL with reference to logic levels, DC noise margin, propagation delay and fan-out.
b) What are the typical parts of a TTL data sheet and discuss their importance in circuit design?

6. a) Explain about VHDL program structure.
b) Give the description on libraries and packages.

7. a) Design a logic circuit to detect the prime number of a 5-bit input. Write the structural VHDL program for the design.
b) Realize the following expression using 74X151 IC.
$f(X) = \overline{A}BC + A\overline{B}C + AB\overline{C}$

8. a) Design an ALU with VHDL program.
b) Write a short note on PLDs.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the following notations:
   i) Asymptotic Notation
   ii) Omega notation
   iii) Theta Notation

2. a) Explain disjoint set operations with example.
   b) Explain the algorithm based on DFS for finding strongly connected components of a directed graph G.

3. a) Give the general method for divide and conquer strategy. Explain any one application that can be solved by divide and conquer.
   b) Is it possible to modify the binary search algorithm to improve its performance? Justify.

4. a) Explain the applications of Greedy method.
   b) Write Greedy algorithm to generate shortest path.

5. a) Explain traveling sales person problem with Dynamic programming.
   b) Describe any two shortest path algorithms.

6. a) State and explain the n-Queen problem using backtracking.
   b) Give a backtracking algorithm for graph coloring problem.

7. a) Define the term branch and bound technique explain it with an example.
   b) Discuss control abstraction for LC search.

8. a) Explain NP class problem with suitable example.
   b) Differentiate between NP-complete and NP-hard.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Construct a smallest DFA over **Σ = {a,b}** accepting all strings which have number of a's divisible by 5 and number of b's divisible by 4.
b) Design DFA for even number of a's and even number of b's.

2. a) Formally define Mealy and Moore machines.
b) Construct Moore machine to output number modulo 3 where number is the value of the binary string input.

3. a) Show that the Regular Languages are closed under intersection and complementation.
b) Prove that the language $L = \{a^i b^{3i} c^n - i, n \geq 1\}$ is not a regular.

4. a) Explain Context free grammar and construct a CFG to generate set of palindromes over alphabet {a, b}
b) Reduce the following grammar G to CNF.
G is **S→aAd, A→aB/bAB, B→b, D→d**.

5. a) What are ambiguous grammars?
b) Convert the following grammar into Chomsky Normal form
S → ASA | aB, S → B | S, B → b |ε

6. a) Design a pushdown automata which accepts **L={ ww^r | w € (a+b)*}**.
b) With a neat diagram, show the working of a push down automata and define language accepted by a pushdown automata.

7. a) What is Turing machine? Explain the working of Turing machine with neat diagram.
b) Explain recursive and recursively enumerable languages.

8. a) What are undecidable problems? Explain why PCP problem is considered undecidable?
b) Explain the various valid modifications of Turing machines.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the statement of an Optimization problem and discuss the following:
i) Constraint surface.
ii) Objective function.
iii) Objective function surfaces.

2. Using Lagrange function, 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 $A_0 = 24\pi$.

3. Solve the given problem using simplex method Max $\mathbf{Z = X_1 + X_2}$ subjected to
$\mathbf{2x_1 + 5x_2 \leq 18}$
$\mathbf{6x_1 + 5x_2 \leq 30}$
$\mathbf{x_1, x_2 \geq 0}$

4. a) What is meant by Degeneracy in transportation problem?
b) Find the optimal assignment for the following problem:

		jobs				
		I	**II**	**III**	**IV**	**V**
Mechanics	**I**	11	17	8	16	20
	II	9	7	12	6	15
	III	13	16	15	12	16
	IV	21	24	17	28	25
	V	14	10	12	11	15

5. Max $\mathbf{f(x) = -3x^2 + 21.6x + 1.0}$ with a minimum resolution of 0.5 over six functional evaluation. The optimal value of f(x) is assumed to lie in the range $\mathbf{0 \leq x \leq 25}$.

6. Perform four iterations of steepest descent method to minimize
$\mathbf{f(x_1,x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2}$, starting point $\mathbf{x_1 = (0,0)}$.

7. Give a proof for the convergence of exterior penalty function method.

8. Solve the following problem using dynamic programming.
Maximize $\mathbf{Z = y_1^2 + y_2^2 + y_3^3}$
Subject to the constraints
$\mathbf{y_1 . y_2 . y_3 \leq 4}$; $\mathbf{y_1, y_2, y_3 \geq 0}$ and integers.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. What is meant by Demand Forecasting? Explain the various steps involved in Demand Forecasting by a firm.

2. What are isoquants? Explain various types of isoquants.

3. Explain price and output determination in perfect competition.

4. Explain the features of new economic policy 1991.

5. What do you mean by accounting concepts? Explain conventions.

6. The following Balance are extracts from the books of Mr. Nithesh as on 31.03.2012.

Capital	30,000	Buildings	22,500
Machinery	15,000	Furniture's	1,500
Motor car	12,000	Opening Stock	24,000
Purchases	1, 11,000	Purchase return	1,500
Sales	2, 10,000	sales Returns	750
Sundry Debtors	22,500	Sundry Creditors	7,200
Cash In Hand	450	cash at Bank	7,050
Salaries	21,000	Rent	6,000
Bad debts	300	Taxes	900
Discount earned	750	Insurance premiums	600
General Expenses	1,200	Discount allowed	1,050
Provision for Doubtful Debts	450		

Adjustments

a) Outstanding salaries 2,000 and rent 1,200.
b) Depreciate Machinery by @5%, Motor Car @10%. and Buildings by @3%.
c) Closing stock as on 31.03.2012 Rs. 30,000.

7. M/s. Pandey Ltd. is contemplating to purchase machine A and B each costing of Rs 5 Lakhs. Profits are expected as follows

Year	Cash Inflows	
	Machine A (Rs.)	Machine B (Rs.)
1	150,000	50,000
2	200,000	150,000
3	250,000	200,000
4	150,000	300,000
5	100,000	200,000

Using 10% discount rate indicates which machine would be profitable using the NPV method.

8. Explain the differences between Manual Accounting and Computerized Accounting.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the basic functional units of a simple computer.
b) Explain the representations of floating point numbers in detail.

2. a) List various states of an instruction cycle.
b) Explain various addressing modes.

3. Explain in detail about nanoprogramming.

4. Explain the following:
i) Array Processors.
ii) RISC pipeline.

5. a) Explain DMA controller with a neat sketch.
b) Give at least six status conditions for the setting of individual bits in the status register of an asynchronous communication interface.

6. a) Describe about serial communication in detail.
b) Explain about IEEE1394 in detail.

7. a) Describe the various characteristics of multiprocessors.
b) What is cache coherence? Explain.

8. Explain in detail about RISC.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A system of 5 wheel loads 80 kN, 140 kN, 160 kN, 50 kN and 40 kN crosses a beam of 15m span with the 80 kN load leading. The distances between the loads are 2.4m, 3m, 2.4m and 1.6m respectively. Find the absolute maximum B.M.

2. a) Sketch the influence line for the BM, SF at mid span of a double overhanging beam of span between the supports "L" and each overhang is "a". Using these diagrams find the BM at mid span when a UDL of intensity "w" is applied on the entire length of the beam.

b) Sketch the influence line diagram for the axial force in the top chord and bottom chords of 3rd panel of an N-type simply supported truss. Truss has 5 bays of each 6m length and height 8m.

3. Analyse the continuous beam shown in Fig.1 using Moment distribution method and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

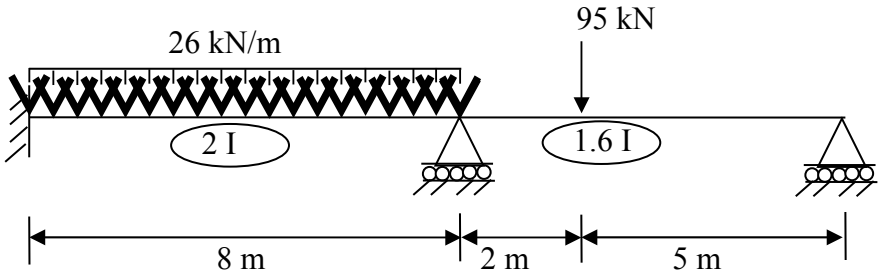

Fig.1

4. Analyze the continuous beam shown in Fig.2, using Slope-Deflection method and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

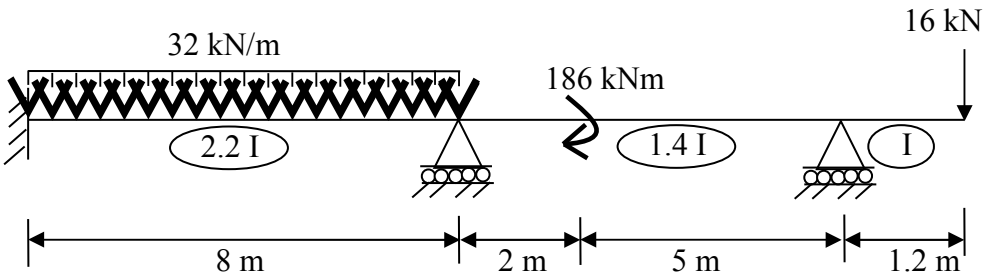

Fig.2

5. Sketch the BMD of the frame shown in Fig.3, use Kanis method. AB=10m; BC=6m; and CD = 10m. UDL is 30kN/m. EI of members is same.

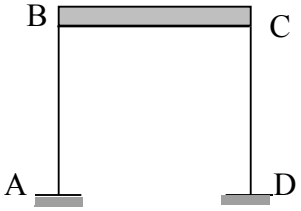

Fig.1

Fig.3

6. Calculate the vertical deflection at the point E for the truss shown in Fig.4. All the members have equal cross-sectional areas of 1255 mm^2 and the modulus of elasticity of members = 203 GPa.

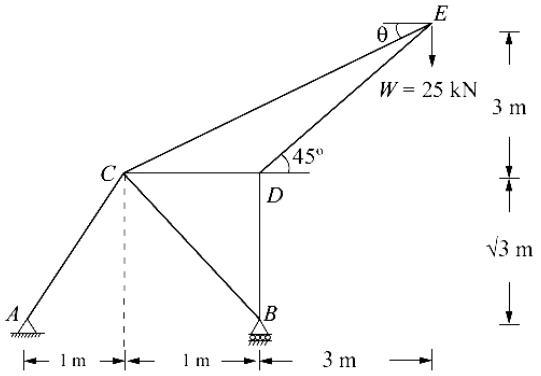

Fig.4

7. Determine the deflection and slope at the free end C of a frame ABC shown in Fig.5. UDL is 10kN/m, Horizontal load is 10kN. Column height is 6m, girder length 3m.
EI is same for all members.

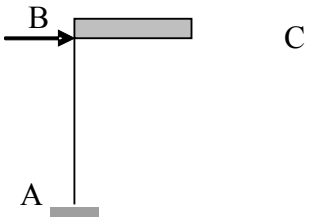

Fig.4

Fig. 5

8. Analyse the frame shown in Fig.6 using Cantilever method. Draw the bending moment diagram and sketch elastic curve. Cross-sectional area of all columns is equal.

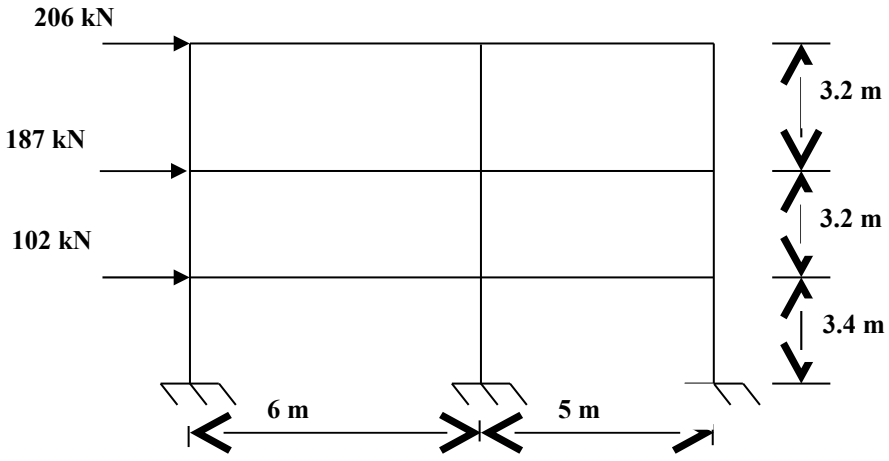

Fig. 6

CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the hydrologic cycle with a neat sketch. Describe briefly the sources of hydrological data in India.

b) Isohyets due to a storm in a catchment were drawn and the details are tabulated as below:

Isohyets (cm)	Area (Sq.km)
Station - 12.0	30
12.0 - 10.0	140
10.0 - 8.0	80
8.0 - 6.0	180
6.0 - 4.0	20.

Determine the average precipitation due to storm in the catchment.

2. a) Describe the principle of working of Symon's non-recording rain gauge with a neat sketch.

b) The average annual rainfalls in cm. at 4 existing rain gauge stations in a basin are 105, 79, 70 and 66. If the average depth of rainfall over the basin is to be estimated within 10% error, determine the additional number of gauges needed.

3. A seven hour storm produced the following rainfall intensities (in mm/h) at half an hour intervals over a basin of area of 1830 km^2. 4, 9, 20, 18, 13, 11, 12, 2, 8, 16, 17, 13, 6 and 1. If the corresponding observed runoff is 36.6 million m^3, estimate the **Ø**-index for the storm.

4. a) What is runoff? What are the various components of runoff? Describe briefly.

b) Explain the various rainfalls - runoff relationships.

5. a) Why is base flow separated from total runoff? Describe any two methods of separating the base flow from the total runoff.

b) Given below are the ordinates of a 4h unit hydrograph of a basin in m^3/s at one hour intervals.

4, 25, 44, 60, 70, 61, 52, 45, 38, 32,
27, 22, 18, 14, 11, 8, 6, 4, 2, 1.

What is the area of the basin?

6. a) The mean annual flood of a river is 600 m^3/s and the standard deviation of the annual flood time series is 150 m^3/s. What is the probability of a flood of magnitude 1000 m^3/s occurring in the river within next 5 years? Use Gumbel's method and assume the sample size to be very large.

b) Describe the Muskingum method of routing an inflow hydrograph through a channel reach. Assume the values of the coefficients K and x for the reach are known.

7. a) Distinguish between

i) Hydraulic conductivity and intrinsic permeability.

ii) Specific yield and storage coefficient.

b) Determine the yield from a 30cm diameter well under a drawdown of 10m in the well, if the radius of influence and hydraulic conductivity are 150m and 5m/day respectively. The aquifer is unconfined with a thickness of 60m.

8. a) A 30 - cm well completely penetrates an unconfined aquifer of saturated depth 40m. After a long period of pumping at a steady rate of 1500lpm, the drawdown in two observation wells 25m and 75m from the pumping well were found to be 3.5m and 2.0m respectively. Determine the transmissivity of the aquifer. What is the drawdown at the pumping well?

b) Explain how the yield of an open well can be determined using recuperation test.

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CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the phenomena of formation and transportation of soils.
b) An undisturbed sample obtained from field weighed 18 kN and its volume was 0.98m^3. The dry density of the sample was 15.4 kN/m^3 and the specific gravity of solid is 2.70. Determine i) water content ii) void ratio iii) saturated unit weight.

2. a) Define the terms: i) liquid limit ii) shrinkage limit iii) relative density iv) toughness index v) sensitivity.
b) The sieve analysis and consistency limit tests conducted on a sample gave the following results. Percentage passing 4.75mm sieve = 82, percentage passing 0.075mm sieve = 9, D_{10} = 0.11mm, D_{30} = 0.45mm, D_{60} = 1.12mm, LL = 22%, PL = 12%. Classify the soil according to Indian Standard Classification system.

3. a) Discuss the factors affecting the permeability of soils. State the limitations of Darcy's law.
b) The sub soil at a site consists of a fine sand layer lying in between a clay layer at top and a silt layer at bottom. The coefficient of permeability of the sand is 100 times that of clay and 20 times that of silt while the thickness of the sand layer is one-tenth that of clay and one-third that of silt. Find out the equivalent coefficient of permeability of the deposit in directions parallel and perpendicular to the bedding planes in terms of the coefficient of the clay layer.

4. a) A stratified soil deposit consists of two layers. The top layer is 2.5 m thick having a bulk density of 17 kN/m^3 and the bottom layer is 3.5 m thick having a saturated density of 21 kN/m^3. The water table is at a depth of 3.5 m from the surface and the zone of capillary saturation is 1m above the water table. Draw the diagrams showing the variation of total, neutral and effective stresses.
b) Discuss properties and uses of a flow net.

5. a) Explain in detail the procedure of construction of Newmark's influence chart. How is it used to determine the induced stresses due to loaded areas of irregular shape?
b) The four legs of a transmission tower form in plan a square of side 8m and together carry a total load of 200 kN. Compute the increase in vertical stress at a depth of 4m vertically below a leg and vertically below the centre of square assuming the legs to transmit point loads.

6. a) Describe standard Proctor test and modified Proctor test. How would you decide the type of the test to be conducted in the laboratory?
b) What are the different methods of compaction adopted in the field? How would you select the type of roller to be used?

7. Explain the following terms: i) Coefficient of compressibility ii) Coefficient of volume change iii) Normally consolidated soil iv) Over consolidated soil v) Under consolidated soil vi) Secondary consolidation

8. a) Explain the following terms:
i) Critical void ratio ii) Sensitivity iii) Liquifaction iv) Pore pressure coefficients
b) A cylindrical specimen of saturated soil fails under an axial stress 150 kN/m^2 in an unconfined compression test. The failure plane makes an angle of 52°with the horizontal. Calculate the cohesion and angle of internal friction of the soil.

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CODE No.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Engineering Geology, Geophysics, Structural Geology, Hydrogeology and add a note on their significance in civil engineering.
b) Define processes of Chemical Weathering with examples.

2. Describe different properties of minerals and how hardness and fracture properties of minerals affect the strength of rocks.

3. What are primary rocks? How are they classified. Discuss the textures and structures of primary rocks. Describe fully any two primary rocks giving their physical properties, mineral composition, engineering properties and petrogenesis.

4. Write about classification of folds with neat sketches and how you take up construction of roads, tunnels and reservoirs in folded structures.

5. What is a seismic vulnerability? Explain different seismic zones of India. What safe measures will you consider in building constructions?

6. Define the geophysics and explain the various geophysical methods. Define the methods of interpretation in electrical resistivity survey.

7. What is a dam? Write geological investigations required for different types of dams.

8. Explain the following.
i) Significance of water table in Tunneling.
ii) Tunnel Support systems.
iii) Geological problems encountered in hard and soft rocks.
iv) Classification of tunnels based on geometry.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the turn on and turn off times of a thyristor.
b) Explain static characteristics of a thyristor with neat sketches.

2. a) With the help of a neat diagram, explain the two transistor analogy of an SCR.
b) With the help of neat circuit diagram and associated waveforms, explain the operation of Resistance firing circuit.

3. a) Write short notes on protections schemes against dv/dt and over voltages.
b) A SCR circuit operates from 300V dc supply, has series inductance of 4μH. A resistance of 4Ω and capacitance of 0.2μF is connected across the SCR. Calculate the safe dv/dt and di/dt ratings.

4. a) Explain the effect of freewheeling diode in rectifier circuits.
b) A single phase semi-converter delivers power to RLE load with R=5 ohms, L=20mH and E=50V. The ac source voltage is 230V, 50Hz. For continuous conduction, find the average value of output current for a firing angle delay of 45 deg.

5. a) Explain the effect of source inductance on the performance of a 3-ϕ full controlled bridge converter circuit?
b) Derive an expression for output voltage of a 3-**ϕ**, full controlled bridge converter circuit by considering the following factors: (i) Overlap angle, (ii) Source inductance.

6. Explain the principle of operation of single phase voltage controller with RL load. Draw necessary waveforms. Derive the expression for output voltage and current.

7. Explain principle of operation of Morgans chopper with neat sketches and its applications.

8. Discuss the working of a single-phase parallel inverter and its commutation process with neat circuit diagram and necessary wave forms.

CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive an expression for chording factor of an alternator.
b) Calculate the rms value of induced EMF per phase of a 10 pole, 3-phase, 50Hz alternator with 2 slots/pole/phase and 4 conductors per slot. Assume coil span of 150 electrical degrees. Flux per pole has a fundamental component of 0.12Wb and a third harmonic component of 20% of the fundamental. What is the value of line-line EMF?

2. a) What is armature reaction? Explain the armature reaction for different power factor of loads?
b) A star connected 3-phase alternator has an induced EMF of 400V between the lines. Due to the presence of third harmonic component, the phase voltage is 244V.
i) Find the value of third harmonic voltage in the machine.
ii) A 3 - phase 10 ohm resistance connected in star are connected across the lines with neutrals tied together. Find line current.

3. a) With neat diagrams explain determination of regulation by synchronous impedance method.
b) A 3-phase synchronous generator has per phase direct axis synchronous reactance of 1.0pu and a quadrature axis synchronous reactance of 0.65pu. Draw the phasor diagram of the machine when operating at full load at a p.f of 0.8 lagging and estimate from there
i) the load angle ii) pu no-load emf.
Neglect armature resistance.

4. a) In what respect is the operation of an alternator on infinite bus bar different from parallel operation of two alternators? What is the effect of change in excitation and change in mechanical power input on operation of an alternator on infinite bus?
b) The speed regulation of two 500 KW alternators A and B running in parallel are 100% to 104% and 100% to 105% from full load to no load respectively. How will the two alternators share a load of 800 KW and also find the load at which one machine ceases to supply any portion of the load?

5. a) Explain the construction and principle of operation of Synchronous motor. Also explain why it will not run at other than synchronous speed.
b) A 2300 V three phase star connected synchronous motor has synchronous impedance of (0.2+j2.2) ohms per phase. The motor is operating at 0.7 p.f. leading with line current of 200A. Determine back EMF per phase.

6. Draw and explain the slip - torque characteristics of the following induction motors.
i) Capacitor start - Capacitor run ii) Split - phase

7. a) Explain principle and operation of a A.C. series motor with neat sketch.
b) Explain principle and operation of reluctance motor.

8. Explain following:
i) Synchros. ii) Servomotors. iii) Applications of stepper motor.

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CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the expression for capacitance of an unsymmetrical three phase system regularly transposed.
b) What is the effect of ground on transmission line capacitance?

2. A conductor is composed of seven identical copper strands, each having a radius **r**, find the self GMD of the conductor

3. Explain the terms surge impedance, surge impedance loading and velocity of propagation of waves with respect to the transmission lines.

4. Given an RL circuit with a sudden 50 Hz sinusoidal voltage applied where R = 20 ohms, L = 0.36H and voltage V = 220V.
i) The switch is closed at such a time as to permit maximum transient current. What is the instantaneous value of V upon closing the switch?
ii) What is the maximum value of current in part (i)?
iii) Let the switch be closed so as to yield minimum transient current. What instantaneous value of V and α corresponding to this instant of closing the switch? Justify.

5. a) Explain the theory of symmetrical components.
b) What are the differences between symmetrical components of Positive, Negative and Zero phase sequence? Describe.

6. What are the methods to improving the string efficiency with neat diagrams?

7. a) What is sag and why it disadvantageous to have either too low or too high and how do you calculated the sag of conductor?
b) An overhead line has a span of 200 meters between level supports. The conductor has a cross-sectional area of 1.29cm^2 and weight 1.17kg/m and has a breaking stress of 4218kg/m^2. Allowing a wind pressure of 122kg/m^2, calculated the sag for a factor of safety of 5.

8. a) By means of a diagram describe how inner sheath grading is provided in underground cables.
b) A cable has been insulated with two insulating materials having permittivity of 4 and 2.5 respectively. The inner and other diameters of the cable are 2.2cm and 7 cm. If the dielectric stress is 40 k v/ cm, calculate the radial thickness of each insulating layer and the safe working voltage of the cable.

CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) A two stage steam turbine receives steam at 38 bar and 350°C. The expansion in the first turbine is carried out until the steam is just dry saturated. Before entering the second turbine the steam is reheated at constant pressure to original temperature of 350°C. The steam expands in the LP turbine to a condenser pressure of 0.03 bar. Calculate: i) work output in kJ/kg. ii) heat supplied per kg of steam. iii) specific steam consumption. iv) the cycle efficiency. The process of expansion may be considered isentropic and feed pump work neglected.

b) What is the concept of mean temperature of heat addition? How it can be varied with reheat and regeneration processes?

2. a) Explain with neat sketches, the construction and working of any two high pressure boilers.

b) How much air is used per kg of coal burnt in a boiler having chimney of 32.3m height to create a draught of 19mm of water column when the temperature of flue gases in the chimney is 370°C and the temperature of the boiler house is 29.5°C?

3. a) Derive an expression for the maximum discharge through steam nozzle.

b) What do you mean by supersaturated flow? Explain with the help of h-s diagram.

4. a) Steam with absolute velocity of 300 m/s is supplied through a nozzle to a single stage impulse turbine. The nozzle angle is 25°. The mean diameter of the blade rotor is 1m and it has a speed of 2000 r.p.m. Find suitable blade angles for zero axial thrust. If the blade velocity co-efficient is 0.9 and the steam flow rate is 10 kg/s, calculate the power developed.

b) What is compounding of a turbine? List out different compounding methods.

5. a) Write a short note on 'bleeding of steam turbines'.

b) Explain the State point locus and reheat factor.

6. a) How will you classify condensers? In what respect a jet condenser differs from a surface condenser.

b) Write down main sources of air in condensers.

7. a) Compare the maximum work delivered by an air craft gas turbine which works with two stage compression with inter cooling. The compressor pressure ratio is 4 and the temperature limit is 1000K for the given ambient condition 1 bar and 301K. If the temperature and pressure at 6000m altitude is -25°C and 0.5 bar, find the percentage change in network output, efficiency and exhaust gas temperature if volume flow rate is 2.5 m^3/s.

b) Explain the importance of regeneration in enhancing the performance of gas turbine.

8. a) Explain the working principle of a turbo jet engine with a neat sketch.

b) State fundamental differences between jet propulsion and rocket propulsion.

CODE No.:10BT50303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

MACHINE TOOLS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about chip formation mechanism and discuss various types of chips.
b) In an orthogonal turning operation with a tool of rake angle 10^0 the following data is observed.
Chip thickness =0.3 mm, Horizontal component of cutting force=1290N,
Vertical component of cutting force=1650N.
Determine shear angle, coefficient of friction, friction angle and resultant cutting force.

2. a) Explain the methods used for the generation of threads on a lathe.
b) Briefly explain with neat sketches, the types of work holding devices that are commonly employed in automatic lathes.

3. a) Distinguish between shaper, planner and a slotter.
b) With the help of neat sketch, explain any quick return motion mechanism of shaper.

4. a) Sketch and describe the essential elements of a twist drill.
b) Distinguish between drilling, boring counter boring and counter sinking operation.

5. a) Explain the applications and differences of the following with reference to milling:
i) Straddle milling.
ii) Gang milling.
b) What are the different types of indexing? Discuss briefly.

6. a) Why balancing is required in grinding? Suggest some methods for balancing a grinding wheel.
b) What are the different artificial abrasives used in grinding wheel. What are their advantages?

7. a) With the help of neat sketch, explain the horizontal pull broaching operation.
b) What is lapping? Explain the following lapping processes with the help of neat sketches.
i) Internal cylindrical lapping
ii) External cylindrical lapping.

8. a) Discuss the principles of jigs and fixtures design.
b) List the advantages of jigs and fixture in mass production.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

DESIGN OF MACHINE ELEMENTS - I

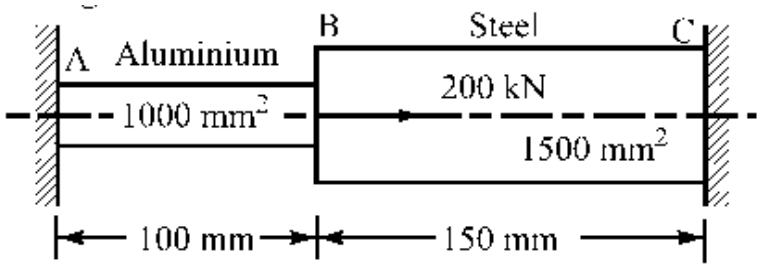
[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify the various types of Machine Design.
b) What is the procedure adopted in the design of Machine elements.

2. A composite bar made up of aluminum bar and steel bar, is firmly held between two unyielding supports as shown in Fig.



An axial load of 200kN is applied at B at 47°C. Find the stresses in each material, when the temperature is 97°C. Take E_a = 70 GPa ; E_s = 210 GPa ; α_a = 24 × 10-6/°C and α_s = 12 × 106/°C.

3. A steel rod of circular cross section and of length 2m is acting as a cantilever beam. It is loaded with appoint load at its free end that varies from 250N to 500N. Determine the diameter of the rod, if endurance limit and the yield point of the material are, respectively, 155MPa and 360MPa.

4. Design the longitudinal joint for a 1.25m diameter steam boiler to carry a steam pressure of 2.5 N/mm². The ultimate strength of the boiler plate may be assumed as 420MPa, crushing strength as 650MPa and shear strength as 300MPa. Take the joint efficiency as 80%. Sketch the joint with all the dimensions. Adopt the suitable factor of safety.

5. a) What is meant by bolts of uniform strength? Mention the practical applications of such bolts.
b) A mild steel cover plate is to be designed for an inspection hole in the shell of a pressure vessel. The hole is 120mm in diameter and the pressure inside the vessel is 6N/mm². Design the cover plate along with the bolts. Assume allowable tensile stress for mild steel as 60MPa and for bolt material as 40MPa.

6. What is the difference between a cotter and key? Why a single taper is provide in cotter and not on both sides? Discuss the advantages and limitations of cotter joint.

7. a) Distinguish between pin, axle and shaft.
b) A shaft supported at the ends in ball bearings carries a straight tooth spur gear at its mid Span and is to transmit 7.5 kW at 300 rpm. The pitch circle diameter of the gear is 150mm. The distances between the centre line of bearings and gear are 100mm each. If the shaft is made of steel and the allowable shear stress is 45MPa, determine the diameter of the shaft. Show in a sketch how the gear will be mounted on the shaft; also indicate the ends where the bearings will be mounted ? The pressure angle of the gear may be taken as 20°.

8. Design and draw a protective type of C.I flange coupling for a steel shaft transmitting 15 kW at 200rpm and having an allowable shear stress of 40MPa. The working stress in the bolts should not exceed 30MPa. Assume that the same material is used for shaft and key and that the crushing stress is twice the value of its shear stress. The maximum torque is 25% greater than the full load torque. The shear stress for C.I is 14MPa.

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CODE No.:10BT50305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define planning. Explain the steps involved in planning.
b) Discuss the significance and limitations of planning.

2. a) Explain the matrix approach for selection of plant location with an example.
b) Classify the production systems with respect to variety and quantity they produce and explain their characteristics.

3. a) Differentiate between outline process chart and flow process chart.
b) Develop a man-machine chart with a suitable example.

4. a) State and explain various duties of stores manager.
b) Explain the procedure involved in purchasing.

5. a) What are the check sheets? Explain the salient features of atleast two types of check sheets.
b) Explain the following double sampling plan with a neat flow chart.
N=1000, n_1=50, c_1=0, n_2=50, c_2=3. State its merits and demerits.

6. a) How preventive maintenance is better than corrective maintenance? Explain.
b) Define the term reliability. What did you understand justify with an example?

7. a) How entrepreneurship is helpful for Indian economy?
b) Discuss the scope of engineering ethics.

8. a) Explain various methods of job evaluation.
b) Explain salient features of industrial disputes act.

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms:
   i) Patterns
   ii) Radiation Intensity
   iii) Beam efficiency
   iv) Directivity and Gain
   v) Antenna aperture.
   b) Explain the radiation mechanism.

2. a) Explain the radiation resistance of Quarter wave monopole.
   b) Calculate the effective length of λ/2 antenna. Given R_r=73Ω, $(A_e)_{max} = 0.13\lambda^2$ and η=120π.

3. a) What is pattern multiplication? Illustrate the pattern multiplication with typical example.
   b) Derive the expression for Bandwidths of Broad side array and End Fire array.

4. a) Derive the expression for the input impedance of a folded λ/2 dipole in terms of the input impedance of a center fed λ/2 dipole. How the input changes if at all, when the unfed limb is of thicker wire than the fed limb?
   b) Distinguish between Sectoral, Pyramidal and Conical Horns with neat sketches. List out their utility and applications.

5. a) Explain about salient features of Microstrip Antennas.
   b) What are the advantages and limitations of Microstrip Antennas?

6. a) Discuss about nonmetallic dielectric lens antenna. Explain why zoning is used in Lenses.
   b) Explain the method of measuring the Beam width of the radiation pattern.

7. a) Derive the expression for field strength in case of space wave propagation.
   b) What is signal fading? List the various types of fading and explain.

8. a) Explain the refraction and reflection of sky waves by Ionosphere.
   b) Explain Skip distance and MUF what are the relation between MUF and Skip distance.

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of a cascade differential amplifier.
b) Derive the voltage gain of a dual input balanced output differential amplifier.

2. a) Define the following parameters to an op-amp.
i) Input bias current ii) Input offset current
iii) Input offset voltage iv) Slew rate
b) Discuss the need of a level shifting network. Describe any two level shifting networks giving their merits and demerits.

3. a) Construct a circuit to realize $V=V_1 + V_2 - V_3$ using op-amp and prove.
b) Explain how an op-amp can be used as an integrator.

4. a) Explain the working principle of monostable multivibrator by using 555 IC with a neat block diagram.
b) How 555 IC astable multivibrator can be used as voltage controlled oscillator?

5. a) What do you mean by Sallen Key filter? Explain.
b) Design a first order Butterworth low pass filter having upper cutoff frequency of 1.5KHz.

6. a) Explain the first-order low pass filter and also sketch its frequency response
b) Design a LPF with Cut-off frequency f_C=1KHz, R_0= 600Ω.

7. a) Draw and explain the principle of operation of single and dual slope ADCs.
b) Give the standard DAC and ADC specifications with the normal values.

8. a) Draw the circuit diagram of an improved sample and hold configuration using operational amplifier and explain its working.
b) Draw the schematic diagram of IC1496 and explain its operation.

CODE No.:10BT50404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Design a 4-input CMOS OR-AND-INVERTER gate. Draw the logic diagram and function table.
b) Explain in detail about CMOS dynamic electrical behavior.

2. Explain the term propagation delay and describe how it will effects the speed of the circuit and explain it with a suitable example.

3. a) Explain VHDL design flow.
b) Explain various data types supported by VHDL. Give the necessary examples.

4. a) What are various types of objects in VHDL? Explain.
b) Explain concept of libraries in VHDL.

5. Design a 16-bit ALU using 74X381 and 74X182 IC's. Implement VHDL source code using data flow style for the same.

6. Explain the operation of floating - point encoder and write a VHDL code for the corresponding.

7. a) Distinguish between latch and flip-flop. Show the logic diagram for both. Explain the operation with the help of function table.
b) Design a 3-bit LFSR counter using 74X194. List out the sequence assuming the initial state is 111.

8. a) Explain in detail about DRAMS.
b) Explain in detail about:
i) Standard SRAM
ii) Synchronous SRAM.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering,Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State the Coulomb's law in SI units and indicate the parameters used in the equation.
b) Explain about different charge distributions with an example.

2. a) Explain Linear, Isotropic and Homogeneous Dielectrics.
b) Derive an expression for energy stored in a capacitor.

3. a) Define Lorentz force equation and explain its significance.
b) State Ampere's circuital law. Specify the conditions to be met for determining magnetic field strength H, based on Ampere's circuital law.

4. a) Express all the Maxwell's Equations in various forms and give their word statement.
b) What do you mean by inconsistency in Ampere's law? Explain with suitable derivation.

5. a) Define phase velocity, and group velocity. Describe them with suitable examples.
b) Derive the propagation characteristics of EM waves in good dielectrics.

6. a) Derive expression for Reflection and Transmission coefficients of an EM wave when it is incident normally on a dielectric.
b) A plane wave traveling in free space has an average Poynting vector of 5 watts/m^2. Find the average energy density.

7. a) Explain about nuclear electromagnetic.
b) Distinguish natural and man-made EMI sources.

8. Write short notes on
i) Grounding.
ii) Cable shielding.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain the following notations.
i) Asymptotic Notation
ii) Omega notation
iii) Theta Notation

2. a) Differentiate between depth first search and breadth first traversals.
b) Explain the properties of strongly connected components.

3. a) Explain the working of binary search algorithm using divide-and-conquer with an example.
b) Explain the quick sort algorithm for the list: 35, 28, 59, 21, 49, 62, 11, 18, 93.

4. a) Explain the following terms:
i) Feasible solution ii) Optimal solution
b) Write procedure for Greedy Knapsack (P,W,M,X,N) where P and W contains profits and weights, M is Knapsack size and X is the solution vector.

5. a) Compare and contrast the Greedy algorithm with dynamic programming method.
b) Explain the Travelling Sales Persons problem.

6. a) Compare backtracking with branch and bound method.
b) Write notes on Hamiltonian cycles.

7. a) How Knapsack problem is solved using Branch and Bound method? Explain.
b) Explain the principles of LIFO Branch and Bound method.

8. a) Explain NP class problem with suitable example.
b) Differentiate between NP complete and NP-hard.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

DATABASE MANAGEMENT SYSTEMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain the Levels of Abstraction in a Database Management System
b) Explain the different roles of database administrators, application programmers and end users of a database.

2. A university database contains information about professors (identified by social security number - SSN) and courses (identified by coursed). Professors teach courses; each of the following situations concerns the Teaches relationship set. For each situation, draw an ER diagram that describes it (No constraints)
i) Professors can teach the same course in several semesters, and only the most recent such offering needs to be recorded.
ii) Every professor must teach some course.

3. a) How is a view created and dropped? What are the problems that are associated with updating of views?
b) Consider the following relations and write relational algebra queries:
Employee (Fname, SSN, Salary, Super-SSN, DNo);
Works ON (ESSN, PHNO, hours);
Department (Dname, Dnumber, Mgr-SSN);
Dependent (ESSN, Dependentname);
i) Retrieve the highest salary paid in each department
ii) Retrieve the name of managers who have more than two dependents

4. a) Explain having, group by and distinct clauses in SQL.
b) Consider the following schema:
suppliers(sid:integer, sname:string,address:string)
parts(pid:integer,pname:string,color:string)
catalog(sid:integer,pid:integer,cost:real)
Write the following SQL queries
i) Find the pnmaes of parts for which there is some supplier
ii) Find sames of suppliers who supply every green part

5. a) Discuss about lossless join decomposition.
b) Explain the 4NF and 5NF.

6. a) Discuss about lossless join decomposition.
b) What are properties of transaction? Explain them.

7. a) Explain in detail how the deadlocks are handled.
b) Write short notes on remote backup systems.

8. a) Explain various directory organizations.
b) What is the order of B+ tree? Describe the format of nodes in a B+ tree and give an example.

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CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

OPERATING SYSTEMS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) List out the various services provided by an operating system.
b) What is a system call? Explain the various types of system calls.

2. a) State and explain different process states with diagram.
b) Explain the various process scheduling concepts.

3. What is dining-philosophers problem? Devise an algorithm to solve this problem.

4. What is a deadlock? Discuss the deadlock avoidance techniques in detail.

5. a) What is virtual memory?
b) Consider the following page reference string:
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.
How many page faults would occur for the following replacement algorithms, assuming five frames? Remember all frames are initially empty, first unique pages will all cost one fault each.
i) LRU replacement ii) FIFO replacement iii) Optimal replacement

6. Compare the file system structure in Unix with Windows operating system.

7. What is disk scheduling? Explain the different disk scheduling algorithms with examples.

8. Explain Access control and Revocation of Access rights.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expression for the resistance and capacitance for gas system.
b) Differentiate between batch and continuous process.

2. a) Explain in detail about single speed floating control with suitable example.
b) Discuss about two-position control with example. Why differential gap is used in the system?

3. a) Explain the force type pneumatic P controller with neat sketch.
b) Explain the electronic type P controller with a neat sketch.

4. a) Explain in detail about IAE, ISE, ITAE evaluation criteria.
b) Discuss continuous oscillation method for control loop tuning.

5. a) Explain current to pressure converter with a neat diagram.
b) Discuss about any one type of electrical actuator with neat diagram.

6. a) Explain the cavitation and flashing phenomena in control valve with necessary sketch. Suggest the elimination schemes.
b) Explain the working principle of diaphragm valve with neat sketch and also list out its merits.

7. a) Write short notes on inferential control.
b) The transfer functions for a cascade control system are given as; $G_{P1} = 1/[(5s+1)(2s+1)]$; $G_{P2} = 5/(S+1)$; $G_{C2} = 2$; G_{C1} is a PID controller ; $G_{M1} = 1/(10s+1)$ and $G_{M2} = 0.2$. Calculate the ultimate value of K_{P1} for primary controller for which simple feedback and cascade loop go into oscillation.

8. a) Write short notes on heat exchanger.
b) Explain a control scheme of binary distillation column.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the measurement of area, diameters and roughness.
b) Explain any one optical methods of measuring length and distance measurement.

2. a) Explain the principle, operation and application of Magnetostrictive transducer.
b) Explain the principle and operation of Stroboscope.

3. a) Explain how the low pressure is measured using manometer.
b) Explain the working principle of Knudsen gauge.

4. a) i) Explain the principle and operation of Electromagnetic type flow meter.
ii) A rotameter has been calibrated in l/min for water. It is to be used for metering brine solution of specific gravity is 1.15.For this purpose the density of the float has been changed from 2000 kg/m^3 to 2250 kg/m^3 without altering the shape and volume of the float. What correction factor should be introduced in the original scale in order to use the rotameter for the brine solution?
b) Explain the principle, working and applications of Laser Doppler Velocimeter.

5. a) Explain the principle and operation of Industrial Viscometer and list their applications.
b) Explain the principle and working of Load cell and Air pressure balance method.

6. a) How temperature scale has been standardized. What are fixed points and how they are used in temperature standards?
b) Discuss the principle of temperature measurement using RTD's.

7. a) Write short notes on float type level gauges.
b) Describe the capacitance type level gauging.

8. a) A LVDT output is recorded by a self balancing potentiometric recorder having its natural frequency of 10Hz and a damping ratio of 0.707.The LVDT is excited by 10V at 50Hz power supply. Calculate the maximum frequency of the displacement signal that can be recorded with an error of ± 2%.
b) Explain the principle and operation of Gyroscope and Microphone.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is Software engineering? Explain its Layered technology.
b) Explain Process assessment with neat diagram.

2. When emergency changes have to be made to systems, the system software may have to be modified before changes to the requirements have been approved. Suggest a model of a process for making these modifications which ensures that the requirements document and the system implementation do not become inconsistent.

3. Classify the following requirements into F for 'Functional', NF for 'non-functional', and X for 'should not be a requirement'. Justify your answer. If you need more information to provide the answer to one of these questions, indicate what else you need to know.
i) The system must use 128-bit encryption for all transactions
ii) If the alarm system is ringing, then the elevators (lifts) will proceed to the ground floor, open their doors and suspend further operations.
iii) The student information system will give output from all commands within one second. The system will use an array to hold the invoices.

4. Comment on the effects if, after a system study , the following observations are made:-
i) Design to requirement is not traceable in all cases
ii) Most of the components are developed by writing a fresh code
iii) There is a lack of use of standards
iv) The modular and component structure is too complex
v) Design does not cater for unforeseen circumstances arising out of data event and process.

5. Draw three flow graphs that have equal cyclomatic number but which seem intuitively to rank differently in terms of structural complexity. What actual structural attributes are contributing to "complexity" in your examples? Find hierarchical measures that capture these attributes.

6. Suggest a contingency action plan for the following risks:-
i) Project Manager may leave in the middle of the project
ii) System designer may have to leave for USA in three months
Funds budget may fall short by 15% in the last phase of cycle

7. a) What are different types of testing strategies for conventional software? Explain with examples.
b) What is meant by black box testing? What are different types of black box testing strategies like, graph based, equivalence partitioning and boundary value analysis?

8. a) One approach, which is commonly adapted to system testing, is to test the system until testing budget is exhausted and then deliver the system to customers? Discuss the ethics of this approach.
b) Using your own words, describe the difference between verification and validation. Do both make use of test case design methods and testing strategies?

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CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

COMPUTER GRAPHICS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the construction and functioning of the following input devices, keyboard, mouse and joystick.
b) Explain the basic operation of a direct view storage tube.

2. a) Generate all raster points on the line segments , if the two end-points are given as (20,30) and (60,70) using Bresenhams line drawing algorithm.
b) Explain the boundary-fill and polygon-fill algorithms.

3. a) Write the matrix representations of
i) translation ii) rotation iii) scaling transformation techniques
b) Explain about the shear and composite transformations.

4. a) Derive the window to view port transformations equations by first scaling the window to the size of the viewport and then translating the scaled window to the view port position.
b) Explain about 4-bit code address significance in Cohen-Sutherland algorithm.

5. a) Explain the properties and design techniques of Bezier curve.
b) Explain Gouraud shading. How does it create smooth shading?

6. a) Derive the perspective projection transformation matrix.
b) Explain the working process of 3D clipping.

7. a) How visibility surfaces of a polyhedron is determined using BSP tree method? Explain.
b) Explain area subdivision and octree methods.

8. a) Illustrate fractal and give any two examples of fractal in detail.
b) Express in detail the Hilbert's curve with appropriate examples.

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

PROCESS CONTROL

[Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define degrees of freedom. Discuss the elements of process dynamics.
b) Explain about the characteristics of liquid system.

2. a) With a neat diagram explain about Ziegler Nicholos method.
b) Explain about PD control scheme. Why integral is not used alone?

3. a) Discuss in detail about different flow measuring elements.
b) Explain in detail about:
i) pneumatic transmission
ii) electrical transmission.

4. a) Explain with a neat sketch, the working principle of a displacement type pneumatic proportional controller. Discuss the effect of adding negative feedback.
b) With necessary diagrams, describe a hydraulic integral controller. Explain how integral time can be adjusted.

5. a) Explain in detail about cascade control configuration with suitable example.
b) Explain:
i) electro pneumatic actuators
ii) control valve sizing

6. Discuss the following in detail:
i) Condenser vapors
ii) Fired heaters

7. a) Write short notes on chemical equilibrium and reaction rate.
b) Explain the stability of exothermic reactions.

8. Explain in detail about instrumentation and control relevant to cement industry.

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

SYSTEM SOFTWARE

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the function of segment and explain various categories of segments.
b) Distinguish between an .EXE and a .COM program.

2. a) Discuss in detail about various loops handling instructions with examples.
b) How can you use shift and rotate instructions for multiplying and dividing double word values? Explain.

3. Explain all different functions used in BIOS INT 21H for keyboard processing.

4. a) Write short notes on macro directives.
b) How can you pass an argument to the macros? Explain.

5. Explain in detail about the basic Macro Processor functions.

6. Explain in detail the features of the MASM assembler for Pentium system.

7. a) Explain in detail about basic loader functions.
b) With diagram explain how loading and calling of a subroutine is done using dynamic linking.

8. Write a short note on:
i) Various features that a basic text editor should posses.
ii) Interactive debugging systems

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

COMPUTER NETWORKS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the differences between a computer network and a distributed system?
b) What are the applications of computer networks?
c) How the Internet has evolved over the years?

2. Explain about Unguided media.

3. a) What is piggy backing?
b) What are stop and wait protocols?
c) Explain how 1-bit sliding window protocol works.

4. Discuss in detail about ALOHA.

5. a) Differentiate between Broadcast and Multicast.
b) Write short notes on IPV6.

6. a) Differentiate between UDP and TCP.
b) List out the functions of Transport Layer.

7. Explain HTTP? List out the various functions of HTTP protocol.

8. a) Give the traditional model for cryptography.
b) Explain Wi-Max.

CODE No.:14BT4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the flow of communication.	7 Marks
	b)	What is 'grapevine'? Is it always harmful? If not why?	7 Marks
		(OR)	
2	a)	Discuss the merits and demerits of assertive communication with suitable examples.	7 Marks
	b)	Illustrate the roles of a manager.	7 Marks

UNIT-II

3	Do organizations need non verbal communication for achieving success with different stakeholders? What makes you think so?	14 Marks
	(OR)	
4	Why has cross cultural communication assumed such importance in companies? Why do you think the cross cultural aspect of doing business is very important?	14 Marks

UNIT-III

5	Define memo. What are the different kinds of memos?	14 Marks
	(OR)	
6	Identify the main components of a business letter. When is “yours faithfully” used and when is “yours sincerely” used?	14 Marks

UNIT-IV

7	Discuss the strategies you recommend to start an 'introduction' of oral presentation.	14 Marks
	(OR)	
8	Discuss in detail how speaker's vocal techniques contribute to his oral presentation.	14 Marks

UNIT-V

9	a)	What is a Resume? What is its main function?	7 Marks
	b)	Discuss the features of a good Resume.	7 Marks
		(OR)	
10		What are the various types of interviews? How do you screen the job applicants?	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

PROFESSIONAL ETHICS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the three types of inquiry?	6 Marks
	b)	Debate on "should ethics be promoted or imposed" with suitable examples.	8 Marks
		(OR)	
2	a)	Why it is important to study the subject of professional ethics?	6 Marks
	b)	How did Gilligum view the three levels of moral development initiated by Kholbuerg?	8 Marks

UNIT-II

3	a)	What are the attributes of a profession?	6 Marks
	b)	Explain the vital role of consensus and controversy while considering moral autonomy in engineering ethics.	8 Marks
		(OR)	
4	a)	What are the pleasures offered by engineering?	6 Marks
	b)	Explain in detail the specific virtues of professional responsibility.	8 Marks

UNIT-III

5	a)	What is meant by "moral autonomy"?	6 Marks
	b)	What are the factors which may impede the flow of information for repeated mistakes in design?	8 Marks
		(OR)	
6	a)	What are the issues involved in maintenance?	6 Marks
	b)	Explain the concept of interest with examples from consulting engineers.	8 Marks

UNIT-IV

7	a)	Differentiate between collegiality and loyalty.	6 Marks
	b)	What is confidentiality and how will you maintain? Explain the same with suitable examples from defense research organization.	8 Marks
		(OR)	
8	a)	What is espionage? Explain the pros and cons.	6 Marks
	b)	What are occupational crimes? Explain the same with suitable examples from IT industry.	8 Marks

UNIT-V

9	a)	Discuss on safety. Explain, what safety measures are to taken by an engineer working in a deep ground mine.	6 Marks
	b)	Discuss the ethical principles adopted for protecting the environment.	8 Marks
		(OR)	
10	a)	Engineers in weapon development – Discuss.	8 Marks
	b)	Describe the ethics related to multinational corporations.	6 Marks

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

MANAGEMENT SCIENCE

[Civil Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are observations made by Henry Fayol on the basic functions of management? 7 Marks

b) Explain the features of cellular organization. What are its merits and demerits? 7 Marks

(OR)

2 a) Distinguish between Formal and Informal organizations. 7 Marks

b) Explain the contributions of F.W.Taylor in the area of scientific management and its utility for modern managers. 7 Marks

UNIT-II

3 The following table gives the data on the number of non-conformities in samples of 100 castings. Draw C-chart and obtain interference. 14 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No. of non conformitives	19	20	18	12	10	18	20	30	25	5	15	19	10	17	39	18	22	17	20	15

(OR)

4 a) Define inventory control. Discuss the objectives and functions of inventory control. 7 Marks

b) A company uses 10,000 units per year of an item. The purchase price is 1 Rupee per item. The ordering cost is 25 Rupees per order. The carrying cost per year is 12% of the inventory value. Find E.O.Q and the number of orders per year. 7 Marks

UNIT-III

5 a) What is Personnel Management? What are its features and functions? 7 Marks

b) Explain the selection process. 7 Marks

(OR)

6 Write short note on any TWO of the following 14 Marks

i) Maslow's theory of human needs
ii) McGregor's theory X and theory Y
iii) Herzberg's two-factor theory.

UNIT-IV

7 A project consists of eleven activities. The time estimates for the activities are given in table below:

Activity	Estimated duration (weeks)		
	Optimistic	Most likely	Pessimistic
1- 2	7	17	9
1-3	10	60	20
1-4	5	15	10
2-5	50	110	65
2-6	30	50	40
3-6	50	90	55
3-7	1	9	5
4-7	40	68	48
5-8	5	15	10
6-8	20	52	27
7-8	30	50	40

(i) Draw the network diagram for the project. 3 Marks

(ii) Determine the critical path. 4 Marks

(iii) Find the probability of project completion in 125 days. 7 Marks

(OR)

8 Discuss the role of entrepreneur in the economic development. 14 Marks

UNIT-V

9 What is JIT? How can a firm be profited by implementing JIT? 14 Marks

(OR)

10 What is an ERP? Discuss the influence of information technology on ERP. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Prove that F(n) = O(h(n)) where F(n) = O(g(n)) and g(n) = O(h(n)) and explain the same by clearly indicating the concepts. 14 Marks

(OR)

2 Show that $f_1(n) + f_2(n) = O(\max(g_1(n), g_2(n)))$ where $f_1(n)=O(g_1(n))$ and $f_2(n) =O(g_2(n))$ by clearly indicating the concepts. 14 Marks

UNIT-II

3 Write an algorithm for finding the strongly connected components of a directed graph and also analyze its time complexity. 14 Marks

(OR)

4 a) Explain when the quick sort is preferred to merge sort and vice versa. 7 Marks

b) Solve the Recurrence Relation for the choices of a=10, b=5 and F(n)=cn*n using substitution method. 7 Marks

UNIT-III

5 You are given a set of n jobs. Associated with each job i is processing time t_i and a deadline d_i by which it must be completed. A feasible schedule is a permutation of the jobs such that if the jobs are processed in that order, then each job finishes by its deadline. Define a greedy schedule to be one in which the jobs are processed in no decreasing order of deadlines. Show that if there exists a feasible schedule then all greedy schedules are feasible. 14 Marks

(OR)

6 By considering the complete graph with n vertices, show that the number of spanning trees in a n vertex graph can be greater than $2^{n-1} - 2$. 14 Marks

UNIT-IV

7 a) Write the backtracking algorithm for the sum of the subsets problem using the state space tree corresponding to the variable tuple size formulation. 7 Marks

b) Discuss the general method of branch and bound technique. 7 Marks

(OR)

8 a) How many colors are required to color the complete graph with k vertices? Illustrate. 7 Marks

b) Using branch and bound technique explain the 0/1 knapsack problem. 7 Marks

UNIT-V

9 a) Explain the classes of P and NP. 7 Marks

b) Explain the satisfiability problem and write the algorithm for the same. 7 Marks

(OR)

10 a) Explain the non-deterministic sorting and searching algorithms. 7 Marks

b) Explain the following: 7 Marks

i) The Clique problem. ii) The Vertex Cover problem.

CODE No.:14BT50101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

STRUCTURAL ANALYSIS - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A UDL of length 2.5m and intensity 25kN/m rolls across a girder of span 9.5 as shown in figure-1. Calculate the maximum negative and positive shear force and bending moment at a section 4.5m from the left support. 14 Marks

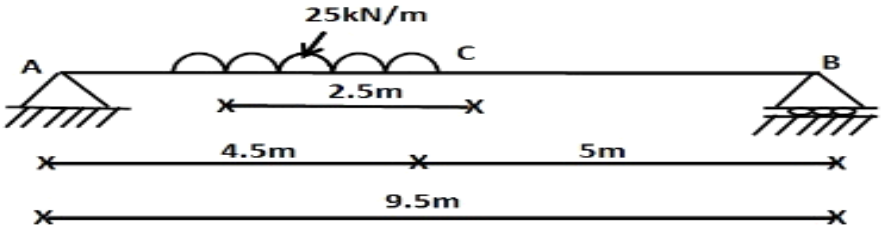


Figure-1

(OR)

2 Calculate the magnitude of shear at point A on the shown in figure-2 using an influence line diagram. 14 Marks

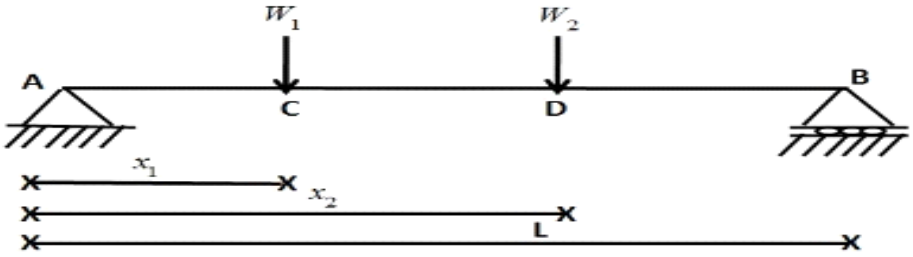


Figure-2

UNIT-II

3 Analyze the beam shown in figure-3 by moment distribution method and draw SF and BMD diagrams due to following support settlements 0.005 and 0.010 at A and C respectively. 14 Marks

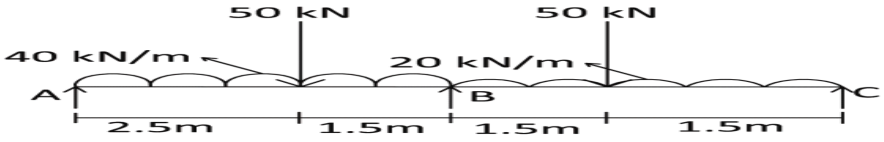


Figure-3

(OR)

4 Explain in detail about displacement method of analysis. Analyze the beam shown in figure-4 by moment distribution method and draw BMD. Assume EI is constant. 14 Marks

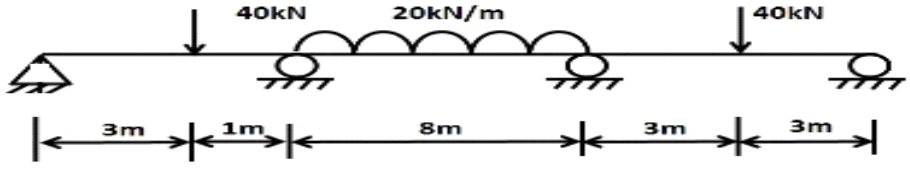


Figure-4

UNIT-III

5 Analyze the rigid frame as shown in figure-5 by Kani's method. 14 Marks

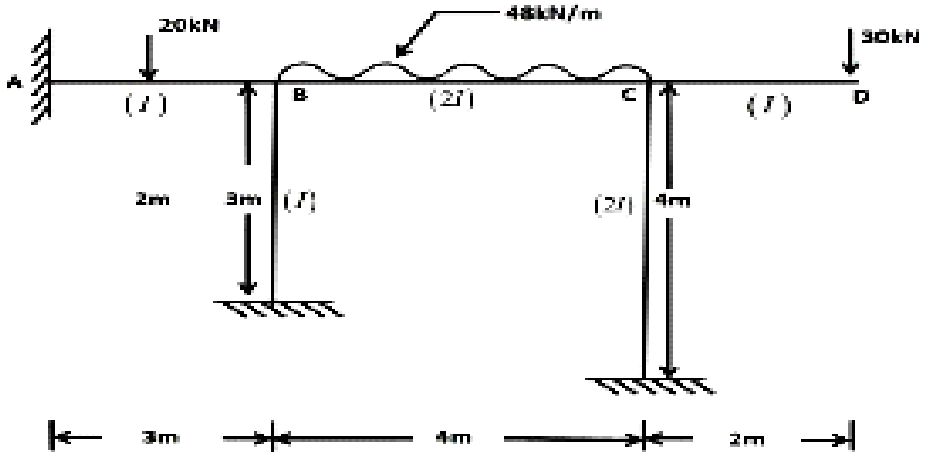


Figure-5

(OR)

6 Two point loads of 180kN and 250kNspaced at 5m apart, cross of a girder of 25m span from left to right with 180kN leading. Construct maximum shear force and bending moment diagrams starting the obsolete maximum values. 14 Marks

UNIT-IV

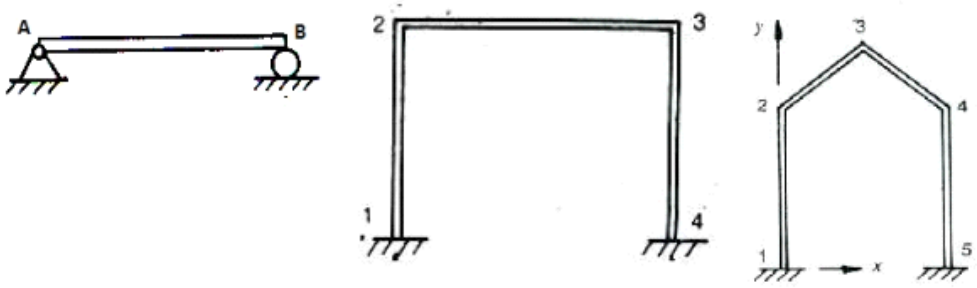
7 What is a Tube structure in tall buildings? Explain the various types of Tube structures in detail using sketches. 14 Marks

(OR)

8 Explain the analysis of a building frame subjected to horizontal forces using Portal method with the help of an example. 14 Marks

UNIT-V

9 Explain static and kinematic redundancy with examples. Determine static and kinematic redundancy for the following structures. 14 Marks



(OR)

10 Analyze the rigid frame shown in figure-6 by direct stiffness matrix method. 14 Marks

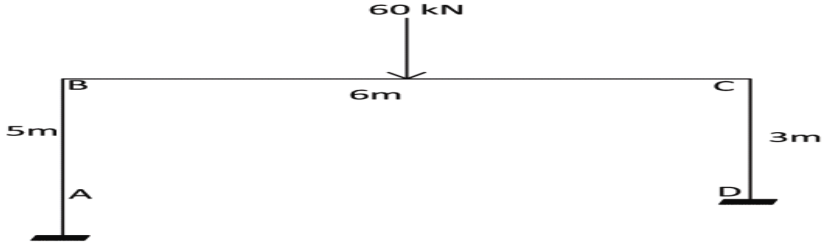


Figure-6

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

REINFORCED CEMENT CONCRETE STRUCTURES-I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Why does the code limit the compressive strength of concrete in structural design to 0.67 $f_{ck,}$ and not to f_{ck}?	7 Marks
	b)	What are the various steps involved in the construction of RC Structures?	7 Marks
		(OR)	
2	a)	What is meant by limit state? Discuss different 'limit states' to be considered in the reinforced concrete design.	10 Marks
	b)	What does it mean by balanced section as per working stress method? Explain with neat sketch.	4 Marks

UNIT-II

3		Design the necessary tension reinforcement for a reinforced concrete beam 300mm wide and 600mm deep with a clear span of 6 meters. The beam to carries a load of 8kN/m in addition to its own self weight. Use M20 grade concrete and Fe 415 steel.	14 Marks
		(OR)	
4		A rectangular reinforced concrete beam is simply supported on two 230mm thick and 5m. The beam has to carry a distributed load of 33kN/m, in addition to its own weight. Design the beam section for a maximum moment at mid span. Adopt M20 concrete and Fe 415 steel.	14 Marks

UNIT-III

5	a)	What is the difference between short and long columns?	7 Marks
	b)	Design a column for the following data: b = 300mm, D = 450mm, Pu = 1000kN Use M20 grade of concrete and Fe415 steel.	7 Marks
		(OR)	
6	a)	Write the IS code provisions for lateral ties.	7 Marks
	b)	Design a rectangular column 300mm **x** 600mm with the following data: Pu=1000kN, Mu=100kNm, M20 concrete and Fe415 grade steel.	7 Marks

UNIT-IV

7		Design a suitable footing for a column of size 300mm **x** 400mm. It carries an axial load of 1600kN. The safe bearing capacity of soil is 180kN/m^2. Use M20 and Fe415 grades of concrete and steel.	14 Marks
		(OR)	
8	a)	What are the types of footings?	7 Marks
	b)	Design the depth of footing for the following data: Pu = 1200kN, SBC = 200kN/m^2, use M20 and Fe415.	7 Marks

UNIT-V

9	Design a RCC floor slab for a room having inside dimensions 6m **x** 3.5m restrained an all the four edges if the super imposed service load is 4kN/m^2. The thickness of wall is 300mm.	14 Marks

(OR)

10	A simply supported RCC slab for a room of clear dimensions 3.5m **x** 9m width of supporting wall is 300mm. The live load on slab is 3.5kN/m^2 and floor finishes as 1.5kN/m^2. Design the slab using M20 and Fe415 grades of concrete and steel.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

WATER SUPPLY ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Discuss the various aspects to be considered while selection of a drinking water source. 7 Marks

b) Explain the effects of 7 Marks
i) Turbidity ii) Dissolved oxygen iii) Hardness.

(OR)

2 a) Using the data given below estimate the population for 2021. Use geometric increase and incremental increase methods and comment on their suitability. 7 Marks

1951	1961	1971	1981	1991	2001
2,25,000	3,41,000	4,22,000	5,91,000	7,25,500	9,80,000

b) What is an indicator organism? What is the criteria for selection of indicator organism? 7 Marks

UNIT-II

3 a) Discuss the various methods of distribution systems used in water supply schemes. 7 Marks

b) A small town with population 50,000 is to be supplied water by constructing a distribution reservoir. Using the data given below estimate the capacity of the distribution reservoir, (i) if pumping is done constantly at uniform rate and (ii) if pumping is done at constant rate between 8.00 to 16.00 hours. 7 Marks

07.00 – 08.00	30 % of daily supply
08.00 – 17.00	40 % of daily supply
17.00 – 19.00	25 % of daily supply
19.00 – 07.00	5 % of daily supply

(OR)

4 a) Derive an expression for the discharge correction factor while analyzing the pipe networks using Hardy-cross method. 7 Marks

b) Write a detailed note on distribution networks emphasizing their merits and demerits. 7 Marks

UNIT-III

5 a) With help of a schematic diagram, indicate the sequence of various units in a treatment plant to treat deep well water. 7 Marks

b) Present a detailed comparison between plain sedimentation and coagulant aided sedimentation. 7 Marks

(OR)

6 a) Assuming per capita demand as 135 lpcd and population as 800,000, design a RSF and state the assumptions used. 7 Marks

b) Describe the various types of chlorination indicating the applicability of each method. 7 Marks

UNIT-IV

7	a)	Explain with a neat sketch and with the chemical equations how hard water is softened in a zeolite softener.	7 Marks
	b)	Write about treatment methods for removal (i) Color. (ii) Iron and Manganese.	7 Marks
		(OR)	
8	a)	Briefly explain management of "Biological residues."	7 Marks
	b)	Write a note on "Adsorption with Activated Carbon."	7 Marks

UNIT-V

9	a)	Sketch a typical Stopcock and explain its functioning.	7 Marks
	b)	Present a general layout of water supply in multi-storey buildings.	7 Marks
		(OR)	
10	a)	Describe the precautions to be taken in laying pipelines in premises of buildings.	7 Marks
	b)	Sketch a connection from water main to building and explain.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the terms: 6 Marks
i) Adsorbed layer
ii) Soil structure
iii) Montmorillonite mineral.

b) A soil has a bulk unit weight of 20kN/m^3 at a water content of 16%. Calculate the porosity and degree of saturation if the specific gravity of solids is 2.65. Also find the air content and percentage of air voids present in it. 8 Marks

(OR)

2 a) Describe the procedure for the determination of liquid limit of soil by Casagrande method. 8 Marks

b) Classify the soil with following properties as per Indian Standard Classification system. Percentage passing 4.75mm sieve = 64, percentage passing 0.075mm sieve = 18, uniformity coefficient = 6, coefficient of curvature = 1.5, liquid limit = 30% and plastic limit = 19%. 6 Marks

UNIT-II

3 a) Explain the method of determining coefficient of permeability of fine grained soil. 8 Marks

b) Compute the average coefficient of permeability in directions parallel and perpendicular to the bedding planes of a layered soil deposit consisting of three layers of total thickness 3.4m. The top and bottom layers are each 0.7m thick. The values of coefficient of permeability for the top, middle and bottom layers are k, 2k and 3k respectively, where k = 15 x 10^{-4}cm/sec. 6 Marks

(OR)

4 a) Discuss the capillary phenomenon and quick sand condition. 6 Marks

b) At a construction site, a 3m thick clay layer is followed by a 4m thick gravel layer, which is resting on an impervious rock. A load of 25kN/m^2 is applied suddenly at the surface. The saturated unit weights are 19kN/m^3 and 20kN/m^3, for the clay and the gravel layers respectively. The water table is at the surface. Draw the total, neutral and effective stress variation diagram. 8 Marks

UNIT-III

5 a) Describe the contact pressure distribution below rigid and flexible footings in clay and sand. 8 Marks

b) A square footing 3m x 3m carries a total load of 2400kN. Determine the intensity of stress using Boussinesq's theory at a depth of 6m below the centre of the footing (i) assuming the load on the footing to act as a point load (ii) considering the footing is divided into four squares of 1.5m x 1.5m and the load on each square acts as a point load. 6 Marks

(OR)

6 a) Explain the effect of compaction on soil properties. 7 Marks

b) The following data is obtained from IS light compaction test. Volume of the mould = 1000cc. 7 Marks

Water content (%)	19.1	20.5	21.3	22.5	24.0
Weight of wet soil (gm)	1650	1725	1775	1790	1775

Calculate the optimum moisture content and maximum dry density.

UNIT-IV

7 a) Explain the types of soil deposits based on consolidation and the method for determination of pre-consolidation pressure. 6 Marks

b) A 5m thick saturated soil stratum has a compression index of 0.25 and coefficient of permeability 3.2×10^{-3}mm/sec. If the void ratio is 1.9 at vertical stress of $0.15N/mm^2$, compute the void ratio when the vertical stress is increased to $0.2N/mm^2$. Also calculate the settlement due to above stress increase and time required for 50% consolidation assuming single drainage. 8 Marks

(OR)

8 a) Explain the consolidation test conducted to plot void ratio-pressure curve. 9 Marks

b) The time required to reach 60% is 30 seconds for a sample of 10mm thick, tested in a laboratory under conditions of double drainage. How many years will the corresponding layer in field require to reach the same degree of consolidation if it is 10m thick and drained from one side only? 5 Marks

UNIT-V

9 a) State the advantages and limitations of direct shear test. 8 Marks

b) Describe pore pressure parameters. State its importance in shear strength of soils. 6 Marks

(OR)

10 The following are the results of a Triaxial test. Determine shear strength parameters. 14 Marks

Sample No	Cell Pressure (kN/m^2)	Deviator stress (kN/m^2)
1	50	350
2	100	440
3	150	530

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the hydrologic cycle with a neat sketch.	8 Marks
	b)	Describe the principle of working of a tipping bucket type recording rain gauge with a neat sketch.	6 Marks
		(OR)	
2	a)	Discuss the various practical applications of hydrology.	7 Marks
	b)	Explain the weather seasons of India with particular reference to south-west monsoon season.	7 Marks

UNIT-II

3	a)	Explain the evaporation process. What are the factors that affect the evaporation from a water body?	6 Marks
	b)	What is evapotranspiration? Discuss the various factors affecting evapotranspiration.	8 Marks
		(OR)	
4	a)	Define infiltration. Explain the difference between infiltration and infiltration capacity rate. What factors affect infiltration?	6 Marks
	b)	Explain the term 'infiltration indices' .What are the different infiltration indices? Explain.	8 Marks

UNIT-III

5	a)	What is double mass curve? Explain.	7 Marks
	b)	What is runoff and what are the various components of runoff?	7 Marks
		(OR)	
6	a)	Explain briefly the dilution method of flow measurement. Also list the qualities of a good tracer for use in dilution technique.	7 Marks
	b)	Describe the slope area method of measurement of flood discharge in a stream.	7 Marks

UNIT-IV

7	a)	Sketch a typical hydrograph resulting from an isolated storm and identify the features of the same.	7 Marks
	b)	Define unit hydrograph. What are the assumptions underlying the unit hydrograph theory? How do they limit the applicability of unit hydrograph?	7 Marks
		(OR)	
8	a)	What are the methods of estimating design flood? What are their limitations?	7 Marks
	b)	The **3h** unit hydrograph of a basin can be approximated as a triangle with a base period of **75h** and a peak discharge of 55.5m^3/s. What is the area of the basin? At what time the peak discharge occurs?	7 Marks

UNIT-V

9 a) Describe a commonly used method of estimating the trap efficiency of a reservoir. 7 Marks

b) List the factors affecting the density of sediment deposited in a reservoir. What is the commonly used method of estimating the average density of sediment deposited over a period of T years in a reservoir? 7 Marks

(OR)

10 Briefly explain the following: 14 Marks

i) Erosion index. ii) Sediment delivery ratio.

iii) Bed load. iv) Suspended load.

v) Reservoir delta.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

CONTROL SYSTEMS

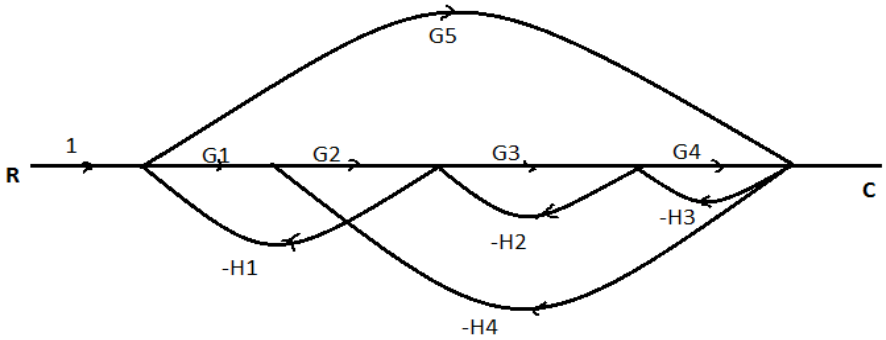
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

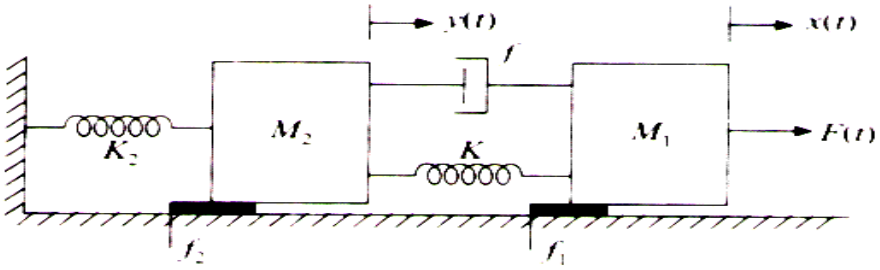
1 a) Find the transfer function of the signal flow graph shown in figure by using Mason's gain formula. 7 Marks



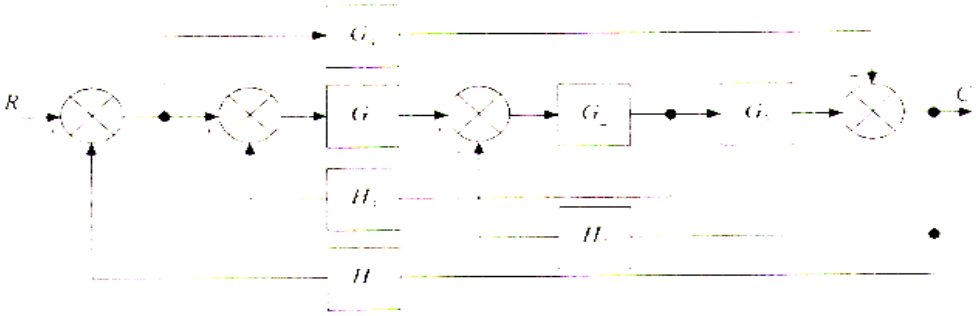
b) Derive an expression for the transfer function of a field controlled DC servo motor. 7 Marks

(OR)

2 a) Derive the differential equations governing the behaviour of the mechanical system shown. Also draw the analogous electrical circuit based on Force-Voltage analogy. 7 Marks



b) Deduce the transfer function of following system using block diagram reduction technique. 7 Marks



UNIT-II

3 a) Obtain the time response for First order system with respect to input test signals. 8 Marks

b) Explain about generalized error constants in control systems. 6 Marks

(OR)

4 a) Derive the mathematical expression for delay time, rise time and settling time for the second order system. 7 Marks

b) The overall transfer function of a unity feedback control system is given by $\frac{C(S)}{R(S)} = \frac{10}{S^2 + 6S + 10}$. Determine the time domain specifications. 7 Marks

UNIT-III

5 a) Explain the difficulties in the formulation of Routh table with respect to system stability. 6 Marks

b) The characteristic equation of a feedback control system is $\boldsymbol{S^4 + 20KS^3 + 5S^2 + 10S + 15 = 0}$. Find the range of K for which the system is stable. 8 Marks

(OR)

6 a) Explain the necessary conditions for stability of a linear time-invariant and SISO systems. 6 Marks

b) A unity feedback system has an open loop transfer function $G(s)\,H(s) = \frac{K}{S(S+2)(S+1))}$. By sketching a root locus plot, find K at breakaway point. 8 Marks

UNIT-IV

7 a) Sketch the polar plot for a unity feedback system with open loop transfer function $G(s) = \frac{1}{s(s+1)^2}$ also find the frequency at which $|\mathbf{G(j\omega)}|=1$ and the corresponding phase angle $\mathbf{G(j\omega)}$. 7 Marks

b) Write the procedure for design of lead compensator. 7 Marks

(OR)

8 Sketch the magnitude and phase bode plots for the system $G(s) = \frac{10}{s(1+0.5s)(1+0.05s)}$. Determine all frequency domain specifications and comment on stability. 14 Marks

UNIT-V

9 a) Derive the state model for Transfer function of system given by 7 Marks

$$T(s) = \frac{2s^3 + 7s^2 + 12s + 8}{s^3 + 6s^2 + 11s + 9}$$

b) Diagonalize the system matrix given below 7 Marks

$$\begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -2 & -5 & -4 \end{bmatrix}$$

(OR)

10 a) Derive an expression for the solution of non- Homogeneous state equations. 7 Marks

b) Determine the state controllability and observability of the system using Kalman's test. 7 Marks

$$A = \begin{bmatrix} 0 & 2 & 0 \\ 1 & 2 & 0 \\ -1 & 1 & 1 \end{bmatrix} \quad B = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix} \quad C = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix}$$

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How does single bus structure connect various functional units of the computer?	8 Marks
	b)	Mention the differences between multi processor and multi computer.	6 Marks
		(OR)	
2	a)	Draw the flowchart for multiplication of two floating point numbers.	7 Marks
	b)	Perform the arithmetic operation (-35) - (+40) with binary numbers and with negative numbers in signed 2's complement representation. Use seven bits to store each number along with its sign. Also determine if there is an overflow by checking the carries into and out of the sign bit position.	7 Marks

UNIT-II

3	a)	Draw a state diagram for instruction cycle.	7 Marks
	b)	Discuss about the design issues of instructions and its elements in detail.	7 Marks
		(OR)	
4	a)	Discuss in detail shift micro operations.	7 Marks
	b)	The memory unit of a computer has 256 words of 32 bits each. The computer has an instruction format with five fields an operation code field, a mode field to specify on of seven addressing modes, register address field to specify one of 64 processor registers and 2 memory address fields. Design an instruction format and the number of bits in each field if the instruction is in one memory word for the above said specifications.	7 Marks

UNIT-III

5	a)	Formulate a mapping procedure that provides 8 consecutive micro instructions for each routine. The operation code has 6 bits and the control memory has 2048 words.	7 Marks
	b)	Write a symbolic micro program routine for the ISZ (Increment and Skip if Zero) instruction.	7 Marks
		(OR)	
6	a)	Give the internal organization of 2M **x** 8 dynamic memory chip.	7 Marks
	b)	How is mapping done using Associative Mapped Cache technique?	7 Marks

UNIT-IV

7	a)	Discuss the architecture of 8085 microprocessor.	7 Marks
	b)	Explain the register organization of 8085 microprocessor.	7 Marks
		(OR)	
8	a)	Show timing diagrams for the various operations of 8085 microprocessor.	7 Marks
	b)	Write sample instructions and their interpretations for arithmetic and logic instruction of 8085 microprocessor.	7 Marks

UNIT-V

9	a)	Draw the timing diagram for the execution of instruction STA 8000H.	7 Marks
	b)	Why control signals are necessary in memory mapped I/O?	7 Marks
		(OR)	
10		Describe seven segment LED display as an output device.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

SYNCHRONOUS MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the terms coil span factors and distribution factors in connection with alternator armature windings and deduce the e.m.f equation of an alternator incorporating the effects of these factors. 7 Marks

b) The stator of a 3-phase, 16-pole alternator has 144 slots and there are 4 conductors per slot connected in two layers and the conductors of each phase are connected in series. If the speed of the alternator is 375 r.p.m., calculate the e.m.f. inducted per phase. Resultant flux in the air-gap is 5×10^{-2} webers per pole sinusoidally distributed. Assume the coil spans 150° electrical. 7 Marks

(OR)

2 Explain the effect of armature reaction on the terminal voltage of an alternator at (i) UPF (ii) ZPF lagging (iii) ZPF leading loads. Draw the relevant phasor diagrams. 14 Marks

UNIT-II

3 a) Compare synchronous impedance and ampere-turns methods of predetermining voltage regulation of alternator. 7 Marks

b) Define synchronous impedance of an alternator and explain how it can be determined experimentally. 7 Marks

(OR)

4 A 3-phase, 800kVA, 3300V, 50Hz alternator gave the following results: 14 Marks

Exciting current (A)	50	60	70	80	90	100
O.C. Volt (line)	2560	3000	3300	3600	3800	3960
S.C. current	190	—	—	—	—	—

The armature leakage reactance drop is 10% and the resistance drop is 2% of the normal voltage. Determine the excitation at full-load 0.8 power factor lagging by the m.m.f. method.

UNIT-III

5 a) Derive the expression for time period of oscillation in synchronous machine. 7 Marks

b) A 5000kVA, 3phase, 10000V, 50Hz alternate runs at 1500 r.p.m. connected to constant frequency, constant voltage bus-bars. If the moment of inertia of entire rotating system is 1.5 x 104 kgm^2 and the steady short-circuit current is 5 times the normal full-load current, find the natural time period of oscillation. 7 Marks

(OR)

6 Two alternators A and B operate in parallel and supply a load of 10MW at 0.8 p.f. lagging: 14 Marks

i) By adjusting steam supply of A, its power output is adjusted to 6000kW and by changing its excitation, its p.f. is adjusted to 0.92 lag. Find the p.f. of alternator B.

ii) If steam supply of both machines is left unchanged, but excitation of B is reduced so that its p.f. becomes 0.92 lead, find new p.f. of A.

UNIT-IV

7 a) The data for no load saturation curve of a 6.6kV, 1.8MVA. 3phase, 50Hz, star connected synchronous motor is given below: 7 Marks

V (k V)	3.6	5.9	7.4	7.9	8.4
If Amp	45	91	130	160	210

The effective resistance and synchronous reactance per phase of the motor are 0.35 and 7 respectively. Plot the V curves for this machine when the input is maintained constant at 450kW.

b) Explain the necessity of damper winding in synchronous motor. 7 Marks

(OR)

8 a) Briefly explain the following starting methods of synchronous motor: 7 Marks
(i) Auxiliary motor starting (ii) Induction motor starting.

b) A 2.3kV, 3phase star connected synchronous motor has Z_s=(0.2+j2.2) ohms per phase. The motor is operating at 0.5 power factor leading with a line current of 200 A. Determine the generated e.m.f per phase. 7 Marks

UNIT-V

9 a) Explain why single phase induction motors are not self-starting. 7 Marks

b) A 230V, 50Hz, 6pole, single phase induction motor has the following constants. 7 Marks
$r_1 = 0.12\Omega$, $r_2 = 0.14\Omega$, $X_1 = X_2 = 0.25\Omega$, $X_m = 15\Omega$. If the core loss is 250W and friction and windage losses are 500W, determine the efficiency and torque at $s = 0.05$.

(OR)

10 a) Explain constructional features and characteristics of AC series motor. 7 Marks

b) Explain why DC servomotors are preferred over AC servomotors for high power applications. 7 Marks

CODE No.:14BT50204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

TRANSMISSION OF ELECTRIC POWER

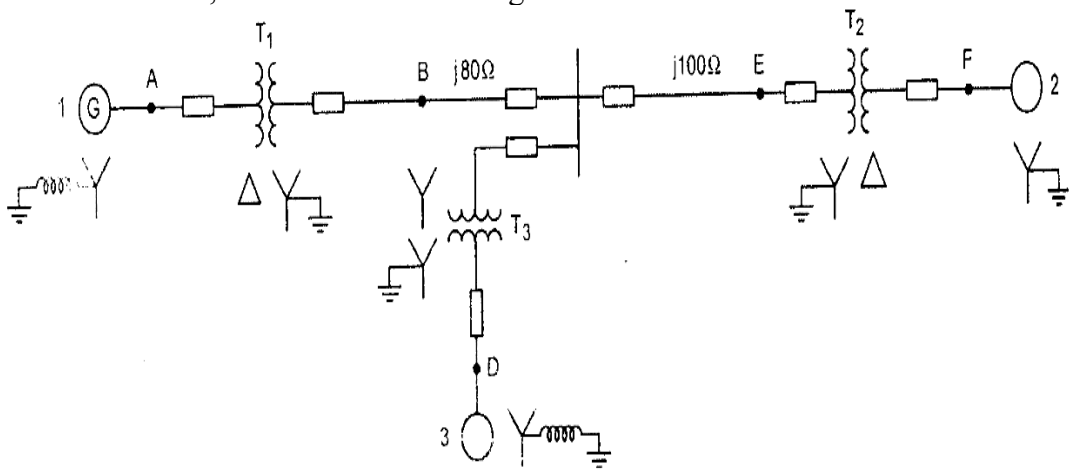
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 The single line diagram of an unloaded power system is shown in figure. 14 Marks
Reactance of the two sections of the transmission line are shown on the diagram.
The generators and transformers are rated as follows:
Generator 1: 20MVA, 11kV, Xd''= 0.25 Per unit
Generator 2: 30MVA, 18kV, Xd''= 0.25 Per unit
Generator 3: 30MVA, 20kV, Xd''= 0.21 Per unit
Transformer 1: 25MVA, 220/13.8kV, X= 0.15 Per unit
Transformer 2: Single phase units, each rated 10MVA, 127/18kV,
X= 0.15 Per unit
Transformer 3: 35MVA, 220/22kV, X= 0.15 Per unit
Draw the impedance diagram with all reactance's marked in per unit. Choose a base of 50MVA, 11kV in the circuit of generator 1.



(OR)

2 a) Derive the expression for inductance of a 3-Φ symmetrically spaced transmission line. 7 Marks

b) Obtain self GMD and mutual GMD and hence calculate inductance/km of each conductor in a 3 phase, 3 wire system. Conductors are arranged at the vertices of a triangle of sides 2.5m, 3m and 5m. These are transposed at regular intervals. Diameter of each conductor is 1.5cm. 7 Marks

UNIT-II

3 a) What is Ferranti effect? 2 Marks

b) Determine the A, B, C and D constants for a 3-Φ, 50 Hz, 100km long transmission line having the following uniformly distributed parameters per km per phase : resistance = 0.25Ω, inductance = 2mH, capacitance=0.014μF. 12 Marks

(OR)

4 A 50Hz, 3-Φ line, 100km long delivers a load of 40000KVA at 110KV, 0.7 lagging power factor. The line constants (line to neutral values) are resistance = 11Ω, inductive reactance = 38Ω, capacitive susceptance = 3×10^{-4} S. Shunt leakage may be neglected. Determine the sending end voltage, current, power factor and power input. 14 Marks

UNIT-III

5 Derive the expression for transient current wave, show that transient current is sum of incident current and reflected current. 14 Marks

(OR)

6 A 3-Φ transmission line has conductors 1.5cm in diameter spaced 1m apart in equilateral formation. The resistance and leakage are negligible. 14 Marks

Calculate:

i) The natural impedance of the line.
ii) The line currents if a voltage wave of 11kV travels along the line.
iii) The rate of energy absorption, the rate of reflection and the state and the form of reflection if the line is terminated through a star connected load of 1000.

UNIT-IV

7 Determine the corona characteristics of a 3-Φ line 160km long, conductor diameter 1.036cm, 2.44m delta spacing, air temperature 26.67°C, altitude 2440m, corresponding to an approximate barometric pressure of 73.15cm of Mercury, operating voltage 110kV at 50Hz. Assume data if required. 14 Marks

(OR)

8 a) What is the necessity of equalizing the potential across various units? Explain any one method to improve the string efficiency. 7 Marks

b) A 33kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11% of self-capacitance of each insulator, find: 7 Marks

i) The distribution of voltage over 3 insulators.
ii) Sting efficiency.

UNIT-V

9 a) Derive the expression for insulation resistance of a single core cable. 7 Marks

b) A 11kV, 50Hz single phase cable has a diameter of 10mm and an internal sheath radius of 15mm. if the dielectric has a relative permittivity of 24, determine for a 2.5km length cable (i) capacitance (ii) charging current. 7 Marks

(OR)

10 a) Derive a relation between the conductor radius and inside sheath radius of single core cable so that the electric stress of the conductor surface may be minimum. 7 Marks

b) An overhead line has a span of 260m. The weight of the line conductor is 0.68kg per meter run. Calculate the maximum sag in the line. The maximum allowable tension in the line is 1550kg. 7 Marks

CODE No.:14BT50301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 The weight of reciprocating parts of a horizontal engine is 250kgf. The difference between driving and back pressure when crank has travelled 60^0 from I.D.C is 3.5 kgf/cm^2. The crank pin circle radius is 30cm and diameter of cylinder is 50cm. The connecting rod length between centers is 120cm. Take the speed of engine as 250r.p.m.For the given position of crank, neglecting difference of area on two sides of the piston, estimate: 14 Marks

i. Force on slide bars.
ii. Thrust in the connecting rod.
iii. Tangential force on the crank pin.
iv. Turning moment.

(OR)

2 The connecting rod of a vertical reciprocating engine is 2.5cm long between centers and has a mass of 400kg. Its mass centre is 1m from big end bearing. When suspended from cross head pin and allowed to swing, the period of oscillation is 2.93sec. The crank is 0.5m long and rotates at 240r.p.m. 14 Marks

When crank has turned through 45^0 from the T.D.C, find due to inertia of connecting rod.

i. The magnitude and the line of action of the resultant force acting upon the connecting rod.
ii. The reaction of the cross head guide.
iii. The force on the main bearing.
iv. The torque on the crank shaft.

UNIT-II

3 a) Write expression for gyroscopic couple. 7 Marks

b) Each paddle wheel of a steamer has a mass of 1600kg and a radius of gyration of 1.2m. The steamer turns to port in a circle of 160m radius at 24km/hr. The speed of the paddle is 90 r.p.m. Find the magnitude and effect of the gyroscopic couple acting on the steamer. 7 Marks

(OR)

4 a) List out the few machines in which flywheel are used. 7 Marks

b) The crank of a three-cylinder single-acting engine is set equally at 1200 the engine speed is 540 r.p.m. The turning-moment diagram for each cylinder is a triangle for the power stroke with a maximum torque of 100N-m at 60^0 after dead-centre of the corresponding crank. On the return stroke, the torque is sensibly zero. Determine: 7 Marks

i. The power developed
ii. The coefficient of fluctuation of speed if the flywheel has a mass of 7.5 kg with a radius of gyration of 65mm.

UNIT-III

5 With a neat sketch, describe the principle and working of an internal expanding shoe brake. Derive expression for the braking torque — 14 Marks

(OR)

6 A multi-plate clutch has three pairs of contact surfaces. The outer and inner radii of the contact surfaces are 150mm and 80mm respectively. The maximum axial spring force is limited to 3kN and the co-efficient of friction is 0.3. Assuming uniform wear find the power transmitted by the clutch at 1500 r.p.m. — 14 Marks

UNIT-IV

7 a) The lengths of the upper and lower arms of a porter governor are 200mm and 250mm respectively. Both the arms are pivoted on the axis of rotation. The central load is 150N, the weight of the each ball is 20N and the friction of the sleeve together with the resistance of the operating gear is equivalent to a force of 30N at the sleeve. If the limiting inclinations of the upper arms to the vertical are 30° and 40° taking friction in to account, find the range of speed of the governor. — 7 Marks

b) How governors are classified? — 7 Marks

(OR)

8 a) Four masses M1, M2, M3 and M4 are 200kg, 300kg, 240kg and 260kg respectively. The corresponding radii of rotation are 0.2m, 0.15m, 0.25m and 0.3m respectively and the angle between successive masses are 45°, 75° and 135°. Find the position and magnitude of balance mass required if its radius of rotation is 0.25m. — 7 Marks

b) Why rotating masses are to be dynamically balanced? — 7 Marks

UNIT-V

9 A spring-mass-damping system having K= 30kN/m, mass= 100kg and the damping provides is only 25% of the critical value, Find out: — 14 Marks

i) The damping factor.
ii) The critical damping co-efficient.
iii) The natural frequency of damped vibration.
iv) The logarithmic decrement.
v) The ratio of two consecutive amplitudes.

(OR)

10 a) Explain vibration isolation and transmissibility. — 6 Marks

b) Derive the expression for the vibration transmissibility. — 8 Marks

CODE No.:14BT50302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		"Fredric Winslow Taylor is regarded as father of scientific management". How do you substantiate this?	14 Marks
		(OR)	
2		State and explain functions of management in brief in general.	14 Marks

UNIT-II

3		What is plant location and mention various factors to be considered in selection of right plant location.	14 Marks
		(OR)	
4		Discuss about the functions and responsibilities of plant maintenance.	14 Marks

UNIT-III

5		Define method study and explain various steps involved in processing method study analysis.	14 Marks
		(OR)	
6		What is time study and discuss various equipments used in time study procedures?	14 Marks

UNIT-IV

7	a)	Mention various objectives of materials management.	7 Marks
	b)	What are the various inventory control techniques?	7 Marks
		(OR)	
8		Define value analysis and explain the procedure with suitable example.	14 Marks

UNIT-V

9		What is TQM? State its benefits. How bench marking can be used in improving the condition of a company?	14 Marks
		(OR)	
10	a)	Distinguish between ideal and actual OC curves.	4 Marks
	b)	Draw a OC curve for the single sampling plan with n = 99 and c = 1.	10 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

THERMAL ENGINEERING - II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working principle of Lancashire boiler with the help of neat diagram.	7 Marks
	b)	With the help of neat sketch, explain working of water level indicator.	7 Marks
		(OR)	
2	a)	Discuss the working principle of Benson boiler with neat sketch.	7 Marks
	b)	The following observations were made in a boiler trial: Coal used 250kg of calorific value 29800kJ/kg, water evaporated 2000kg, steam pressure 11.5 bar, dryness fraction of steam 0.95 and feed water temperature 34^0 C. Calculate the equivalent evaporation from and at 100^0 C per kg of coal and the efficiency of the boiler.	7 Marks

UNIT-II

3	a)	Establish a condition for maximum discharge of flue gases through a chimney of given height.	7 Marks
	b)	A simple Rankine cycle works between pressures 28 bar and 0.06 bar, the initial condition of steam being dry saturated. Calculate the cycle efficiency, work ratio and specific steam consumption.	7 Marks
		(OR)	
4	a)	Explain the working and analysis of the regenerative Rankine cycle with one feed water heater.	7 Marks
	b)	A boiler is equipped with a chimney of 30m height. The ambient temperature is 25^0 C. The temperature of flue gases passing through the chimney is 300^0 C. If the air flow is 20 kg/kg of fuel burnt. Find: i) Draught produced. ii) The velocity of flue gases passing through chimney if 50% of the theoretical draught is lost in friction.	7 Marks

UNIT-III

5	a)	What is the significance of critical pressure ratio on discharge through the nozzle?	7 Marks
	b)	Dry saturated steam enters a steam nozzle at a pressure of 15 bar and discharged at a pressure of 2 bar. If the dryness fraction of discharge steam is 0.96, what will be the final velocity of steam, neglect initial velocity of steam? If 10% of heat drop is lost in friction, find the percentage reduction in the final velocity.	7 Marks
		(OR)	
6	a)	Differentiate between jet and surface condensers.	7 Marks
	b)	In a barometric jet condenser, the barometric and vacuum readings are 760 and 660 mm Hg. The rise in temperature of cooling water is 20^0 C, with its outlet temperature as 40^0 C. It deals with 3000kg of steam per hour, which is 90% dry. Calculate: i) Vacuum efficiency. ii) Quantity of cooling water required per hour.	7 Marks

UNIT-IV

7 a) Explain the working principle of nozzle controlled governing with neat sketch. 7 Marks

b) A single stage turbine is supplied with steam at 4 bar and 160^0C and it is exhausted at condenser pressure of 0.15 bar at the rate of 60kg/min. The steam expands in a nozzle with an efficiency of 90%. The blade speed is 250m/s and the nozzles are inclined at 20^0 to the plane of wheel. The blade angle at the exit of moving blade is 30^0. Neglecting friction losses in the moving blades, determine steam jet velocity, power developed and stage efficiency. 7 Marks

(OR)

8 a) Derive an expression for 'condition for maximum efficiency' of a reaction turbine. 7 Marks

b) In a stage of 50% parson's reaction turbine, the steam consumption is 18000kg/hr and it runs at 300 r.p.m. The discharge blade tip angles are 20^0 both for fixed and moving blades. The axial velocity of flow is 0.7 times the blade velocity. Determine the drum diameter and blade height of a particular turbine pair where pressure of steam is 2 bar of dryness 0.95, the power developed amounts to 3.75kW. 7 Marks

UNIT-V

9 A turbo-jet engine consumes air at the rate of 60.2kg/s when flying at a speed of 1000km/h. Calculate: 14 Marks

i) exit velocity of the jet when the enthalpy change for the nozzle is 230kJ/kg and velocity coefficient is 0.96.

ii) fuel flow rate is kg/s when air-fuel ratio is 70:1

iii) thrust specific fuel consumption

iv) thermal efficiency of the plant when the combustion efficiency is 92% and calorific value of fuel used is 42000kJ/kg.

(OR)

10 Define the principle of jet engine. List the different types of jet engines. 14 Marks

CODE No.:14BT50304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

MACHINE TOOLS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the assumptions in merchants force analysis. Derive an expression to find the shear plane angle in metal cutting.	9 Marks
	b)	Sketch a single point cutting tool under ASA system and discuss various tool angles with their importance.	5 Marks
		(OR)	
2	a)	Explain the concept of built up edge.	7 Marks
	b)	What are the different areas and sources of heat generation during metal cutting? Explain.	7 Marks

UNIT-II

3	a)	Explain with a neat sketch the working principle of an engine lathe.	8 Marks
	b)	What is machinability? What are the factors affecting it?	6 Marks
		(OR)	
4	a)	List out the various taper turning methods in a lathe and explain any one of them.	7 Marks
	b)	Explain how thread cutting is done in a lathe.	7 Marks

UNIT-III

5	a)	With a neat sketch, mention various parts of a shaper.	7 Marks
	b)	Explain how quick return is achieved in shaper.	7 Marks
		(OR)	
6		Classify the drilling machines and mention their applications. With a neat sketch, explain the various parts and their uses of a radial drilling machine.	14 Marks

UNIT-IV

7	a)	Explain a tool and cutter grinder with a diagram.	7 Marks
	b)	Write notes on dynamic balancing of a grinding machine.	7 Marks
		(OR)	
8	a)	Explain different types of bonds used in grinding wheels.	7 Marks
	b)	With a neat sketch, explain the nomenclature of a broach tool.	7 Marks

UNIT-V

9	a)	List the differences between a plain milling machine and a universal milling machine.	7 Marks
	b)	Draw a neat sketch of milling fixture and explain briefly.	7 Marks
		(OR)	
10	a)	Explain simple indexing method with an example.	7 Marks
	b)	Sketch and explain various clamping devices.	7 Marks

CODE No.:14BT50306 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the construction and working of valve mechanism in a automobile.	7 Marks
	b)	What are the advantages and disadvantages of diesel engines over gasoline engines?	7 Marks
		(OR)	
2	a)	Draw a schematic diagram to explain the working of a simple carburetor.	7 Marks
	b)	Explain with a simple sketch, working of CRDI system in an automobile.	7 Marks

UNIT-II

3	a)	Predict the functions of cooling system in automobile. Explain with a neat sketch thermostat cooling system.	7 Marks
	b)	What is evaporative cooling? List out advantages and disadvantages.	7 Marks
		(OR)	
4	a)	Discuss in detail the requirements and the functions of an ignition system of an internal combustion engine.	7 Marks
	b)	Sketch battery ignition system and explain working principle in detail. List out advantages.	7 Marks

UNIT-III

5	a)	What are the causes and problems of exhaust emissions from an automobile?	7 Marks
	b)	What is conventional catalytic convertor, how do they control the emissions from an automobile?	7 Marks
		(OR)	
6	a)	Discuss the causes of hydrocarbon emissions from SI and CI engine.	7 Marks
	b)	Explain briefly how using biomass used as fuel in automobile can contribute to emission control.	7 Marks

UNIT-IV

7	a)	Explain with schematic diagram, construction and working of synchromesh gear box.	7 Marks
	b)	Draw Davis steering mechanism and explain its working with limitations if any.	7 Marks
		(OR)	
8	a)	Give a brief description of working of automatic transmission system.	7 Marks
	b)	What is steering geometry? Explain it in detail.	7 Marks

UNIT-V

9	a)	Explain with neat sketch, working principle of telescopic damper.	7 Marks
	b)	Discuss working of wishbone suspension with a neat sketch.	7 Marks
		(OR)	
10	a)	State the functions and requirements of automobile breaks.	7 Marks
	b)	Sketch the schematic arrangement of a vacuum operated break and explain its working.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

ANTENNAS AND PROPAGATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the following with respect to antenna: 14 Marks
(i) Beam area. (ii) Radiation intensity.
(iii) Effective height. (iv) Field components.

(OR)

2 a) Discuss about the radiation mechanism of single wire and two wire configurations. 7 Marks
b) Evaluate the field components of Quarter wave dipole. 7 Marks

UNIT-II

3 a) In a linear array of 4 isotropic elements spaced apart and with equal currents fed in phase, plot the radiation pattern in polar coordinates. 7 Marks
b) Derive the Fourier Transform method of synthesis of array. 7 Marks

(OR)

4 a) Derive the expression for the array factor of a linear broadside array of 'n' elements. 7 Marks
b) Derive the expressions of null-null beam width of a uniform linear array. 7 Marks

UNIT-III

5 a) Explain the construction of horn antenna and its principle of working. 7 Marks
b) With neat diagrams, describe the principle of working of 3-element Yagi antenna, listing out its length and spacing requirements. 7 Marks

(OR)

6 a) Explain the geometrical configuration of different reflector types in detail. 7 Marks
b) State the features, advantages and limitations of microstrip antenna. 7 Marks

UNIT-IV

7 a) What are the precautions to be taken to obtain accurate pattern measurements? 7 Marks
b) Explain the method of measurement of antenna impedance with the help of measurement block diagram. 7 Marks

(OR)

8 a) Describe a method of measurement of radiation pattern with neat measurement setup. 7 Marks
b) What is polarization and describe polarization measurement by power measurement approach? 7 Marks

UNIT-V

9 a) Explain the structural details of the ionosphere. 8 Marks
b) List the effects of D-layer in the sky wave propagation. 6 Marks

(OR)

10 a) Derive the fundamental equation for free space propagation. 8 Marks
b) Explain the relation between MUF and skip distance in detail. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With the help of block diagram, explain the elements of digital communication systems.	7 Marks
	b)	Explain different types of companding techniques.	7 Marks
		(OR)	
2	a)	Draw the block diagram of Adaptive Delta Modulation and explain its working.	7 Marks
	b)	Write short notes on granular noise and slope overload distortion.	7 Marks

UNIT-II

3	a)	Derive an expression for quantization error and SNR of PCM system.	10 Marks
	b)	Explain the effect of thermal noise in PCM.	4 Marks
		(OR)	
4	a)	Derive an expression for quantization noise and output signal power in DM.	10 Marks
	b)	A voice frequency signal band limited to 3kHz is transmitted with the use of DM system. The pulse repletion frequency is 30,000 pulses/sec and step size is 40mV. Determine the maximum permissible speech signal amplitude to avoid a slope overload.	4 Marks

UNIT-III

5	a)	Describe the baseband pulse shaping.	8 Marks
	b)	Discuss the matched and correlation receivers.	6 Marks
		(OR)	
6	a)	Explain the phase shift keying modulation.	8 Marks
	b)	Derive the expression for probability of error of coherent FSK signaling scheme.	6 Marks

UNIT-IV

7	a)	Explain the concept of information and average information.	6 Marks
	b)	Explain the procedural steps involved in Huffman coding and perform Huffman coding for the following:	8 Marks

Message : x_1 x_2 x_3 x_4 x_5 x_6 x_7

Probability : **0.4** **0.2** **0.12** **0.08** **0.08** **0.08** **0.04**

(OR)

8	a)	Describe how error free communication achieved over noisy channel.	8 Marks
	b)	Discuss the practical communication systems in light of Shannon's equation.	6 Marks

UNIT-V

9	a)	Explain in briefly about cyclic codes and decoding of cyclic codes.	6 Marks
	b)	For the (7,4) single error correcting cyclic code $m(X) = m_0 + m_1 X + m_2X^2 + m_3X^3$ and $X^7 + 1 = (1 + X + X^3)(1 + X + X^2 + X^4)$ draw the encoder and find the code words.	8 Marks
		(OR)	
10	a)	Explain how encoding is done by convolutional codes with an example.	7 Marks
	b)	Compare Coded and Uncoded systems in detail.	7 Marks

CODE No.:14BT50403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw switch models for a 2-input CMOS NOR gate for all four input combinations.	7 Marks
	b)	Write short notes on emitter coupled logic.	7 Marks
		(OR)	
2	a)	Name and draw the logic symbols of four different 4-input CMOS gates that each use 8 transistors.	7 Marks
	b)	Discuss the CMOS inverter VTC.	7 Marks

UNIT-II

3	a)	Write a VHDL entity and architecture for a 3-bit synchronous counter using flip-flops.	6 Marks
	b)	Design a transistor circuit of 2-input TTL NOR gate. Explain the operation with the help of function table.	8 Marks
		(OR)	
4	a)	Write a behavioral VHDL program to compare 16-bit signed and unsigned integers.	6 Marks
	b)	Design the logic circuit and write a data-flow style VHDL program for the following function. **$F(R) = \Sigma_{A, B, C, D}$ (1, 4, 5, 7, 9, 13, 15)**	8 Marks

UNIT-III

5	a)	Design a 16-bit comparator using 74X85 ICs.	8 Marks
	b)	Implement a full adder with two 4 x 1 multiplexers.	6 Marks
		(OR)	
6		An 8 x 1 multiplexer has inputs A, B, and C connected to the selection inputs S_2, S_1 and S_0, respectively. The data inputs I_0 through I_7 are as follows: (i) $I_1 = I_2 = I_7 = 0$; $I_3 = I_5 = 1$; $I_0 = I_4 = D$; and $I_6 = D'$. (ii) $I_1 = I_2 = 0$; $I_3 = I_7 = 1$; $I_4 = I_5 = D$; and $I_0 = I_6 = D'$. Determine the Boolean functions that the multiplexer implements.	14 Marks

UNIT-IV

7	a)	Design and implement a 74 x 194 shift register and write Verilog code for the same.	10 Marks
	b)	Discuss about flip-flops and latches.	4 Marks
		(OR)	
8	a)	Design a four bit bidirectional shift register.	7 Marks
	b)	Write a Verilog code for a simple BCD counter.	7 Marks

UNIT-V

9 Write short notes on: 14 Marks
i) RAM ii) SRAM iii) DRAM iv) SDRAM

(OR)

10 a) Discuss how PROM, EPROM and EEPROM technologies differ from each other. 6 Marks

b) Using 64 x 8 ROM chips with an enable input, construct a 512 x 8 ROM with eight chips and a decoder. 8 Marks

CODE No.:14BT50404 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List and explain the functionality of all the basic building blocks of an op-amp.	7 Marks
	b)	Explain about AC characteristics of an op- amp.	7 Marks
		(OR)	
2	a)	Explain in detail about the differential amplifier.	7 Marks
	b)	Define CMRR. For op-amp, CMRR=10^5 and differential gain $A_{DM} = 10^5$. Calculate the common mode gain A_{CM} of the op-amp.	7 Marks

UNIT-II

3	a)	Draw and explain the operation of a voltage to current converter.	7 Marks
	b)	Draw the circuit of a full-wave rectifier and explain how it gives the average value.	7 Marks
		(OR)	
4	a)	Explain the difference between the integrator and differentiator and how op-amp is used as an integrator. Explain.	7 Marks
	b)	With a near sketch, explain how op-amp can be used as an instrumentation amplifier.	7 Marks

UNIT-III

5		Explain the internal structure of voltage regulator IC723. Draw a low voltage regulator circuit using IC723 and explain its operation.	14 Marks
		(OR)	
6		Draw the circuit diagram of a second order Butterworth low pass filter and derive its transfer function.	14 Marks

UNIT-IV

7		Explain how PLL can be used as frequency multiplier and frequency translator.	14 Marks
		(OR)	
8		Explain the Astable operation of a 555Timer IC with applications.	14 Marks

UNIT-V

9	a)	Explain the operation of Dual slope ADC.	7 Marks
	b)	Explain the terms resolution, accuracy, settling time and linearity with respect to ADC.	7 Marks
		(OR)	
10	a)	Explain the working of weighted resistor type of DAC.	7 Marks
	b)	Discuss about DAC specifications.	7 Marks

CODE No.:14BT50405 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define unit-step function, ramp function and impulse function. Show that a pulse is combination of unit-step functions.	5 Marks
	b)	What is meant by linear wave shaping?	3 Marks
	c)	Why a capacitor in a high-pass RC circuit is named as blocking capacitor.	6 Marks
		(OR)	
2	a)	What is meant by piece wise-linear approximation? Draw V-I characteristics of junction diode on the basis of above approximation.	8 Marks
	b)	Discuss the breakdown voltage considerations and saturation parameters of transistor.	6 Marks

UNIT-II

3	a)	Design a clamper circuit to give an output with average of **−2.5V** for a sinusoidal input voltage with **1V** average.	9 Marks
	b)	Explain synchronized clamping.	5 Marks
		(OR)	
4	a)	Explain positive and negative clippers with neat circuit diagrams and waveforms.	7 Marks
	b)	Explain the effects of diode characteristics on clamping voltage.	7 Marks

UNIT-III

5	a)	Give the design procedure for emitter coupled monostable multivibrator.	7 Marks
	b)	Design an astable multivibrator to produce an output with 100msec ON period and 50msec OFF period for V_{CC} = 18V, h_{FE} = 60, $I_{C\,(sat)}$ = 100μA.	7 Marks
		(OR)	
6	a)	Explain the working of collector coupled astable multivibrator with circuit diagram and wave forms.	7 Marks
	b)	Explain the use of a monostable relaxation circuit as a frequency divider with the help of neat diagram and wave forms.	7 Marks

UNIT-IV

7	a)	Explain Miller time base generator with neat circuit diagram.	8 Marks
	b)	Write about stability of relaxation devices.	6 Marks
		(OR)	
8	a)	Explain pulse synchronization of relaxation devices.	7 Marks
	b)	Explain the basic principle of a bootstrap sweep generator. Draw the circuit and explain its operation with necessary waveforms.	7 Marks

UNIT-V

9	a)	What is Pedestal? How can pedestal be reduced in a sampling gate circuit?	7 Marks
	b)	Draw the circuit of an emitter-coupled bidirectional sampling gate and explain.	7 Marks

(OR)

10	a)	Draw the circuit of a 2-input TTL totem-pole output NAND gate with the help of four transistors. Explain why the output of this gate cannot be wire-ANDed.	6 Marks
	b)	Explain the function of multi emitter transistor used in the above circuit. What is the disadvantage of using back to back diodes in place of multi emitter transistor?	5 Marks
	c)	Explain why this logic circuit is faster than open collector logic circuit.	3 Marks

CODE No.:14BT50431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

MICROPROCESSORS AND INTERFACING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Sketch and explain the timing diagrams of READ and WRITE machine cycles.	10 Marks
	b)	Describe briefly what a recursive and reentrant procedure is.	4 Marks
		(OR)	
2	a)	Write a program in assembly language to find the factorial of number.	10 Marks
	b)	Explain the functions of NMI, ALE, BHE and LOCK pins of 8086.	4 Marks

UNIT-II

3	a)	Draw the block diagram of Programmable Interrupt Controller and describe the function of each block in detail.	7 Marks
	b)	List and elucidate the registers of 8257 DMA controller.	7 Marks
		(OR)	
4	a)	How does 8259A differentiates between an 8 bit and 16 bit processors?	7 Marks
	b)	Discuss different states of operation of 8237 during different types of transfer.	7 Marks

UNIT-III

5	a)	Differentiate serial and parallel communications.	6 Marks
	b)	Explain the control word formation of 8255 with suitable examples.	8 Marks
		(OR)	
6	a)	Discuss the organization and architecture of 8255 PPI IC with a functional block diagram.	7 Marks
	b)	Write a program to blink port C bit 0 of 8255. Assume address of control word register of 8255 is 83. Use bit set/reset mode.	7 Marks

UNIT-IV

7	a)	What are the organizational and operating features of 8251A?	7 Marks
	b)	Explain about command instructions and mode instructions of 8251A.	7 Marks
		(OR)	
8	a)	Explain about various serial I/O interface using RS232C.	7 Marks
	b)	Draw the status read word format of 8251.	7 Marks

UNIT-V

9	a)	Draw the architectural diagram of 8051 microcontroller and explain in detail.	7 Marks
	b)	Draw and explain the bit pattern of TMOD and TCON SFRs of 8051.	7 Marks
		(OR)	
10	a)	Discuss the function of each port of 8051 in detail.	7 Marks
	b)	Explain the internal RAM organization of 8051. Discuss how switching between register banks is possible.	7 Marks

CODE No.:14BT50501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design a DFA accept the following strings over the alphabets (0, 1). The set of all string that contains a pattern 11. Prove this with Mathematical Induction. 14 Marks

(OR)

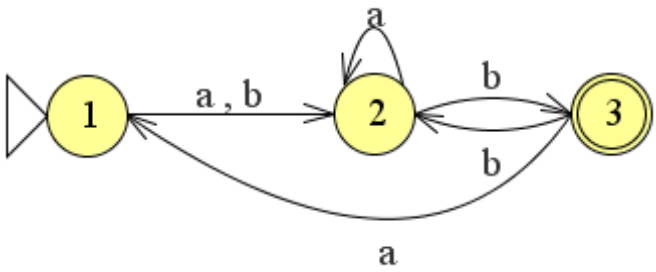
2 a) Write a note on NFA and compare with DFA 7 Marks

b) Discuss on the relation between DFA and minimal DFA. 7 Marks

UNIT-II

3 a) Using Pumping lemma, prove whether the following language is regular or Not? 7 Marks
$C = \{w \mid w$ has an equal number of 0's and 1's.

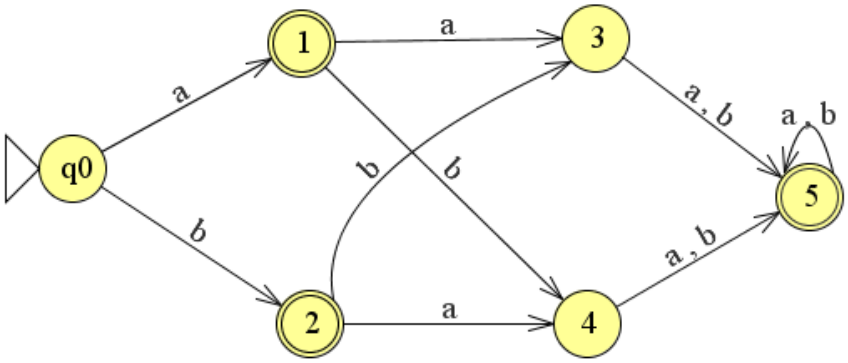
b) Convert the following FA to Regular Expression. 7 Marks



(OR)

4 a) Give a regular expression generating the language 5 Marks
{*w* | *w* begins with a 1 and ends with a 0}.

b) Minimize 9 Marks



UNIT-III

5 Construct a PDA for the given grammar **S->aSab|bSb|c.** 14 Marks

(OR)

6 Explain in detail about equivalence of pushdown automata and CFG. 14 Marks

UNIT-IV

7	Explain Turing machine as a computer of integer functions with an example.	14 Marks
	(OR)	
8	Design a TM, M to implement the function "MULTIPLICATION" using the subroutine "COPY".	14 Marks

UNIT-V

9	Illustrate the Turing machine model formally.	14 Marks
	(OR)	
10	Prove that if a language is recursive if and only if it and its complement are both recursively enumerable.	14 Marks

CODE No.:14BT50502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

UNIX INTERNALS

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Comment on "UNIX system has become more popular now - a - days".	7 Marks
	b)	Give brief description about the Unix file subsystem.	7 Marks
		(OR)	
2	a)	Explain about process execution levels and memory management.	7 Marks
	b)	Describe about the processing of environment.	7 Marks

UNIT-II

3	a)	What do you mean by shell and explain in detail about the shell responsibilities?	7 Marks
	b)	Discuss about pipes.	7 Marks
		(OR)	
4	a)	Explain about the control structures in shell programming.	7 Marks
	b)	Discuss about the backup utilities.	7 Marks

UNIT-III

5		Explain the following: i) Super block. ii) System calls and library functions. iii) Scanning directories.	14 Marks
		(OR)	
6		Give the syntax and write example program that contain 'fopen', 'fread', 'fwrite', 'fclose', 'fflush', 'fseek', 'fgets', 'fputc', 'printf', 'fprintf', 'fscanf', 'sscanf'.	14 Marks

UNIT-IV

7	a)	What is a process? Give brief description on the structure of it.	7 Marks
	b)	Write about the common codes that are provided for STAT system call of **ps** command.	7 Marks
		(OR)	
8	a)	Describe the working of a zombie process.	7 Marks
	b)	List the signal names that are included in the signal header file.	7 Marks

UNIT-V

9	a)	Write an algorithm to send the message. Explain it in detail.	7 Marks
	b)	Which mechanism the BSD system provides for inter process communication and to allow use of sophisticated network protocols. Explain it.	7 Marks
		(OR)	
10	a)	Write a program for **popen( )** and explain its implementation.	7 Marks
	b)	Explain with example how the child process differs from its parent process.	7 Marks

CODE No.:14BT51002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

INDUSTRIAL INSTRUMENTATION-I

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the measurement of angle using sine bar.	7 Marks
	b)	Describe the construction and working off an optical interferometer for measurement of length.	7 Marks
		(OR)	
2	a)	What are line standard instruments? Describe their classification into i) Metro rods, scales and tapes ii) Vernier callipers iii) Micrometers.	8 Marks
	b)	Describe the construction and working of a mechanical comparator. Discuss its advantages and disadvantages.	6 Marks

UNIT-II

3	a)	Explain how spring balances can be used for measurement of force. Describe their working, advantages and limitations.	7 Marks
	b)	Describe the construction and functioning of pneumatic load cells. Explain their advantages and disadvantages.	7 Marks
		(OR)	
4	a)	Explain how the torque of rotating shafts can be measured by the following methods. i) Digital. ii) Magnetostrictive.	8 Marks
	b)	What are dynamometers? How are the dynamometers classified? Explain the difference between absorption, transmission and driving dynamometers.	6 Marks

UNIT-III

5	a)	What are the different elastic elements used for measuring pressure. Discuss the construction, principle and working of Bourdon Tube Pressure Gauge, with a neat diagram.	7 Marks
	b)	Define vacuum pressure. Explain the measurement of vacuum pressure using McLeod Gauge with necessary diagrams.	7 Marks
		(OR)	
6	a)	What is an electro mechanical transducer? Explain the working of resistive type electro mechanical system for measurement of dynamic pressure.	7 Marks
	b)	List different types of thermal conductivity gauges and explain the working of thermocouple vacuum gauge with necessary diagrams.	7 Marks

UNIT-IV

7	a)	Describe the construction, principle and working of null balance accelerometer.	7 Marks
	b)	Define linear velocity and angular velocity. Explain the construction and working of simplest of the rotational speed measuring equipment.	7 Marks
		(OR)	

8	a)	Explain the construction, working and response characteristics of AC Tachogenerators with necessary diagrams.	7 Marks
	b)	With a neat diagram, explain the method with which RPM is measured without making any contact with the rotating body.	7 Marks

UNIT-V

9	a)	Define humidity. Describe measurement of humidity using commercial dry and wet bulb Psychrometer with a neat diagram.	7 Marks
	b)	What is specific gravity? With a neat diagram, describe the measurement of density using pipe vibration method.	7 Marks

(OR)

10	a)	Compare various types of hygrometers used for measurement of humidity.	7 Marks
	b)	Define relative viscosity and viscosity index. Describe the working of rotameter type viscometer with a neat diagram.	7 Marks

CODE No.:14BT51003 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain the block diagram of an operational amplifier.	8 Marks
	b)	Explain about level translator.	6 Marks
		(OR)	
2	a)	Explain the DC characteristics of an operational amplifier.	10 Marks
	b)	Give the classification of Integrated Circuits.	4 Marks

UNIT-II

3	a)	For a three operational amplifier realization of a current input instrumentation amplifier, derive the expression for Vo.	7 Marks
	b)	Briefly discuss comparator applications and explain non-inverting comparator with neat sketches.	7 Marks
		(OR)	
4	a)	Design a low pass filter at a cutoff frequency of 1KHz with a pass band gain of 2. Draw the circuit and plot its frequency response.	7 Marks
	b)	Explain the operation of AC amplifier.	7 Marks

UNIT-III

5	a)	Calculate the values of LSB, MSB and full-scale output for an 8-bit DAC for the 0 to 10V range.	6 Marks
	b)	Draw the functional block diagram of 555 timer and explain.	8 Marks
		(OR)	
6	a)	Define capture-range, lock-range and pull-in time of PLL.	6 Marks
	b)	Design a monostable multivibrator using 555 timer to produce a pulse width of 100ms.	8 Marks

UNIT-IV

7	a)	Design CMOS transistor circuit for 3-input AND gate. Explain its working.	7 Marks
	b)	Explain the concept and implementation of ECL logic family.	7 Marks
		(OR)	
8	a)	Design a transistor circuit of 2-input ECL NOR Gate. With the help of function table explain its operation.	7 Marks
	b)	Explain the features of the TTL logic family.	7 Marks

UNIT-V

9	a)	Explain about Verilog as HDL.	7 Marks
	b)	Write a Verilog code for half-adder using CMOS switches.	7 Marks
		(OR)	
10	a)	Write a Verilog code for JK flip-flop with NAND gates.	7 Marks
	b)	What are the data types that are available in Verilog HDL? Explain with example.	7 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

COMPUTER NETWORKS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe 802.11 wireless LAN protocol stack.	7 Marks
	b)	Differentiate between Routers and Switches.	7 Marks
		(OR)	
2	a)	Compare and contrast OSI model and TCP/IP model.	8 Marks
	b)	Define Bridge. How bridges useful for connecting different LANS.	6 Marks

UNIT-II

3	a)	Explain selective repeat sliding window protocol.	7 Marks
	b)	What is framing? Explain various framing techniques of Data Link Layer.	7 Marks
		(OR)	
4	a)	Compare and contrast CSMA/CD and CSMA/CA for channel allocation.	7 Marks
	b)	Write about DLL Switching.	7 Marks

UNIT-III

5	a)	Discuss about Distance Vector Routing algorithm.	7 Marks
	b)	Explain each field in IPV4 header format with neat diagram.	7 Marks
		(OR)	
6	a)	Write about Token bucket algorithm.	7 Marks
	b)	Discuss about Link State Routing algorithm.	7 Marks

UNIT-IV

7		What is congestion? How can we control it? Explain it with respect to transport layer.	14 Marks
		(OR)	
8	a)	How to release the connection in Transport protocol? Explain	7 Marks
	b)	Explain about the RTP Header.	7 Marks

UNIT-V

9	a)	Give brief description about the working of DNS and DNS name spaces.	7 Marks
	b)	What techniques should be followed to improve the performance of WWW? Explain.	7 Marks
		(OR)	
10	a)	What is MIME? Briefly explain about the MIME types and subtypes.	7 Marks
	b)	Discuss about the H.323 protocol in detail.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the term software and write the characteristics of software.	5 Marks
	b)	Sketch and explain Waterfall model.	9 Marks
		(OR)	
2	a)	Compare various layers of Software Process Framework in software engineering.	7 Marks
	b)	List the merits of using incremental model in software development process.	7 Marks

UNIT-II

3	a)	What are the difficulties in Elicitation?	4 Marks
	b)	Design interaction model for word processor.	10 Marks
		(OR)	
4	a)	Explain the requirements management principles and procedures.	7 Marks
	b)	What is system modeling? List out and briefly explain various models.	7 Marks

UNIT-III

5	a)	What are characteristics of a good design for a software product?	7 Marks
	b)	Describe the golden rules for user interface design.	7 Marks
		(OR)	
6		Explain various aspects of software architectural design.	14 Marks

UNIT-IV

7	a)	Explain the difference between functional and non-functional testing.	7 Marks
	b)	Briefly write about object oriented testing methods.	7 Marks
		(OR)	
8	a)	What do you mean by system testing? Explain the distinct phases of system testing.	7 Marks
	b)	Explain the various testing techniques in control structure testing.	7 Marks

UNIT-V

9	a)	Compare and contrast reactive and proactive risk strategies.	7 Marks
	b)	Briefly write about software reliability.	7 Marks
		(OR)	
10	a)	Write short notes on RMMM.	7 Marks
	b)	Define quality and write about quality concepts.	7 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

OPERATING SYSTEMS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the essential properties of a distributed system. 7 Marks

b) What are the limitations of handheld systems? Explain with examples. 7 Marks

(OR)

2 a) Consider the following set of processes, with the length of the CPU burst given in milliseconds: 7 Marks

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The processes are assumed to have arrived in the order P_1, P_2, P_3, P_4, P_5 all at time 0. Use SJF scheduling algorithm and answer the following:

i) Draw four Gantt charts that illustrate the execution of these processes.
ii) What is the turnaround time of each process?
iii) What is the waiting time of each process?

b) What are the various ways of establishing a relationship between user threads and kernel threads? 7 Marks

UNIT-II

3 a) What is a Semaphore? What is the difference between Semaphore and Mutex? 7 Marks

b) Explain about dining philosopher's problem. 7 Marks

(OR)

4 a) What are the methods used to recover from deadlock? 7 Marks

b) Explain Bankers algorithm for deadlock avoidance. 7 Marks

UNIT-III

5 a) Explain the steps involved in handling page faults. 7 Marks

b) Explain the need for page replacement and explain FIFO page replacement algorithm with example. 7 Marks

(OR)

6 a) Explain Optimal and LRU page replacement algorithms with one example. 7 Marks

b) Explain the Memory Management requirements. 7 Marks

UNIT-IV

7 a) Explain the concept of a file, the types of files and the operations that can be performed on a file. 7 Marks

b) Explain about Directory Implementation with example. 7 Marks

(OR)

8		Explain about Tertiary storage structure.	14 Marks

UNIT-V

9		Explain about the Application I/O Interface.	14 Marks
		(OR)	
10	a)	Explain the Goals of Protection.	7 Marks
	b)	Explain about the Access Matrix with one example.	7 Marks

CODE No.:14BT51502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

SYSTEMS SOFTWARE

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the SIC programming with necessary examples.	7 Marks
	b)	Explain the data movement and arithmetic operations for SIC.	7 Marks
		(OR)	
2		Describe the instruction format and addressing modes of the **SIC/XE** system in detail. Also explain the various arithmetic operations available in **SIC/XE** system with examples.	14 Marks

UNIT-II

3	a)	Explain about symbol-defining statements.	7 Marks
	b)	Explain how could literals be implemented in a one-pass assembler.	7 Marks
		(OR)	
4		Explain multi-pass assembler operation with an example.	14 Marks

UNIT-III

5		Discuss the features of machine-dependent loader.	14 Marks
		(OR)	
6	a)	Write an algorithm for pass 2 of a linking loader.	7 Marks
	b)	Explain about MS-DOS linker.	7 Marks

UNIT-IV

7	a)	Write an assembly language program to pass arguments to the macros.	7 Marks
	b)	Using an example, explain about macro instructions defining macros.	7 Marks
		(OR)	
8		With a neat flow chart, explain the operation of simple one pass macro processor.	14 Marks

UNIT-V

9	a)	Explain the overview of editing process.	7 Marks
	b)	Explain editor structure with a diagram.	7 Marks
		(OR)	
10	a)	Explain the functions and debugging capabilities of interactive debugging system.	7 Marks
	b)	Write a note on the concept of user interface criteria in a text editor.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2017

DIGITAL SIGNAL PROCESSING

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) For the system $y(n) = \log_e[x(n)]$, determine whether it is stable, causal, linear and time invariant. 8 Marks

b) Consider the discrete time signal $x(n) = 1 - \sum_{k=3}^{\infty} \delta(n - 1 - n_0)$, determine the values of the integers M and n_0 so that $x(n)$ may be expressed as $x(n) = u(Mn - n_0)$ 6 Marks

(OR)

2 a) Determine the signal having the Fourier transform $X(e^{i\omega}) = \cos^2(\omega)$ 7 Marks

b) Determine the z- transform of $x(n) = -\left(\frac{1}{2}\right)^n u(-n-1) + 2^n u(-n-1)$ and depict the ROC and the locations of poles and zeros in the z-plane. 7 Marks

UNIT-II

3 a) State and prove the convolution property of DFT. 4 Marks

b) Compute the 4-point DFT of the sequence $X[n] = \cos(\pi n)$. 5 Marks

c) The even samples of the 11–point DFT of length–11 real sequence are given by $X(0) = 4$, $X(2) = -1 + j3$, $X(4) = 2 + j5$, $X(6) = 9 - j6$, $X(8) = -5 - j8$ and $X(10) = \sqrt{3} - j2$. Determine the missing odd samples of the DFT. 5 Marks

(OR)

4 a) Use the overlap-add procedure to find convolution of the following two sequences: $x(n) = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ and $h(n) = \{1, 0, -1\}$. 7 Marks

b) Draw the butterfly structure for 8-point DIT FFT and explain how DFT is computed using this. 7 Marks

UNIT-III

5 a) Design an analog butterworth low pass filter that has a -2dB pass band attenuation at a frequency of 20rad/sec and atleast -10dB stop attenuation at 30rad/sec. 10 Marks

b) Derive the relation between digital and analog frequency in impulse invariant transformation. 4 Marks

(OR)

6 a) Determine the order of the filter using Chebyshev approximation. Also find H(s) for the given specifications. 10 Marks
α_p = 3dB; f_p= 1KHz ; α_s = 16dB; f_s = 2KHz.

b) Convert the analog filter with transfer function $H_a(s) = \frac{2}{(s+1)(s+2)}$, into a digital filter using Bilinear Transformation technique. Assume T = 1 sec. 4 Marks

UNIT-IV

7 Design a band bass filter to pass frequencies in the range 1-2rad/sec using Hannning window N=5. 14 Marks

(OR)

8 For $\mathbf{H(z) = 1 + 2z^{-1} - z^{-2} + 3z^{-3} + 3z^{-4} - z^{-5} + 2z^{-6} + z^{-7}}$ draw the direct form I and II structures and compare them. 14 Marks

UNIT-V

9 A multiplier–accumulator, with three pipe stages, is required for a digital signal processor. Sketch a block diagram of a suitable configuration for the MAC. Explain briefly with the aid of a timing diagram how the MAC works. 14 Marks

(OR)

10 In DSP processor, explain how extended parallelism architecture helps to increase the number of instructions executed in each cycle and the number of operations performed in each instruction to enhance the performance. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What is Managerial Economics? What are the basic functions of Managerial Economics? 14 Marks

(OR)

2 What is meant by Demand? Explain the determinants of demand. 14 Marks

UNIT-II

3 Explain the law of variable proportions. How does it helps the business manager in decision - making? 14 Marks

(OR)

4 Below is given the cost and sales information of Kishore & Co. 14 Marks

Particulars	Amount (Rs.)
Sales	80,000/-
Variable cost	40,000/-
Profit	20,000/-

Calculate: i) P/V Ratio
ii) Break-Even Point
iii) Margin of Safety
iv) Sales required to earn profit of Rs. 50,000/-
v) If sales are Rs.2,50,000/-, what will be the profit?

UNIT-III

5 What is Monopolistic Competition? How does a firm take its pricing and output decisions under Monopolistic Competition? 14 Marks

(OR)

6 What do you mean by capital? Explain different source of working capital. 14 Marks

UNIT-IV

7 What are the basic Accounting principles? Why should a business concern follow these principles? 14 Marks

(OR)

8 Define Ledger. Explain the procedure for balancing a Ledger account. 14 Marks

UNIT-V

9 From the following Trail Balance of Ram & Krishna, prepare Trading, Profit and Loss account for the year ending 31st March, 2012 and Balance Sheet as on that date. 14 Marks

Particulars	**Debit Rs.**	**Credit Rs.**
Buildings	15,000	
Capital A/c		25,000
Purchases and Sales	14,000	28,800
Opening Stock (01-04-2011)	3,000	
Debtors and creditors	5,000	1,500
Factory Rent	300	
Commission Received		1,000
Insurance	1,200	
Salaries	4,800	
Wages	3,000	
Printing and Stationery	1,700	
Machinery	8,000	
Bills Payables		2,000
Interest Received		800
Cash in hand	2,000	
Patents	4,000	
Furniture	500	
Bank Overdraft		3,400
	62,500	**62,500**

Adjustments:

1.Closing Stock Rs.5,500
2. Outstanding Printing charges Rs.300
3. Insurance paid in advance Rs.200
4. Unpaid wages Rs.500
5. Commission Received in advance Rs.100

(OR)

10 Distinguish between Manual Accounting and Computerised Accounting. 14 Marks

CODE No.:14BT5HS02 SVEC-14 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

MANAGEMENT SCIENCE

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Summarize the developments in management thought during Human Relations period. 14 Marks

(OR)

2 a) What do you understand by `Span of control' and how is it chosen? 7 Marks
b) What factors will influence the effective span? 7 Marks

UNIT-II

3 a) What are the factors affecting plant location? 7 Marks
b) Compare two types of production systems with advantages and limitations. 7 Marks

(OR)

4 Explain purchasing procedure and roles of stores management in a large organization. 14 Marks

UNIT-III

5 a) What are the benefits of 'Job Evaluation'? 7 Marks
b) How can HR manager help in maintaining cordial relations between Trade Unions and Management? 7 Marks

(OR)

6 Explain various methods of merit rating with advantages and limitations. 14 Marks

UNIT-IV

7 Crash the following project network, if overhead charges are Rs.100/day. 14 Marks

Activity	Normal Time	Normal Cost	Crash Time	Crash Cost
1-2	3	350	2	400
2-3	6	1440	4	1620
2-4	9	2160	8	2220
2-5	7	1300	5	1600
3-5	8	500	7	600
4-5	5	1600	3	1770
5-6	8	450	7	750

(OR)

8 Discuss the concept of Entrepreneur and list characteristics and traits of Entrepreneur. 14 Marks

UNIT-V

9 a) Explain the basic concepts of TQM. 7 Marks
b) Describe JIT manufacturing and workers attitude in connection with TQM. 7 Marks

(OR)

10 Explain the following 14 Marks
i) ERP ii) BPO

❀ ❀ ❀

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

MANAGEMENT SCIENCE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Summarize the developments in management thought during Human Relations period. 14 Marks

(OR)

2 a) What do you understand by `Span of control' and how is it chosen? 7 Marks
b) What factors will influence the effective span? 7 Marks

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b) Describe JIT manufacturing and workers attitude in connection with TQM. 7 Marks

(OR)

10 Explain the following 14 Marks
i) ERP ii) BPO

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CODE No.:14BT6HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

BANKING AND INSURANCE

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the Primary and Secondary functions of the Commercial Banks.	14 Marks
		(OR)	
2		Write a short note on:	
		i) Recurring deposit account.	5 Marks
		ii) Home safe account.	5 Marks
		iii) Open market operation.	4 Marks

UNIT-II

3		Explain the liabilities of drawer, maker or acceptor, drawee and an endorser of a negotiable instrument.	14 Marks
		(OR)	
4		Write a note on:	14 Marks
		i) What are the differences between lien and hypothecation?	
		ii) Distinguish between hypothecation and pledge.	

UNIT-III

5	a)	Explain about e-cash.	7 Marks
	b)	Explain about NEFT transaction.	7 Marks
		(OR)	
6		Explain B2B and B2C business models.	14 Marks

UNIT-IV

7		"Pure risks are always insurable". Comment.	14 Marks
		(OR)	
8		Write a short note on:	
		i) Principle of subrogation.	7 Marks
		ii) Principle of contribution.	7 Marks

UNIT-V

9		Briefly summarize the various legal provisions applicable to insurance business in India.	14 Marks
		(OR)	
10		Explain the role of insurance policies in India in activity in economic growth rate.	14 Marks

CODE No.:14BT6HS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

ENTERPRENEURSHIP FOR MICRO SMALL AND MEDIUM ENTERPRISES

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	What are the skills required to become a successful Entrepreneur? Explain in brief.	14 Marks
	(OR)	
2	Explain the entrepreneurial decision process.	14 Marks

UNIT-II

3	How do you plan a location to set up a new business? Explain the factors to be considered.	14 Marks
	(OR)	
4	What are the guidelines to be followed in preparing a Project Report?	14 Marks

UNIT-III

5	Distinguish between Micro and Small Business Enterprises.	14 Marks
	(OR)	
6	Explain the policy and incentives provided by the government for promoting small enterprises in India.	14 Marks

UNIT-IV

7	Explain the role and functions of SFCs.	14 Marks
	(OR)	
8	Evaluate the working of SISIs in developing small scale enterprises in India.	14 Marks

UNIT-V

9	What is the need for development of Women Entrepreneurs in India? What are the efforts made by Govt. of India to support Women Entrepreneurs?	14 Marks
	(OR)	
10	What are the opportunities and challenges of developing rural Entrepreneurship in our country?	14 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

COMPUTER ORGANIZATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is floating point representation? Explain the IEEE standard for floating point representation with examples.	8 Marks
	b)	Draw the flowchart for Booth's algorithm for multiplication of signed 2's complement numbers and explain with an example.	6 Marks
		(OR)	
2	a)	Represent decimal number 6027 in i) BCD ii) excess-3 code iii) 2421 code	10 Marks
	b)	What are self-complementing codes? Give example.	4 Marks

UNIT-II

3	a)	Explain the generic Instruction types that present in a computer system.	8 Marks
	b)	With the help of a block diagram, explain how we select the address of control memory.	6 Marks
		(OR)	
4		What is the difference between a direct and an indirect address instruction? How many references to memory are needed for each type of instruction to bring an operand into a processor register?	14 Marks

UNIT-III

5	a)	Why bus arbitration is required? Explain with a block diagram of bus arbitration using daisy chain mechanism.	7 Marks
	b)	Compare interrupt driven data transfer scheme with DMA. Using block diagram explain interrupt driven transfer scheme.	7 Marks
		(OR)	
6	a)	List four peripheral devices that produce an acceptable output for a person to understand. Explain them in detail.	10 Marks
	b)	What is the importance of I/O interface? In a computer system, why a PCI bus is used? With a neat sketch, explain how the read operation is performed, along with the role of IRDY#/TRDY# on the PCI bus.	4 Marks

UNIT-IV

7	a)	Define basic terms Hit, Miss and miss penalty and explain how to compute performance of cache memory.	7 Marks
	b)	List different types of Main memories and compare them.	7 Marks
		(OR)	
8	a)	Discuss in detail about secondary storage Optical Disks.	7 Marks
	b)	Assume that a computer system employs a cache with an access time of 20ns and a main memory with a cycle time of 200ns. Suppose that the hit ratio for reads is 90%, what would be the average access time for reads if the cache is a "look-through" cache?	7 Marks

UNIT-V

9	a)	Distinguish between Arithmetic pipeline and Instruction pipeline.	7 Marks
	b)	Discuss Flynn classification for Multiple Processor Organizations	7 Marks
		(OR)	
10	a)	Explain in detail about Inter Process Synchronization with an example.	7 Marks
	b)	An unpipelined processor has a cycle time of 25ns. What is the cycle time of a pipelined version of the processor with 5 evenly divided pipeline stages, if each pipeline latch has a latency of 1ns?	7 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define an algorithm. Write an algorithm to find the Transpose of a Matrix and find its complexity.	7 Marks
	b)	Explain about Asymptotic notation with an example.	7 Marks
		(OR)	
2		Write algorithms for Find and Union procedures for Sets and explain with examples.	14 Marks

UNIT-II

3	a)	Write an BFS algorithm for Graph traversal	7 Marks
	b)	Explain about Bi-Connected components in a Graph.	7 Marks
		(OR)	
4		What is divide and Conquer technique? Explain Strassens' matrix multiplication with equations using Divide and Conquer approach and find its complexity.	14 Marks

UNIT-III

5	a)	Define Merging and Purging Rules in **0/1** Knapsack problem.	7 Marks
	b)	Write an algorithm for all pairs shortest path and explain with an example.	7 Marks
		(OR)	
6		Prove that Greedy Knapsack generates optimal solution to the given instance of Knapsack problem when profit weight ratio is arranged in non-increasing order.	14 Marks

UNIT-IV

7	a)	Write an algorithm of M-coloring problem.	7 Marks
	b)	Solve the n-Queens problem using backtracking.	7 Marks
		(OR)	
8		Describe the TSP in branch and bound techniques.	14 Marks

UNIT-V

9		Write about Non-Deterministic algorithms.	14 Marks
		(OR)	
10		Explain about NP-Hard and NP-Complete classes with an example.	14 Marks

CODE No.:14BT41201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain OOP Paradigm and need of OOP Paradigm.	7 Marks
	b)	Explain constructor overloading with an example.	7 Marks
		(OR)	
2	a)	Explain OOP concepts of Class and Object with an example program.	7 Marks
	b)	Explain Parameter Passing techniques in JAVA with examples.	7 Marks

UNIT-II

3		Given a list of marks ranging from 0 to 100, write a program to compute and print the number of students who obtained marks. i) In the range 81 to 100. ii) In the range 61 to 80. iii) In the range 41 to 60. iv) In the range 0 to 40. The program should use a minimum of if statements.	14 Marks
		(OR)	
4		Write a program to illustrate the concept of interface in JAVA.	14 Marks

UNIT-III

5	a)	Give comparison between checked exception and unchecked exception with an example.	7 Marks
	b)	Can finally block be used without catch? Explain.	7 Marks
		(OR)	
6		Write a JAVA program to create a thread by implementing runnable interface.	14 Marks

UNIT-IV

7		Develop an Applet that displays the various shapes which includes circle, rectangle and square.	14 Marks
		(OR)	
8		Design an Applet to display time in a small box.	14 Marks

UNIT-V

9	a)	Write a JAVA program to establish a connection to a database.	7 Marks
	b)	Explain Servlet API.	7 Marks
		(OR)	
10	a)	Explain, how to create and compile the servlet program.	7 Marks
	b)	Explain Scrollable results.	7 Marks

CODE No.:14BT50103 SVEC-14 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

WATER SUPPLY ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Discuss briefly the need for protected water supplies for communities. 7 Marks

b) Distinguish between surface sources and underground sources from quality and quantity considerations. 7 Marks

(OR)

2 a) Discuss the factors that influence the fluctuations in per capita demand and mention various factors governing the rate of demand. 7 Marks

b) The census records of a city show population as follows. 7 Marks
Workout probable population after two decades, selecting any two methods.

Year	1970	1980	1990	2000
Population	25000	28000	35000	41000

UNIT-II

3 a) Discuss the various methods of distribution systems used in water supply schemes. 7 Marks

b) A small town with population 50,000 is to be supplied water by constructing a distribution reservoir. Using the data given below estimate the capacity of the distribution reservoir if (a) pumping is done constantly at uniform rate and (b) if pumping is done at constant rate between 8.00 to 16.00 hours 7 Marks

07.00 – 08.00	30 % of daily supply
08.00 – 17.00	40 % of daily supply
17.00 – 19.00	25 % of daily supply
19.00 – 07.00	5 % of daily supply

(OR)

4 a) Derive an expression for the discharge correction factor while analyzing the pipe networks using Hardy-cross method. 7 Marks

b) Write a detailed note on distribution networks emphasizing their merits and demerits. 7 Marks

UNIT-III

5 a) What are different methods of aeration? Briefly explain. 7 Marks

b) Design and sketch coagulation cum sedimentation tank with continuous flow for a population of 60,000 persons with daily requirement of 120 lpc. Over flow rate is 1000 litres/h/m^2 of plan area. Make suitable assumptions where needed. 7 Marks

(OR)

6 a) Explain "Theory of Filtration". 7 Marks

b) What are the advantages of chlorination? Explain break point chlorination. 7 Marks

UNIT-IV

7 a) What do you mean by aeration? Explain the various types of aeration adopted in water treatment. 7 Marks

	b)	Discuss the disadvantages of hard water. Explain two methods used in industry to remove permanent hardness.	7 Marks

(OR)

8		Write a detailed notes	
		i) Desalination techniques	7 Marks
		ii) Membrane filtration	7 Marks

UNIT-V

9	a)	Sketch a typical Stopcock and explain its functioning.	7 Marks
	b)	Present a general layout of water supply in multi-storey buildings.	7 Marks

(OR)

10	a)	Describe the precautions to be taken in laying pipelines in premises of buildings.	7 Marks
	b)	Sketch a connection from water main to building and explain.	7 Marks

CODE No.:14BT51003 SVEC-14 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between practical and ideal op-amp. Draw its equivalent circuit.	7 Marks
	b)	With the help of suitable examples, explain how the Slew Rate affects the frequency response of an op-amp.	7 Marks
		(OR)	
2	a)	Define the following terms: i) Input bias current ii) Input offset voltage	4 Marks
	b)	Explain the frequency compensation technique in an op-amp.	10 Marks

UNIT-II

3	a)	For a three op-amp realization of a current input instrumentation amplifier, derive the expression for V_0.	7 Marks
	b)	Briefly discuss comparator applications and explain non-inverting comparator with neat sketches.	7 Marks
		(OR)	
4	a)	Design a low pass filter at a cutoff frequency of 1KHz with a pass band gain of 2. Draw the circuit and plot its frequency response.	7 Marks
	b)	Explain the operation of AC amplifier.	7 Marks

UNIT-III

5	a)	Calculate the values of LSB, MSB and full-scale output for an 8-bit DAC for the 0 to 10V range.	6 Marks
	b)	Draw the functional block diagram of 555 timer and explain.	8 Marks
		(OR)	
6	a)	Define capture-range, lock-range and pull-in time of PLL.	6 Marks
	b)	Design a monostable multivibrator using 555 timer to produce a pulse width of 100ms.	8 Marks

UNIT-IV

7	a)	Explain steady state electrical behavior of CMOS and also explain CMOS-to-TTL interface.	7 Marks
	b)	Compare different logic families and list out their advantages and disadvantages.	7 Marks
		(OR)	
8	a)	What are the parameters that are used to define electrical characteristics of CMOS circuits? Write typical values for a CMOS NOR gate.	7 Marks
	b)	Draw the circuit for CMOS NAND gate, its functional table & symbol and explain its working neatly.	7 Marks

UNIT-V

9	a)	Write a Verilog code for SR flip-flop with NAND gates.	7 Marks
	b)	In Verilog HDL, explain port declaration with example.	7 Marks
		(OR)	
10	a)	Using gate level modeling, design full adder with the help of half adder.	7 Marks
	b)	Using two 74 x 138 decoders design a 4 to 16 decoder.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

COMPUTER NETWORKS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate with a neat sketch, the architecture of the UMTS 3G mobile phone network.	7 Marks
	b)	Compare and contrast OSI and TCP/IP reference models.	7 Marks
		(OR)	
2	a)	Draw the electromagnetic spectrum and mention its uses for communication.	7 Marks
	b)	Discuss the relationship of services to protocols.	7 Marks

UNIT-II

3	a)	What is framing? Explain Character Stuffing and Bit Stuffing framing techniques.	6 Marks
	b)	Define Error Correction. Explain about Hamming error correction method for sample data bit **1001101**.	8 Marks
		(OR)	
4	a)	Write short note on different types of Ethernet Cables.	7 Marks
	b)	Differentiate between Pure ALOHA and Slotted ALOHA.	7 Marks

UNIT-III

5	a)	Explain Distance Vector Routing Algorithm with an example.	7 Marks
	b)	What is Flooding? What are the drawbacks of Flooding?	7 Marks
		(OR)	
6	a)	Define Congestion. What are the techniques used to avoid Congestion?	7 Marks
	b)	Explain Leaky Bucket Algorithm to achieve Quality of service.	7 Marks

UNIT-IV

7		What is Connection establishment? How Transport layer establish a connection with Three-way Hand Shake mechanism? Explain in detail.	14 Marks
		(OR)	
8	a)	Explain each field in UDP Header Format with a neat diagram.	7 Marks
	b)	Write short note on Real time Transport Protocol.	7 Marks

UNIT-V

9	a)	What are the advantages of SMTP Protocol?	7 Marks
	b)	Write short notes on Dynamic Web Document.	7 Marks
		(OR)	
10		With an example, explain how DNS Server mapping the domain names. Explain the architecture of DNS.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

COMPUTER NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Computer Networks. What are the applications of Computer Networks?	6 Marks
	b)	Explain different kinds of Network Topologies.	8 Marks
		(OR)	
2	a)	Explain the Frame format and functionality of 802.11 standard protocols.	7 Marks
	b)	What is unguided transmission media? Explain with examples.	7 Marks

UNIT-II

3	a)	What are the design issues of Data Link Layer? Explain.	6 Marks
	b)	Define Error Detection. Generate codeword at sender site for a given data unit 100100; the divisor is 1101. Verify the codeword at receiver site.	8 Marks
		(OR)	
4	a)	Compare and contrast static and dynamic channel allocation problems.	7 Marks
	b)	Explain the channel allocation process with CSMA/CD protocol.	7 Marks

UNIT-III

5		With the help of a neat sketch, explain hierarchical routing.	14 Marks
		(OR)	
6		What is congestion? Explain any one algorithm used to control congestion.	14 Marks

UNIT-IV

7		Explain Transmission Control Protocol connection establishment and release process.	14 Marks
		(OR)	
8	a)	What are the design issues of Transport Layer?	7 Marks
	b)	How does Remote Procedure Call works in Transport Layer?	7 Marks

UNIT-V

9	a)	What are the advantages of SMTP Protocol?	7 Marks
	b)	Write short notes on Dynamic Web Document.	7 Marks
		(OR)	
10		With an example, explain how DNS Server mapping the domain names. Explain the architecture of DNS.	14 Marks

CODE No.:14BT60101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

REINFORCED CEMENT CONCRETE STRUCTURES – II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design a dog legged stair for a building in which the vertical distance between floors is 3.6 m. The stair hall measures 2.5 m X 5 m. The live load may be taken as 2500 N/m². Use M20 concrete and Fe 415 grade steel reinforcement. 14 Marks

(OR)

2 Design a staircase consisting of 10 steps having 300mm tread and 160mm rise and two landings. The width of the staircase is 1500mm and the length of each landing is 1200 mm. Assume the imposed load as 5kN/m² and mild exposure, and use M 20 concrete and Fe 415 steel. 14 Marks

UNIT-II

3 Design a rectangular combined footing for two columns 450 mm x 450 mm and 600 mm x 600 mm carrying 800 kN and 1000 kN respectively. The columns are located 4.0 m apart. The safe bearing capacity of the soil is 200 kN/m². Use M20 concrete and Fe 415 grade steel. 14 Marks

(OR)

4 Design a precast pile of diameter 400mm carrying an axial load of 275kN, placed in submerged medium dense sandy soil having an angle of internal friction of 32°. The density of soil is 18kN/m³ and the submerged density of soil is 10kN/m³. Angle of wall friction between concrete pile and soil is 24°. Assume the following data: Depth of top of pile cap below ground level is 500 mm, thickness of pile cap is 1.5m, grade of concrete in pile is M25, Fe415 steel is used, and clear cover to reinforcement is 75mm. Determine the vertical load carrying capacity of pile and design the pile. 14 Marks

UNIT-III

5 Design a suitable counter fort retaining wall to retain 8 m high embankment above ground level. The foundation is to be taken 1.5 m deep where the safe bearing capacity of soil is 200 kN/m². Surcharge angle is 18° and angle of internal friction for backfill is 30°. Coefficient of friction between soil and concrete is 0.55. Unit weight of soil is 18 kN/m³. Use M20 mix and Fe415 steel reinforcement. 14 Marks

(OR)

6 Design the stem of cantilever retaining wall to retain earth level with the top of the wall to a height of 5.5 m above ground level. The density of soil at site is 17 kN/m³ with a safe bearing capacity of 120 kN/m². Assume the angle of shearing resistance of the soil as 35°. Assume coefficient of friction between soil and concrete as 0.55. Adopt M20 grade concrete and Fe415 grade steel. 14 Marks

UNIT-IV

7 Design a circular water tank to hold 5,00,000 liters of water. Assume rigid joints 14 Marks

between the wall and base slab. Adopt M20 concrete and Fe: 415 steel. Sketch details of reinforcements.

(OR)

8 Design a spherical dome over a circular beam for the following data: 14 Marks

i) Inside diameter of the room=15m.

ii) Rise of the dome = 5m.

iii) Live load due to wind, snow, etc = 1.5 kN/m

UNIT-V

9 Design a silo for storing maize, having unit weight of 6870 N/m^3. The silo has 6m internal diameter and the height of cylindrical portion is 15m. The conical dome has a slope of 40°C with horizontal and has an opening of 60cm diameter. Use Airy's theory. Take $\mu = 0.521$ and $\mu' = 0.432$ use M20 grade concrete. 14 Marks

(OR)

10 A circular reinforced cement concrete chimney has an internal diameter of 4m and a shell thickness of 300 mm. It is reinforced with one percent steel at a cover of 60mm from the outer face. Temperature difference between outer and inner faces is 75°C. Calculate the stresses developed in steel and concrete due to the temperature gradient. Take moduli of Elasticity of steel and concrete as 210 and 18 kN/mm^2 respectively. Coefficient of expansion of both materials may be taken as 11×10^{-6} / °C. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss with neat sketches any two boring methods used in soil exploration.	7 Marks
	b)	Write a brief critical note on vane shear test.	7 Marks
		(OR)	
2	a)	What are the objectives of the exploration program?	6 Marks
	b)	Write in detail about how you plan the exploration program for Alignment of New Embankment Construction.	8 Marks

UNIT-II

3	a)	Discuss the Culmann's graphical method for determination of active earth pressure in cohesionless soil.	8 Marks
	b)	What are the different types of earth pressure?	6 Marks
		(OR)	
4	a)	What are the assumptions made in Rankine's earth pressure theory?	4 Marks
	b)	A retaining wall 5m high with a smooth vertical back retains a dry sandy backfill of unit weight 18 kN/m^3 and angle of shearing resistance of 30^o. The backfill carries a uniformly distributed load of 10 kN/m^2. Find the total active earth thrust per meter length of the wall and its point of application using the Rankine's theory.	10 Marks

UNIT-III

5	a)	Explain briefly the standard method of slices to compute the stability of slope.	6 Marks
	b)	Calculate the factor of safety with respect to cohesion of a clay slope laid at 1 in 2 to a height of 10m, if $\varphi = 12^0$, C = 35 kN/m^2 and γ = 19 kN/m^3. What is the critical height of the slope in this soil? Assume Taylor's stability number as 0.064.	8 Marks
		(OR)	
6	a)	Compute the factor of safety of an infinite slope in a cohesionless soil for a steady state seepage condition, when the flow is parallel to the slope.	6 Marks
	b)	What inclination is required where a filling 12m high is to be constructed having a factor of safety of 1.25? The Soil has C = 20 kN/m^2, $\phi = 15^0$, γ = 17.0 kN/m^3. The stability number for $\phi_{cu} = 12^0$ is equal to 0.063 when the slope is 30^0 and 0.098 when the slope is 45^0.	8 Marks

UNIT-IV

7	a)	Differentiate between general shear failure and local shear failure.	6 Marks
	b)	A square footing carries a load of 800kN and is located at a depth of 1.5m below the ground level. The soil properties are C = 20 kN/m^2, $\varphi = 25^o$, γ= 18 kN/m^3, $N_c = 21$, $N_q = 12.5$ and $N_\gamma = 10$. Calculate the size of footing.	8 Marks
		(OR)	
8	a)	Describe the plate load test. What are its limitations?	8 Marks
	b)	What is the ultimate bearing capacity of a rectangular footing 1m x 2m on the surface of saturated clay of unconfined compressive strength of 100 kN/m^2. Use Skempton's equation.	6 Marks

UNIT-V

9	a)	How are skin friction and point resistance of a pile computed?	9 Marks
	b)	A concrete pile of 50cm diameter was driven into sand of loose to medium density to a depth of 15m. The following properties are known: Average unit weight of soil along the length of the pile, γ = 17.5 kN/m^3, average $\varphi = 30^\circ$, average K_s = 1.0 and δ= 0.750. Calculate (i) the ultimate bearing capacity of the pile, and (ii) the allowable load with Fs=2.5. Assume the water table is at great depth. Use Berezantsev's method. N_q for L/d = 33.3, $\varphi = 30^0$ is equal to 16.5.	5 Marks
		(OR)	
10	a)	What are the advantages and disadvantages of a Pneumatic Caisson, when compared with other types?	7 Marks
	b)	Design a Cylindrical Open Caisson to be sunk through 30m of sand to support a load of 50MN. The allowable bearing pressure is 1700kN/m^2. Test the feasibility of sinking the caisson, taking the skin friction as 27kN/m^2. What is the thickness of the concrete seal required?	7 Marks

CODE No.:14BT60103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

TRANSPORTATION ENGINEERING - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the major recommendations of Bombay road plan? Explain the differences between Bombay and Lucknow road plans.	7 Marks
	b)	Derive an expression for vertical summit curves. Derive the length of summit curve to provide a stopping sight distance for a design speed of 80kmph for an intersection formed of two gradients +3.0 and -5.0 percent. Assume other data.	7 Marks

(OR)

2	a)	What are the different highway cross sectional elements and explain the importance of geometric standards that are maintained in designing a highway?	7 Marks
	b)	Derive an expression for stopping sight distance. Calculate the stopping sight distance on a highway at a descending gradient of 2% for a design speed of 80kmph. Assume other data as per IRC recommendations.	7 Marks

UNIT-II

3	a)	Explain the requirements and importance of highway surface and subsurface drainage system.	7 Marks
	b)	Discuss the construction of Road in Water-Logged areas and explain the process of drainage of slopes and erosion control.	7 Marks

(OR)

4	a)	Discuss the requirements of highway drainage system. Explain drainage provided near slopes and erosion control in highways.	7 Marks
	b)	What are the measures taken in water logging areas and black cotton soil areas while constructing a highway?	7 Marks

UNIT-III

5	a)	Draw a neat sketch of a Rigid pavement. Indicate all component layers. Explain the functions of each layer.	7 Marks
	b)	Calculate the maximum warping stresses at the edge and interior of a slab of length 4.5m long and 3.5m width. Take the elastic modulus of the concrete as $3 \times 10^5 kg/cm^2$. Modulus of sub grade reaction = 8.0 kg/ cm^3; Thickness of pavement slab= 20cm; Radius of contact area= 15 cm; Poisson's ratio= 0.15; Temperature differential between top and bottom surface of the slab as 17^oC ; Coefficient of thermal expansion of concrete as 10×10^{-6} per ^oC.	7 Marks

(OR)

6	a)	Design the thickness of a flexible pavement for a dual single carriage way with the following data using IRC method: Traffic Expected = 440 CV/day in both directions; Design Life = 15 years; Design CBR value of soil sub Grade= 5% ; Vehicle Damage Factor = 3.1; Traffic Growth Rate= 7.3%.	7 Marks
	b)	Design the length and spacing of tie bars given that the pavement thickness is 20cm and width of the road is 7m with one longitudinal joint. The unit weight of concrete is 2400 kg/m^3, the coefficient of friction is 1.5, allowable working tensile stress in steel is1750 kg/cm^2 and bond stress of deformed bars is 24.6 kg/cm^2.	7 Marks

UNIT-IV

7		Explain the types of construction and construction methodology of Bituminous pavements.	14 Marks

(OR)

8		Explain the construction methodology of RCC pavements.	14 Marks

UNIT-V

9	a)	Draw a neat sketch of permanent way. Explain the requirements of railway track.	7 Marks
	b)	Draw a neat sketch of Left Hand Turnout.	7 Marks

(OR)

10	a)	List out various aircraft characteristics. Explain how these would help in the planning of an airport.	7 Marks
	b)	Calculate the actual runway length for the following data: Basic runway length = 1600m Elevation of the airport = 650m above MSL Airport reference temperature = 32.5^{o}C Effective gradient of the runway = 0.8%	7 Marks

CODE No.:14BT60104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

WASTEWATER TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the principles of collection and disposal of sewage.	7 Marks
	b)	Differentiate conservancy and water carriage system of sewage disposal.	7 Marks
		(OR)	
2	a)	Explain the objectives of different sewerage systems.	7 Marks
	b)	Differentiate Separate and Combined Systems.	7 Marks

UNIT-II

3	a)	Write a short note on the various materials used in sewer construction.	5 Marks
	b)	Explain the necessity of providing manhole in sewer line. Explain the construction of a manhole with neat sketches.	9 Marks
		(OR)	
4	a)	Write a short note on BOD.	5 Marks
	b)	If 2.5ml of raw sewage have been diluted to 250ml and the DO concentration of the diluted sample at the beginning was 8mg/l and 50mg/l after 5 days incubation at 20ºC, find the BOD of raw sewage.	9 Marks

UNIT-III

5	a)	Discuss briefly on the efficiency of a settling tanks with respect to surface load.	5 Marks
	b)	What is the necessity of providing a grit chamber? What are the design considerations for a grit chamber?	9 Marks
		(OR)	
6	a)	How the sedimentation tanks can be classified? How the settling efficiency of particles can be increased?	10 Marks
	b)	Draw the flow diagram of a conventional wastewater treatment plant and list out the treatment units.	4 Marks

UNIT-IV

7	a)	Explain the factors which affect the biological treatment system.	5 Marks
	b)	What is meant by activated sludge? Describe with sketch the treatment of sewage by activated sludge process. Mention the advantages and disadvantages of this system.	9 Marks
		(OR)	
8	a)	Design stabilization pond for treating sewage from a hot climatic residential colony with 5000 persons, contributing sewage at the rate of 120 litres per capita per day. The 5-day BOD of sewage is 250 mg/L. (Take organic loading as 300 kg/hectare/day).	9 Marks
	b)	Explain the working principle involved in the trickling filter.	5 Marks

UNIT-V

9 a) Explain the disposal of sewage by land treatment in detail. 9 Marks

b) What is sewage sickness? Explain the methods to be adopted to prevent it. 5 Marks

(OR)

10 Design a sludge digestion tank with the following data 14 Marks

Average flow of sewage = 20×10^6 l/day

Total suspended solids in raw sewage = 350 mg/l

Volatile suspended solids = 250 mg/l

Water content of raw sludge = 90%

Water content of digested sludge = 80%

Volatile solids reduction = 45%

Assume required data.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

GROUND WATER DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain: 14 Marks
i) Transmissivity ii) Darcy's law
iii) Storage coefficient iv) Ground water flow Contours

(OR)

2 a) Discuss in detail the vertical distribution of groundwater. 7 Marks
b) Write a note on the following aquifer parameters: 7 Marks
i) Porosity ii) Specific yield
iii) Specific Retention iv) Storage Coefficient.

UNIT-II

3 a) Describe recuperation test and yield of an open well. 7 Marks
b) Explain steady and unsteady radial flow of ground water towards wells in both the aquifers. 7 Marks

(OR)

4 a) List out the assumptions made in the Dupuit's equation. Derive an expression for the steady state discharge of a well fully penetrating into a confined aquifer. 7 Marks
b) Explain non-equilibrium equations along with their significance. 7 Marks

UNIT-III

5 a) Derive the Ghyben – Herzberg relation between fresh and saline waters. 7 Marks
b) From the collection and interpretation of hydrologic, geologic and geochemical data, the following information was obtained. 7 Marks

Width of aquifer	2.8km
Thickness of aquifer	30m
Porosity of aquifer material	10%
Difference in specific gravity	0.03
Permeability of the aquifer	48.9 m/day

From conductivity measurements in two observation wells located at 150 and 225 m from the shore (landward side) the 1500 ppm line was found to be located at 15 and 22.5 m respectively, below the top of the aquifer. Determine the fresh water-sea water interface.

(OR)

6 a) Explain the methods for intrusion control of saline water. 7 Marks
b) What is fresh–salt water interface? How do you get the shape of the interface? 7 Marks

UNIT-IV

7 Discuss the necessity, concept and different methods of artificial recharge 14 Marks

of ground water.

(OR)

8 What is the need for artificial recharge of ground water? Explain with case studies, applications of RS and GIS in artificial recharge of ground water. 14 Marks

UNIT-V

9 a) Explain the electrical resistivity method. 7 Marks

b) Describe the seismic refraction method. 7 Marks

(OR)

10 a) Explain geophysical logging. 7 Marks

b) Describe resistivity logging. 7 Marks

CODE No.:14BT60108 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

SOLID WASTE MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the quantity and composition of municipal solid wastes.	14 Marks
		(OR)	
2		What are the ways to create public awareness on solid waste management? Discuss in detail.	14 Marks

UNIT-II

3		Discuss about on-site storage of solid waste and the factors influencing it.	14 Marks
		(OR)	
4		Compose the impacts of public health and economic aspects of on-site solid waste storage system.	14 Marks

UNIT-III

5	a)	What are different factors affects the waste collection?	7 Marks
	b)	Explain in details on-site storage methods municipal solid waste.	7 Marks
		(OR)	
6		Explain various methods of collection of municipal solid waste in i) Municipal areas ii) Urban areas	14 Marks

UNIT-IV

7	a)	Explain process of source separation of solid waste.	7 Marks
	b)	Explain different process components and techniques involved in solid waste management.	7 Marks
		(OR)	
8	a)	What are the factors to be consider for selection of vehicles for transport of municipal solid waste?	7 Marks
	b)	What is transfer station? Explain the necessity of transfer station.	7 Marks

UNIT-V

9	a)	What are the merits and demerits of composting and incineration?	10 Marks
	b)	Explain sanitary land fill.	4 Marks
		(OR)	
10		Compare the Bangalore method composting with Indore method of composting.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Draw and discuss the internal block diagram of 8086. 7 Marks

b) Draw the register organization of 8086 and explain typical applications of each register. Discuss the significance of Flag register in detail. 7 Marks

(OR)

2 a) Write an assembly language program for 8086 processor to find out the number of positive and negative numbers from a given series of signed numbers. 7 Marks

b) What do you mean by addressing modes? What are the different addressing modes supported by 8086? Explain each of them with suitable examples. 7 Marks

UNIT-II

3 a) Draw and discuss a typical minimum mode 8086 system. 7 Marks

b) How will you differentiate between the two procedures, the first of which is a subroutine and the second is an interrupt service routine? 7 Marks

(OR)

4 a) Explain the methodology to interface RAM with 8086 microprocessor. 7 Marks

b) How will you provide more than eight interrupt input lines to an 8086 based system? Design an interrupt system which provides twenty nine interrupt inputs to the 8086 system. 7 Marks

UNIT-III

5 a) Interface an 8255 with 8086 so as to have port A address 00, port B address 02, port C address 01, and CWR address 03. 7 Marks

b) Explain the functions of the following signals of 8257. 7 Marks

i) $\overline{IOR}$ ii) $\overline{IOW}$ iii) HRQ iv) HLDA

v) $\overline{MEMR}$ vi) $\overline{MEMW}$ vii) TC

(OR)

6 a) Draw a typical stepper motor interface with 8086 using 8255 and explain. 7 Marks

b) Draw and discuss the asynchronous mode transmitter and receiver data formats of 8251. 7 Marks

UNIT-IV

7 a) Compare Microprocessors and Microcontrollers. 6 Marks

b) Draw and discuss the formats and bit definitions of the following SFR's in 8051 microcontroller. 8 Marks

i) IP ii) TMOD iii) TCON iv) SCON.

(OR)

8 a) Assume that ROM space of 8051 starting at 250H contains “Hello”, write a program to transfer the bytes into RAM locations starting at 40H. 10 Marks

b) Write the features of 8051 and 8052 microcontrollers. 4 Marks

UNIT-V

9	a)	Write a program to generate a square wave of 50Hz frequency on port pin P1.5 using timer 1 in mode2. Assume XTAL=11.0592MHz.	9 Marks
	b)	List out the steps involved in programming the 8051 to transfer data serially.	5 Marks

(OR)

10	a)	Explain the interrupt structure of 8051.	7 Marks
	b)	Write the differences between microprocessors and microcontrollers? Also mention their application areas?	7 Marks

CODE No.:14BT60202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

POWER ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the operation of IGBT with the help of neat structural diagram and suitable wave forms.	7 Marks
	b)	What are ***dv/dt*** and ***di/dt*** ratings of SCRs? What happens if these ratings exceed? Explain.	7 Marks
		(OR)	
2	a)	Describe any one driver circuit and snubber circuit for MOSFET.	7 Marks
	b)	Draw the dynamic characteristics of SCR during turn-on and turn-off and explain.	7 Marks

UNIT-II

3		Describe the operation of single-phase, two pulse, mid-point converter with relevant voltage and current waveforms.	14 Marks
		(OR)	
4	a)	What are the advantages of three phase bridge controlled rectifier over three phase midpoint six pulse controlled rectifier?	7 Marks
	b)	A 3-phase half wave controlled rectifier has a supply of 200V/phase. Determine the average load voltage for firing angle of 30^0 and 60^0 assuming a thyristor volt drop of 1.5V and continuous load current.	7 Marks

UNIT-III

5		What are dual converters? What are their applications? Explain the operation of a three phase dual converter.	14 Marks
		(OR)	
6		A single phase half wave ac voltage controller is connected with a load of R = 5 Ω with an input voltage of 230V, 50Hz. If the firing angle of thyristor is 45^o, determine (i) the RMS output voltage (ii) power delivered to load (iii) input power factor (iv) average value of input current and voltage.	14 Marks

UNIT-IV

7		Explain the working of type A chopper with suitable voltage and current waveforms. Give the complete time domain analysis of type A chopper.	14 Marks
		(OR)	
8	a)	Derive the expression for the output voltage of a step-up chopper and explain its control strategies.	7 Marks
	b)	A step-up chopper has input voltage of 220V and output voltage of 660V. If the Non-conducting time of thyristor chopper is 100 micro seconds, compute the pulse width of output voltage. In case pulse width is halved for constant frequency operation, find the new output voltage.	7 Marks

UNIT-V

9	a)	Explain the working principle of single phase current source inverter.	7 Marks
	b)	Describe the working of a Mc-Murray half bridge inverter with relevant wave forms.	7 Marks

(OR)

10		Describe the functioning of three phase voltage source inverter supplying a balanced star -connected load in 120^{0} operating mode.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the effect of fault impedance on the fault current.	7 Marks
	b)	Derive the expression for the fault current for a line to line to ground fault and draw its sequence network connections.	7 Marks

(OR)

2		A 3-phase, 25 MVA, 11 KV, alternator with X_0=0.05 p.u, X_1=X_2=0.15 p.u is earthed through a reactance of 0.333ohms. Calculate the fault current for a single line to ground fault and derive the formulae employed for SLG fault.	14 Marks

UNIT-II

3	a)	What is meant by percent bias? Under what circumstances is a percentage differential relay preferred over the differential relay?	7 Marks
	b)	What do you mean by distance relay? Describe the operating characteristics of distance relays on the impedance plane and discuss their limitations.	7 Marks

(OR)

4	a)	What is a static relay? What are the merits and demerits of static relays over electromagnetic relays also mention its applications.	7 Marks
	b)	Discuss the realization of an IDMT over current relay using a microprocessor.	7 Marks

UNIT-III

5	a)	Explain with neat circuit diagram the Inter turn fault protection for alternators.	7 Marks
	b)	An alternator rated at 10kV protected by balanced circulating current system has its neutral grounded through a resistance of 10 ohms. The protective relay is set to operate when there is an out of balance current of 1.8 amp in the pilot wires, which are connected in the secondary windings of 1000/5 ratio current transformers. Determine: i) the percent winding which remains unprotected ii) the minimum value of the earthing resistance required to protect 80%.of the winding.	7 Marks

(OR)

6	a)	While connecting the CT secondaries for differential protection of three phase transformers, the CT's on the star side have to be connected in delta and vice versa. Explain with an example.	7 Marks
	b)	Describe a method of protecting the transformer against internal faults.	7 Marks

UNIT-IV

7	a)	Explain in detail the protection of bus bars.	7 Marks

	b)	Explain 3-zone protection using distance relays of transmission line.	7 Marks
		(OR)	
8	a)	Briefly explain metal oxide surge diverter.	7 Marks
	b)	Discuss the effect of power surges on the performance of different types of distance relays.	7 Marks

UNIT-V

9	a)	Discuss the recovery rate theory and energy balance theory of arc interruption in a circuit breaker.	7 Marks
	b)	Explain the terms recovery voltage, restriking voltage and RRRV. Derive an expression for the restriking voltage in terms of system capacitance and inductance.	7 Marks
		(OR)	
10		With neat circuit diagrams, explain the operation of vacuum circuit breaker and SF6 circuit breaker.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

DISTRIBUTION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and explain loss factor and load factor.	7 Marks
	b)	Assume that annual peak load of a primary feeder is 2000kW at which total power loss which is total copper loss is 80kW / 3-φ. Assuming an annual loss factor of 0.15, determine i) Annual average power loss ii) The total annual energy loss due to the copper loss of the feeder circuits.	7 Marks

(OR)

2	a)	The annual peak load input to a primary feeder is 2000kW. A computer program which calculates voltage drops and I^2R losses shows that the total copper loss at the time of peak load is 100kW. The total annual energy supplied to the sending end of the feeder is 5.61×106 kWh. i) Determine the annual loss factor ii) Calculate the total annual copper loss energy and its values at Rs.1.50/kWh.	7 Marks
	b)	Distinguish between underground and overhead distribution system.	7 Marks

UNIT-II

3		Explain the power factors referred to receiving end voltage and respective load voltages.	14 Marks

(OR)

4	a)	What should be the minimum cross sectional area of each conductor in a 2-core cable 100m long to limit the total voltage drop to 4% of the declared voltage of 250V when the conductor carry 60A? The resistivity of the conductor is 2.845 μΩ-cm.	7 Marks
	b)	Explain about radial d.c distributor fed at both the ends.	7 Marks

UNIT-III

5	a)	Analyze the square shaped distribution substation service areas for percentage voltage drop and power losses.	8 Marks
	b)	Distinguish between indoor and outdoor substations.	6 Marks

(OR)

6	a)	Analyze the 1-phase, 2-wire system with multi grounded common neutral.	7 Marks
	b)	Derive the voltage and power loss expressions of non-three phase distribution systems and compare with the 3 phase balanced system.	7 Marks

UNIT-IV

7	a)	Derive an expression for voltage drop in a three phase ac distributor.	8 Marks
	b)	Explain in detail about line sectionalizer.	6 Marks

(OR)

8	a)	Explain the overall coordination procedure employed for the protection of distribution systems.	7 Marks
	b)	Derive the voltage drop and power loss expressions of a feeder with a non-uniformly distributed load.	7 Marks

UNIT-V

9	a)	Differentiate the effects of shunt and series compensations in the distribution systems.	7 Marks
	b)	What are the effects of shunt and series capacitors in distributions systems?	7 Marks

(OR)

10	a)	What is the need for P.F improvement in distribution systems?	7 Marks
	b)	With the help of a phasor diagram, show how a series capacitor boosts the voltage. What are the limitations in this method?	7 Marks

CODE No.:14BT60207 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the applications of Insulating materials in the construction of circuit breakers.	14 Marks

(OR)

2		What is Finite Element Analysis? Discuss its step-by-step procedure for the solution of electric field problem.	14 Marks

UNIT-II

3		Two plane circular electrodes of diameter = 40cm each and separated by 5mm gap shows a current of 100nA on application of 10kV at NTP. Keeping the applied field constant and reducing the distance to 2mm results a current of 4000pA. Calculate Townsend's primary ionization coefficient.	14 Marks

(OR)

4		Explain the study of a Townsend discharge with neat diagram along with current growth equation.	14 Marks

UNIT-III

5	a)	What is a Tesla coil? How are damped high frequency oscillations obtained from a Tesla coil?	7 Marks
	b)	Explain one method of controlled tripping of impulse generators. Why is controlled tripping necessary?	7 Marks

(OR)

6	a)	Explain the different schemes for cascaded connection of transformers for producing very high **ac** voltages.	7 Marks
	b)	An impulse generator has eight stages with each condenser rated for 0.16μF and 125kV. The load capacitor available is 1000pF. Find the series resistance and the damping resistance needed to produce 1.2/50μs impulse wave. What is the maximum output voltage of the generator, if the charging voltage is 120kV?	7 Marks

UNIT-IV

7	a)	Explain the principle and construction of an electrostatic voltmeter for very high voltages. What are its merits and demerits for high voltage **ac** measurements?	7 Marks
	b)	A Rogowski coil is to be designed to measure impulse currents of 10kA having a rate of change of current of 1011A/s, the current is read by a VTVM as a potential drop across the integrating circuit connected to the secondary. Estimate the values of mutual inductance, resistance and capacitance to be connected, if the meter reading is to be 10V for full-scale deflection.	7 Marks

(OR)

8	a)	What are the requirements of an oscillograph for impulse and high frequency measurements in high voltage test circuits?	7 Marks
	b)	Why are the capacitance voltage dividers preferred for high **ac** voltage measurements?	7 Marks

UNIT-V

9	Briefly explain how partial discharges in an insulation system or equipment can be detected and displayed.	14 Marks
	(OR)	
10	Explain the high voltage Schering bridge for the **tanδ** and capacitance measurement of insulator bushings.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

DESIGN OF MACHINE ELEMENTS-II

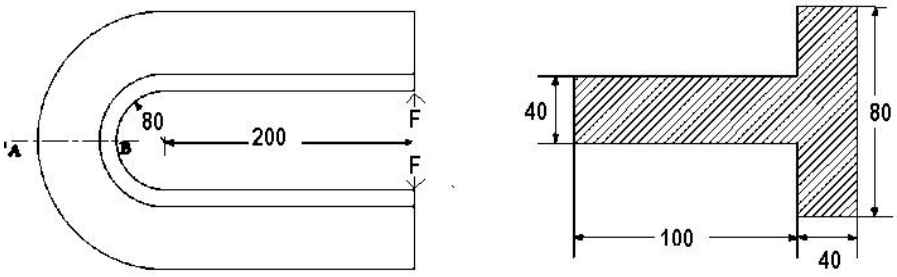
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

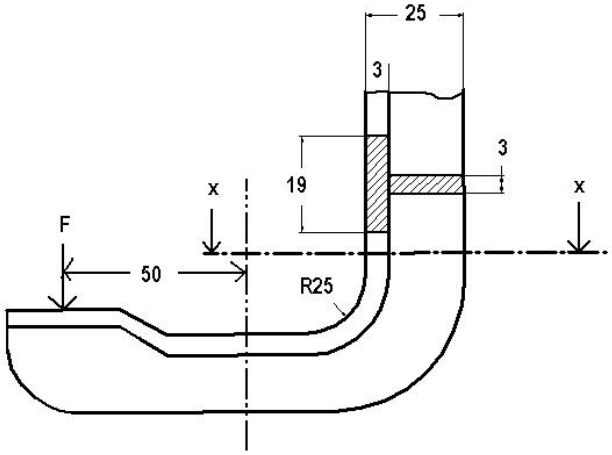
UNIT-I

1 A section of frame for a punch press is shown in figure below. Determine the capacity of the press if the maximum tensile stresses in the frame are not to exceed 60MPa. 14 Marks



(OR)

2 A section of a C clamp is shown in figure. What force F can be exerted by the screw if the max tensile stress in clamp is limited to 140 MPa. 14 Marks



UNIT-II

3 Design a journal bearing for centrifugal pump with following data 14 Marks
Diameter of journal = 50 mm
Operating speed = 1000 RPM
Radial load = 5000 N

(OR)

4 A single-row deep groove ball bearing is subjected to an axial thrust load 5000 N and a radial load of 4000 N. Select the suitable bearing for an average life of 5 years with 40 hr/week and explain design procedure of ball bearings. 14 Marks

UNIT-III

5 A pair of helical gears consists of a 20 teeth pinion meshing with a 100 teeth gear. The pinion rotates at 720 r.p.m. The normal pressure angle is 20° while the helix angle is 25°. The face width is 40 mm and the normal module is 4 mm. The pinion as well as gear are made of steel having ultimate strength of 600 MPa and heat treated to a surface hardness of 300 B.H.N. The service factor and factor of safety are 1.5 and 2 respectively. Assume that the velocity factor accounts for the dynamic load and calculate the power transmitting capacity of the gears? — 14 Marks

(OR)

6 The following particulars of a single reduction spur gear are given: Gear ratio = 10: 1; Distance between centres = 660 mm approximately; Pinion transmits 500 kW at 1800 r.p.m.; Involute teeth of standard proportions (addendum = m) with pressure angle of 22.5°; Permissible normal pressure between teeth = 175 N per mm of width. — 14 Marks

Find : i) The nearest standard module if no interference is to occur
ii) The number of teeth on each wheel
iii) The necessary width of the pinion
iv) The load on the bearings of the wheels due to power transmitted

UNIT-IV

7 a) Design a spring for a balance to measure 0 to 1000 N over a scale of length 80 mm. The spring is to be enclosed in a casing of 25 mm diameter. The approximate number of turns is 30. The modulus of rigidity is 85 kN/mm^2. Also calculate the maximum shear stress induced. — 7 Marks

b) At the bottom of a mine shaft, a group of 10 identical close coiled helical springs are set in parallel to absorb the shock caused by the falling of the cage in case of a failure. The loaded cage weighs 75 kN, while the counter weight has a weight of 15 kN. If the loaded cage falls through a height of 50 metres from rest, find the maximum stress induced in each spring if it is made of 50 mm diameter steel rod. The spring index is 6 and the number of active turns in each spring is 20. Modulus of rigidity, G = 80 kN/mm^2. — 7 Marks

(OR)

8 A helical compression spring made of oil tempered carbon steel, is subjected to a load which varies from 400 N to 1000 N. The spring index is 6 and the design factor of safety is 1.25. If the yield stress in shear is 770 MPa and endurance stress in shear is 350 MPa, find : 1. Size of the spring wire, 2. Diameters of the spring, 3. Number of turns of the spring, and 4. Free length of the spring. The compression of the spring at the maximum load is 30 mm. The modulus of rigidity for the spring material may be taken as 80 kN/mm^2. — 14 Marks

UNIT-V

9 Design the Overhung Crankshaft

i) When the crank is at dead centre. — 7 Marks

ii) When the crank is at an angle of maximum twisting moment. — 7 Marks

(OR)

10 Determine the dimensions of an I-section connecting rod for a petrol engine from the following data: Diameter of the piston = 110 mm, Mass of the reciprocating parts = 2 kg Length of the connecting rod from centre to centre = 325 mm, Stroke length = 150 mm, r.p.m.= 1500 with possible over speed of 2500, Compression ratio = 4:1 Maximum explosion pressure= 2.5 N/mm^2. — 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

OPERATIONS RESEARCH

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A company makes two kinds of leather belts. Belt A is of high quality and belt B is of lower quality. The respective profits are Rs.4 and Rs. 3 per belt. Each belt of type A requires twice as much time as a belt of type B and if all belts were of type B the company could make 1000 belts per day. But the supply of leather is sufficient for only 800 belts (both A and B combined). Belt A requires a fancy buckle and only 400 such buckles are available per day. There are only 700 buckles a day available for type B. Determine the number of belts to be produced for each type so as to maximize profit. 14 Marks

(OR)

2 A transport company with Rs.40,00,000 to spend is contemplating to purchase three types of vehicles. Vehicle A has 10 tons pay load and expected to average 35Km per hour and it costs Rs. 80,000. Vehicle B has 20 ton pay load, expected to average 30 Km per hour and costs Rs.1,00,000. Vehicle C is modified form of B. It is having provisions for sleeping for one driver and its capacity is 18 tons and averages to 28 Km per hour. A and B with one driver can run 12 hours per day. C requires 2 drivers and runs 20 hours per day. Company has 100 drivers available. Maintenance facilities restrict the total vehicles to 30. Formulate this as a linear programming problem to optimize the resources. 14 Marks

UNIT-II

3 a) Four engineers are available to design four projects. Engineer 2 is not competent to design the project B. Given the following time estimates needed by each engineer to design a given project, find how should the engineers be assigned to projects so as to minimize the total design time of four projects. 10 Marks

Projects

	A	B	C	D
1	12	10	10	8
2	4	Not suitable	15	11
3	6	10	16	4
4	8	10	9	7

b) Define the following with reference to transportation problems 4 Marks
i) Basic solution.
ii) Basic feasible solution.
iii) Degerate basic feasible solution.
iv) Optimal basic feasible solution.

(OR)

4 A firm manufacturing a single product has plant I, II, III. The three plants 14 Marks

haves produced 60, 35 and 40 units respectively during this month. The firm had made a commitment to sell 22 units to customer A, 45 units to customer B, 20 units to customer C, 18 units to customer D and 30 units to customer E. Find the minimum possible transportation cost of shipping the manufactured product to five customers. Solve the initial basic feasible solution with North West corner rule and then optimal solution with MODIs method. The net per unit cost of transporting form the three plants to five customers is given in the table:

	A	B	C	D	E
I	4	1	3	4	4
II	2	3	2	2	3
III	3	5	2	4	4

UNIT-III

5 Time taken by different activities of P.E.R.T project is as given below 14 Marks

Activity		Activities Times		
Tail Event (i)	Head event(j)	Optimistic time	Pessimistic time	Most likely time
1	2	1	3	2
2	3	1	7	4
2	7	2	4	3
3	4	1	5	3
3	5	0	0	0
4	6	0	0	0
5	6	3	13	5
7	8	4	12	8
6	9	4	14	6
8	9	1	2	2

i) Draw the network.
ii) Determine the critical path and project duration.
iii) What should be the project duration for the probability of completion of 95%.

(OR)

6 From the activity details given below, determine the optimal project duration by taking indirect cost as Rs.70/day. 14 Marks

Normal			Crash	
Activity	Time	Cost	Time	Cost
1-2	8	100	6	200
1-3	4	150	2	350
2-4	2	50	1	90
2-5	10	100	5	400
3-4	5	100	1	200
4-5	3	80	1	100

UNIT-IV

7 A bank has 2 tellers working on SB A/c. The first teller handles withdrawals only. The second teller handles deposits only. It has been 14 Marks

found that the service time distribution for the deposits and withdrawals both are exponentially with mean service time of 3 minutes / customer. Depositors one found to arrive in a Poisson distribution throughout the day with mean arrival rate of 16/hr. withdrawals also arrive in a poisons fashion with mean arrival rate of 14/hr. What would be the average waiting time for depositors and withdrawals if each teller would handle both withdrawals and deposits what would be the effect if this could only be accomplished by increasing the service time to 3.5 minutes?

(OR)

8 a) A certain queuing system has a input with a mean arrival rate of two calling units / hr. The service time distribution is experimental with a meaning 0.4 hr. The marginal cost of providing each sector is Rs. 4 /hr. Where it is estimated that the cost which is incurred by hearing each calling unit idle is Rs. 100 /hr. Determine the number of servers that should be assigned to the system in order to minimize the expected total cost/hr. 7 Marks

b) Internet users arrive at a centre following a Poisson distribution with an average time of 10 minutes between one arrival and the next. The time taken for internet browsing is on an average 30 minutes and it follows an exponential distribution. What is the probability that the system in the centre is busy? How many more systems should be established to reduce the waiting time to less than or equal to half of the present waiting time? 7 Marks

UNIT-V

9 ABC Ltd has invented a picture cell phone. It is faced with selecting one alternative out of the following strategies. 14 Marks

i) Manufacture the cell phone.
ii) Take royalty from another manufacturer.
iii) Sell the rights for the inventions and take a lump sum amount.

Profit in thousands of rupees which can be incurred and probability associated with such alternative are shown in the table below:

Event	Probability	Manufacturer	Royalty	Sell rights
High	0.25	200	60	50
Medium	0.4	50	40	50
Low	0.35	-10	20	50

Represent the company problem in the form of the decision tree and suggest what decision the company takes to maximize profits

(OR)

10 a) Explain the terms: 7 Marks

i) Saddle point ii) Payoff matrix iii) Criterions

b) In a game of matching coins with two players, suppose A wins one unit of value when there are two heads, wins nothing when there are two tails and losses 1/2 unit of value when there is one head and one tail. Determine the payoff matrix, the best strategies for each player and the value of the game to A. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive the general two-dimensional unsteady state heat conduction equation for an isotropic solid cylindrical rod with internal heat generation. Simplify the obtained equation to Poisson's equation, Fourier's equation and Laplace equation. 14 Marks

(OR)

2 Consider a large plane wall of thickness L = 0.05m. The wall surface at x = 0 is insulated, while the surface at x = L is maintained at a temperature of 30°C. The thermal conductivity of the wall is k = 30 W/m °C and heat is generated in the wall at a rate of $\dot{g}_{gen} = \dot{g}_0 e^{-0.5x/L}$ W/m^3 where $\dot{g}_0 = 8\times 10^6$ W/m^3. Assuming steady one-dimensional heat transfer. (i) Express the differential equation and the boundary conditions for heat conduction through the wall. (ii) Obtain a relation for the variation of temperature in the wall by solving the differential equation. (iii) Determine the temperature of the insulated surface of the wall. 14 Marks

UNIT-II

3 Circumferential aluminium fins of rectangular profile (1.5cm. wide and 1mm thick) are fitted on to a 90mm engine cylinder with a pitch of 10mm. The height of the cylinder is 120mm. The cylinder base temperature before and after fitting the fins are 200°C and 150°C respectively. Take ambient at 30°C and h (average) = 100 W/m^{2}K. Estimate the heat dissipated from the finned and the unfinned surface areas of cylinder body. 14 Marks

(OR)

4 a) What is meant by a semi-infinite solid? Write temperature distribution equation for it. 6 Marks

b) A 60mm thick large steel plate (k=42.6 W/m°C, α= 0.043 m^2/h), initially at 440°C is suddenly exposed on both sides to an environment with convective heat transfer coefficient 235 W/m^2 °C and temperature 50°C. Determine the centre line temperature and temperature inside the plate 15mm from the mid plane after 4.3 minutes. 8 Marks

UNIT-III

5 a) Define Reynolds, Nusselt and Prandtl numbers. Explain their importance in convective heat transfer. 6 Marks

b) The crankcase of an I.C engine measuring 80cm x 20cm may be idealised as a flat plate. The engine runs at 90km/h and the crankcase is cooled by the air flowing past it at the same speed. Calculate the heat loss from the crank surface maintained at 85°C, to the ambient air at 15°C. Due to road induced vibration, the boundary layer becomes turbulent from the leading edge itself. 8 Marks

(OR)

6	a)	Air at atmospheric pressure and 200°C flows over a plate with a velocity of 5 m/s. The plate is 15mm wide and is maintained at a temperature of 120°C. Calculate the thickness of hydrodynamic and thermal boundary layers and the local heat transfer coefficient at a distance of 0.5m from the leading edge. Assume that flow is on one side of the plate. Take ρ= 0.815 kg/m^3, μ= 24.5 x 10^{-6} Ns/m^2, Pr=0.7 and K= 0.0364 W/m K.	8 Marks
	b)	Calculate the heat transfer from a 60W incandescent bulb at 115°C to ambient air at 25°C. Assume the bulb as a sphere of 50mm diameter. Also find the percentage of power lost by free convection.	6 Marks

UNIT-IV

7	a)	Water is boiled at the rate of 25kg/h in a polished copper pan, 280 mm in diameter at atmospheric pressure. Assuming nucleate boiling conditions, calculate the temperature of the bottom surface of the pan.	7 Marks
	b)	A vertical square plate 30cm x 30cm is exposed to steam at atmospheric pressure. The plate temperature is 98°C. Calculate the heat transfer and the mass of steam condensed per hour.	7 Marks

(OR)

8	a)	Write a short note on compact heat exchangers.	5 Marks
	b)	A cross flow heat exchanger in which both fluids are unmixed is used to heat water with engine oil. Water enters at 30°C and leaves at 85°C at rate of 1.5 kg/s, while the engine oil with C_p= 2.3 kJ/kg K enter at 120°C with a mass flow rate of 3.5 kg/s. The heat transfer surface area is 30 m^2. Calculate the overall heat transfer co-efficient by using LMTD method.	9 Marks

UNIT-V

9	a)	Define emissivity, absorptivity and reflectivity.	6 Marks
	b)	Two large parallel plates are kept at 1000°C and 500°C. i) Determine heat radiated. ii) If the respective emissivities are 0.8 and 0.5, determine heat radiated.	8 Marks

(OR)

10	a)	Explain the following laws relevant to radiation heat transfer: i) Wien's displacement law. ii) Planck's law. iii) Radiation shield.	6 Marks
	b)	Two large parallel plates with ε = 0.5 each are maintained at different temperatures and are exchanging heat only by radiation. Two equally large radiations shields with surface emissivity 0.05 are introduced in parallel to the plates. Find the percentage reduction in net radiative heat transfer.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

CAD/CAM

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 With a neat sketch explain the product cycle in a conventional manufacturing environment. 14 Marks

(OR)

2 Classify various types of input and output devices and discuss the working of a colour Raster display system with a neat sketch. 14 Marks

UNIT-II

3 Reflect the polygon whose vertices are A(-1,0), B(0, -2), C(1,0) and D(0,2) about the lines 14 Marks

i) horizontal line y = 2 and ii) vertical line x = 3.

(OR)

4 Develop the equation of a Bezier curve, find the points on the curve for t = 0, 0.25, 0.5, 0.75 and 1 and plot the curve for the following data. The coordinates of the four control points is given by P_0 (0,0), P_1(0.2), P_2 (4,2) and P_3 (4,0). 14 Marks

UNIT-III

5 What is meant by Canned Cycle? Illustrate its importance by writing NC part program with and without using canned cycle for the component shown in Fig.1 below. 14 Marks

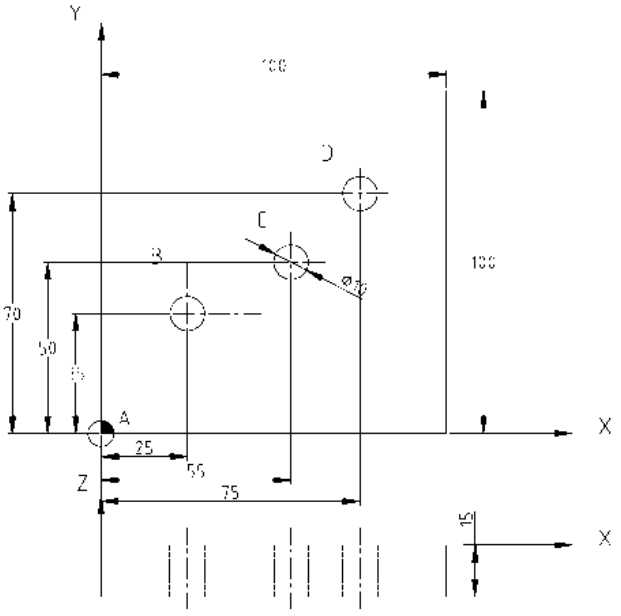

Fig.1

(OR)

6 The part drawing of a component is shown in Fig.2 below. Five holes of 12.5 mm 14 Marks

diameter are to be drilled at five places. The speed and feed rate are 592 RPM and 100 mm/min respectively. The machine has a floating zero feature and absolute positioning. The thickness of plate is 10 mm. Write the manual part program.

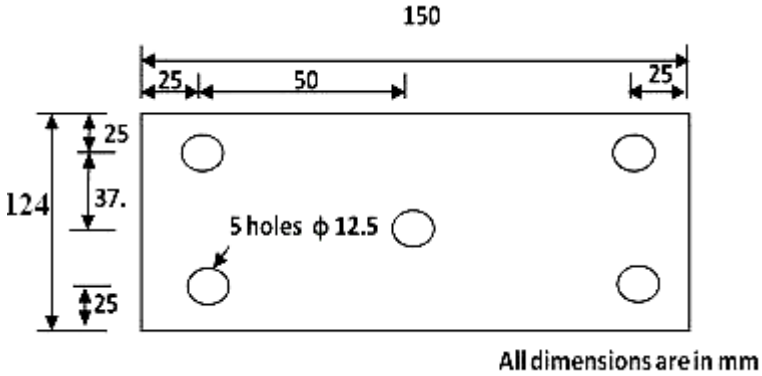

Fig.2

UNIT-IV

7 What is meant by part classification and coding? Classify different types of part classification and coding system Discuss about MICLASS Coding System with a neat sketch. 14 Marks

(OR)

8 What is meant by CAPP? Name the benefits of CAPP and with a neat sketch; explain the Working principle of a Variant CAPP System. 14 Marks

UNIT-V

9 Define CIM and discuss the classification of various types of material handling Systems. 14 Marks

(OR)

10 Classify various types of inspection systems. Discuss about the Integration of CAQC with CAD/CAM. 14 Marks

CODE No.:14BT60305 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

ARTIFICIAL INTELLIGENCE AND ROBOTICS

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate the underlying assumption of Artificial Intelligence.	7 Marks
	b)	Summarize the concept of state space search in Artificial Intelligence.	7 Marks
		(OR)	
2		List out various control strategies with suitable examples.	14 Marks

UNIT-II

3		Illustrate the concepts of Natural Deduction and Semantic Nets.	14 Marks
		(OR)	
4		Elucidate on the following: i) Procedural versus Declarative knowledge ii) Forward Reasoning versus Backward Reasoning	14 Marks

UNIT-III

5		Identify force and torque sensors used in robot. Explain the function of any one sensor with neat illustration.	14 Marks
		(OR)	
6		Explain the working concept of ultrasonic sensor with neat sketch. Also highlight its usage in robot system.	14 Marks

UNIT-IV

7		Discuss the influence of resolved motion control to achieve better motion and velocity control of an industrial robot.	14 Marks
		(OR)	
8		Develop the dynamic model of two link manipulator using Newton-Euler formulation.	14 Marks

UNIT-V

9		List general consideration for obstacle avoidance. With suitable example, analyze the importance of obstacle avoidance in industrial transportation.	14 Marks
		(OR)	
10		Discuss the graph-search technique in problem solving with necessary flow diagram.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

MANAGING INNOVATION AND ENTERPRENEURSHIP

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Who is an Entrepreneur? Explain opportunities for entrepreneurial growth in India.	14 Marks
	(OR)	
2	Explain the concept of evolution of Entrepreneurship from economic theory.	14 Marks

UNIT-II

3	Explain what is the meaning of Shifting Composition of Economy. What role is played by Entrepreneurship in this?	14 Marks
	(OR)	
4	Explain what is Purposeful Innovation. What are seven sources of innovation opportunity?	14 Marks

UNIT-III

5	Explain motivational aspects of Entrepreneurship.	14 Marks
	(OR)	
6	How do you differentiate between Inventors from Entrepreneurs?	14 Marks

UNIT-IV

7	Discuss about changing environment in international scenario of Entrepreneurship.	14 Marks
	(OR)	
8	Explain elaborately about international business and related strategic issues.	14 Marks

UNIT-V

9	How an Entrepreneur starts the entrepreneurial journey? Explain how the Problem Identification is done. Explain the sources and steps involved in this process.	14 Marks
	(OR)	
10	How innovation can help an Entrepreneur to build an enterprise successfully? Explain types of innovation and the approach to innovation.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Check the periodicity of the following signals and compute the common period N if periodic
i) $x(n) = \cos(n/2)$ 3 Marks
ii) $x(n) = 4 - \sin(7n/4)$ 4 Marks
iii) $x(n) = \cos(8n/3) + \cos(8n/3)$ 7 Marks

(OR)

2 Determine the Fourier Transform of 14 Marks
$\mathbf{x(n) = a^{|n|}}$ $\mathbf{-1 < a < 1}$

UNIT-II

3 Compute the DFT of each of the following finite length sequences considered to be of length N (where N is even) 14 Marks
i) x(n) = 1 $\mathbf{0 \le n \le (N/2)-1}$
= 0 $\mathbf{N/2 \le n \le N-1}$
ii) x(n) = a^n $\mathbf{0 \le n \le N-1}$
= 0 **otherwise**

(OR)

4 a) Find the 4-point real sequence x(n) if its 4-point DFT samples are $X(0) = 6$, $X(1) = -2 + j2$, $X(2) = -2$, $X(3) = -2 - j2$. Use DIT-FFT algorithm. 7 Marks
b) Find the 4-point DFT of the sequence, $x(n) = \sin(n/4)$ using DIF-FFT algorithm. 7 Marks

UNIT-III

5 a) Distinguish between Butterworth and Chebyshev type-1 filters. 6 Marks
b) Design an analog Butterworth low pass filter that has -2dB pass band attenuation at frequency of 20 rad/sec and at least -10dB stop band attenuation at 30 rad/sec. 8 Marks

(OR)

6 a) What are the different forms of IIR filter realization? Realize the system given by difference equation 8 Marks
$\boldsymbol{y(n) = -0.1\,y(n-1) + 0.72y(n-2) + 0.7x(n) - 0.252x(n-2)}$
in parallel form.
b) Obtain the cascade realization for the following system. 6 Marks

$$H(z) = \frac{\left(1 + \frac{3}{2}z^{-1} + \frac{1}{2}z^{-2}\right)\left(1 - \frac{3}{2}z^{-1} + z^{-2}\right)}{\left(1 + z^{-1} + \frac{1}{4}z^{-2}\right)\left(1 + \frac{1}{4}z^{-1} + \frac{1}{2}z^{-2}\right)}$$

UNIT-IV

7 a) What are the main advantages of FIR filters over IIR filters? Explain the process of designing FIR filters using Fourier series method. 7 Marks

b) Design an ideal low pass filter with a frequency response 7 Marks

$$H_d(e^{jw}) = \begin{cases} 1 \ \ for \ -\frac{\pi}{2} \le w \le \frac{\pi}{2} \\ 0 \ \ for \ -\frac{\pi}{2} \le |w| \le \pi \end{cases}$$

Find the values of h(n) for N=11. Find H(z).

(OR)

8 What are the properties of FIR filter? Use frequency sampling to design FIR low pass filter with $W_c = \frac{\pi}{4}$, for $N = 15$. Plot the magnitude response. 14 Marks

UNIT-V

9 Discuss about the following with respect to programmable DSP's 14 Marks

i) Short direct addressing mode.
ii) Circular addressing.
iii) TDM serial port.

(OR)

10 Discuss about the following with respect to TMS320C6X DSP processor 14 Marks

i) Functional Units.
ii) Control Register.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the wave equation for a TM wave and obtain expression for the field component in a rectangular waveguide.	7 Marks
	b)	A rectangular hollow metal waveguide has internal dimensions as 2.286 cm and 1.016 cm.Find frequency range for single mode operation.	7 Marks
		(OR)	
2	a)	What is frequency of resonance of a rectangular cavity? Derive an expression for $\mathbf{f_o}$ and give its applications.	7 Marks
	b)	A cavity resonator with dimensions a=2cm, b=1cm and d=2cm is excited by TE101 mode. Find the resonant frequency.	7 Marks

UNIT-II

3	a)	Explain the following parameters used to characterize a directional coupler. i) Coupling coefficients ii) Directivity iii) Isolation	7 Marks
	b)	With the help of a diagram, show how a Magic Tee can be used to behave as a mixer producing IF frequency.	7 Marks
		(OR)	
4	a)	Derive the scattering matrix of a E-plane Tee.	7 Marks
	b)	With a neat diagram, explain the dielectric and rotary wave phase shifters.	7 Marks

UNIT-III

5	a)	Derive the expression for power output and efficiency of a reflex klystron and explain bunching process.	7 Marks
	b)	Define velocity modulation and current modulation. Distinguish between velocity modulation and current modulation.	7 Marks
		(OR)	
6	a)	Explain the operation of a two cavity klystron amplifier with neat diagram.	7 Marks
	b)	Derive the expression of input power and output power of a catcher cavity in two cavity klystron amplifier.	7 Marks

UNIT-IV

7	a)	Explain the salient features, performance characteristics and applications of TWT.	7 Marks
	b)	A normal circular magnetron has the following parameters. Inner Radius Ra = 0.15 m, Outer Radius Ro = 0.45 m, Magnetic flux density =1.2 mW b/m^2. i) Determine the Hull cut off voltage. ii) Determine the cut off magnetic flux density if the beam voltage Vo as 6000V. iii) Determine the cyclotron frequency in GHz.	7 Marks
		(OR)	

8 a) What are slow wave structures? Explain how a helical TWT achieves amplification. 7 Marks

b) A helical TWT has diameter of 2mm with 50 turns per cm. 7 Marks
i) Calculate axial phase velocity.
ii) Calculate anode voltage at which the TWT can be operated for useful gain.

UNIT-V

9 a) Explain the modes of operation for Gunn diode. 7 Marks

b) Explain the operation and V-I characteristics of the varactor diode. 7 Marks

(OR)

10 Explain about: 14 Marks
i) IMPATT diode.
ii) TRAPATT diode.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the performance of BICMOS technology.	4 Marks
	b)	Define threshold voltage of a MOS device and explain its significance.	4 Marks
	c)	Derive the pull up to pull down ratio for an nMOS inverter.	6 Marks
		(OR)	
2		Write a short notes on:	
		(i) BICMOS inverter with a suitable diagram.	8 Marks
		(ii) Pass transistor logic.	6 Marks

UNIT-II

3	a)	Drive an expression for rise time and fall time of CMOS inverter.	6 Marks
	b)	Give the stick diagram of both nMOS and CMOS inverter.	8 Marks
		(OR)	
4	a)	Discuss the principle of constant field and lateral scaling. Write the effect of these scaling methods on the device characteristics.	8 Marks
	b)	Describe VLSI design flow.	6 Marks

UNIT-III

5	a)	Implement a look-up table based full adder using suitable ROM.	7 Marks
	b)	Design a logarithmic shifter circuit using CMOS.	7 Marks
		(OR)	
6	a)	Why do we go for Carry Look-Ahead Adder? Develop the circuits for Propagate (Pi) and Generate (Gi) terms needed for a 4-bit CLA.	10 Marks
	b)	Draw and explain zero/one detection circuit.	4 Marks

UNIT-IV

7	a)	Design an OR-AND PLA that provides the following outputs: F1 = M2. M3. M5 F2 = M0. M1. M4 F3 = M1. M2. M6. M7	8 Marks
	b)	With neat diagram, explain the operation of synchronous counter.	6 Marks
		(OR)	
8	a)	With neat sketch, explain CLB, IOB and programmable interconnects of FPGA device.	8 Marks
	b)	Compare the features of PLA, PAL, CPLD and FPGAs.	6 Marks

UNIT-V

9	a)	Compare different design styles.	6 Marks
	b)	Discuss all four types of simulations.	8 Marks
		(OR)	
10	a)	Write about need for testing.	4 Marks
	b)	List out the nature of failures in CMOS devices.	4 Marks
	c)	Describe sensitized path based testing.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

IMAGE PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and describe the following fundamental steps in digital image processing: i) Image segmentation ii) Image restoration	7 Marks
	b)	Define the neighbourhood of a pixel. Identify the 4-neighbourhood and 8-neighbourhood of a pixel. Further define the 4-adjacency and 8-adjacency of two pixels.	7 Marks
		(OR)	
2	a)	Using mathematical expression, define the 2-D Discrete Fourier Transform and mention its properties.	7 Marks
	b)	Describe the Walsh Transform coefficients for N = 8.	7 Marks

UNIT-II

3	a)	By taking suitable example, explain any one histogram based technique for image enhancement.	7 Marks
	b)	Explain clearly, the process of sharpening of a digital image using spatial filters.	7 Marks
		(OR)	
4	a)	Discuss the process of smoothing of digital image using spatial filters.	7 Marks
	b)	Explain Image sharpening filter in frequency domain.	7 Marks

UNIT-III

5	a)	Explain image restoration in the presence of noise.	7 Marks
	b)	Explain the concept of Weiner filter with respect to Image restoration.	7 Marks
		(OR)	
6	a)	What is Inverse filtering with reference to Image restoration?	7 Marks
	b)	Explain the various noise models which are considered in Image restoration.	7 Marks

UNIT-IV

7	a)	With the help of neat block diagram, describe the components of an image compression system.	7 Marks
	b)	Describe the block transform coding with a neat block diagram and mention the image compression standards using this approach.	7 Marks
		(OR)	
8	a)	Describe the need for image compression by computing the storage required for a SD or HD movie.	7 Marks
	b)	Write short notes on arithmetic coding with an example.	7 Marks

UNIT-V

9	a)	Explain, how the Laplacian and Gaussian Operators are used for image segmentation.	7 Marks
	b)	Write notes on RGB color model.	7 Marks
		(OR)	
10	a)	How is sharpening achieved in the color image processing?	7 Marks
	b)	Write notes on HSI color model.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

TV AND RADAR ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss in detail about the VSB Transmission and Reception.	7 Marks
	b)	With a block diagram, explain the Monochrome TV transmitter.	7 Marks
		(OR)	
2	a)	Explain frequency interleaving.	7 Marks
	b)	Draw horizontal and vertical blanking pulses with details.	7 Marks

UNIT-II

3	a)	In what respects do the requirement of the antenna, the tuner and the deflection system in a color TV receiver differ from those of the monochrome?	7 Marks
	b)	How EHT is generated in TV receiver.	7 Marks
		(OR)	
4	a)	What is basic principle in HD TV?	7 Marks
	b)	Compare the key features of HD TV and 3D-TV presently available in the market.	7 Marks

UNIT-III

5	a)	Explain the principle and operation of fully digital television system.	7 Marks
	b)	With a block diagram, explain the digital TV receivers.	7 Marks
		(OR)	
6	a)	Explain the principle of MAC TV.	7 Marks
	b)	Compare LCD and LED display receivers.	7 Marks

UNIT-IV

7	a)	Explain different system losses that occur in Radar System. How range and Doppler measurement is done in frequency modulated CW Radar?	7 Marks
	b)	What are the different limitations that effect the performance of MTI Radar?	7 Marks
		(OR)	
8	a)	What is sequential lobing? How sequential lobing and conical scanning helps in tracking Radar?	7 Marks
	b)	With the help of neat diagram, explain the operation of amplitude comparison monopulse Radar.	7 Marks

UNIT-V

9	a)	Write the characteristics of matched filter and derive the frequency response.	7 Marks
	b)	List out the general characteristics of a Radar receiver.	7 Marks
		(OR)	
10	a)	Explain in detail the principle and operation of branch-type duplexers.	7 Marks
	b)	Explain the different types of Radar displays.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

PRINCIPLES OF COMMUNICATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain autocorrelation of a periodic waveform.	7 Marks
	b)	Draw the impulse responses of $Sin\omega_0(t)$ and $Cos\omega_0(t)$.	7 Marks
		(OR)	
2	a)	Find the Fourier transform of $\mathbf{x(t) = 2 / (1 + t^2)}$.	7 Marks
	b)	Plot the convolution of a function **f(t)** with a pair of impulses.	7 Marks

UNIT-II

3	a)	Explain how SSB-SC signal is generated using phase shift method	4 Marks
	b)	Derive the mathematical expression of Wide Band FM using Bessel functions.	6 Marks
	c)	An AM transmitter of 1kW power is fully modulated. Calculate the power transmitted if it is transmitted as SSB.	4 Marks
		(OR)	
4	a)	An angle modulated signal has the form $v(t) = 100 \cos(2\pi f_c t + 4\sin 2000\pi t)$ when f_c = 10MHz i) Determine average power ii) Determine peak phase deviation iii) Determine peak frequency deviation iv) Is this an FM or PM signal? Explain.	6 Marks
	b)	Explain the concept of frequency translation using the spectrum of DSB-SC wave.	4 Marks
	c)	A diode envelope detector with a load resistance R = 250KΩ in parallel with a capacitor C = 100pF is used to detect an AM carrier with 60 % modulation. Find the highest modulation frequency that can be detected without distortion.	4 Marks

UNIT-III

5	a)	Explain the process of generation of PWM with neat diagrams.	7 Marks
	b)	Define Pulse Amplitude Modulation (PAM). Give merits and demerits of PAM.	7 Marks
		(OR)	
6	a)	For a PAM transmission of voice signal having maximum frequency equal to f_m = 3KHz, calculate the transmission bandwidth. It is given that the sampling frequency f_s = 8KHz and the pulse duration = 0.1 T_S.	7 Marks
	b)	What is an aliasing effect? Explain how it can be eliminated.	7 Marks

UNIT-IV

7	a)	Derive an expression for the spectrum of BPSK and sketch it.	7 Marks
	b)	What is a delta modulation? Explain its block diagram.	7 Marks
		(OR)	
8	a)	An analog signal band limited to 10kHz quantize is 8-levels of PCM system with probability of 1/5, 1/5, 1/4, 1/10, 1/20, 1/10, 1/20 and 1/10 respectively. Find the entropy and rate of information.	7 Marks
	b)	Derive the probability error of QPSK system and explain its operation.	7 Marks

UNIT-V

9	a)	A discrete memory less source x has five symbols x_1, x_2, x_3, x_4 and x_5 with probabilities $P(x_1) = 0.4$, $P(x_2) = 0.19$, $P(x_3) = 0.16$, $P(x_4) = 0.15$ and $P(x_5) = 0.1$. Construct a Shannon-Fano code for x, and calculate the efficiency of the code.	9 Marks
	b)	State the significance of minimum distance of a block code.	5 Marks
		(OR)	
10	a)	Find a generator polynomial for a (7, 4) cyclic code and hence find the code word for [1000].	7 Marks
	b)	Consider 5 messages with probabilities 0.22, 0.34, 0.17, 0.19, 0.08 are transmitted. Estimate its coding efficiency using Huffman code.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain, why it is necessary to have a variety of diagrams in a model of a system.	7 Marks
	b)	Discuss the principles of modeling.	7 Marks
		(OR)	
2	a)	Briefly explain the basic building blocks of UML.	7 Marks
	b)	Explain Software development life cycle.	7 Marks

UNIT-II

3	a)	Discuss briefly about the Elements of Object Model for the design of student examination system.	7 Marks
	b)	What do you mean by a class diagram? Explain how a class diagram represents logical design and structural model with examples.	7 Marks
		(OR)	
4	a)	What are the Objects and Classes? Discuss in detail about the advanced features of a class diagrams.	7 Marks
	b)	Explain how an object diagram is used to represent a scenario in the logical design of a Bank account management system.	7 Marks

UNIT-III

5		Design an activity diagram that specifies the flow of control involved in registering a new student in a University.	14 Marks
		(OR)	
6	a)	Describe interaction diagram. What are their contents and common properties?	7 Marks
	b)	What is the purpose of use case diagram? Where do we use them?	7 Marks

UNIT-IV

7	a)	Discuss briefly about the processes, threads in the context of time-space modeling.	7 Marks
	b)	Draw state chart diagram of voice mail system.	7 Marks
		(OR)	
8	a)	Discuss briefly about the behavioral modeling in reverse engineering.	7 Marks
	b)	Explain events and signal modeling with a suitable example.	7 Marks

UNIT-V

9		Elaborate on the common modeling techniques of deployment. Illustrate modeling a Fully distributed system.	14 Marks
		(OR)	
10	a)	What are the common uses of deployment diagrams? Draw the deployment diagram for online shopping.	7 Marks
	b)	Explain the component diagram with an example.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

ENGINEERING SYSTEMS ANALYSIS AND DESIGN

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the term Expert Systems. How do Expert Systems differ from Knowledge Work Systems?	7 Marks
	b)	Explain the advantages of mounting the applications on the web.	7 Marks
		(OR)	
2	a)	Explain the necessity of Object Oriented Analysis and Design with an example.	7 Marks
	b)	Explain CASE tools in detail.	7 Marks

UNIT-II

3	a)	Define organization boundary. Explain interrelatedness and interdependence of systems.	7 Marks
	b)	How does process represented in a context level data flow diagram? Explain data flow diagram with example.	7 Marks
		(OR)	
4	a)	Explain the types of E-R diagrams.	7 Marks
	b)	Explain different levels of management in organization.	7 Marks

UNIT-III

5	a)	What are the major fundamentals of a project? Explain.	7 Marks
	b)	What is feasibility? How feasibility is determined?	7 Marks
		(OR)	
6	a)	What is critical path? Explain.	7 Marks
	b)	Explain Gantt chart and PERT.	7 Marks

UNIT-IV

7	a)	Explain the Things in UML.	7 Marks
	b)	Explain the concept of inheritance in Object Oriented Systems.	7 Marks
		(OR)	
8	a)	What is an activity? Explain activity diagram with an example.	7 Marks
	b)	Explain the importance of modeling.	7 Marks

UNIT-V

9	a)	Contrast external outputs with internal outputs produced by the system. Explain the objectives in designing system output.	7 Marks
	b)	Enlist and explain the factors that must be considered when choosing output technology.	7 Marks
		(OR)	
10	a)	Explain the concept behind designing a web site.	7 Marks
	b)	Explain functional elements of printed report.	7 Marks

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CODE No.:14BT61001 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

INDUSTRIAL INSTRUMENTATION-II

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Why is cold junction compensation necessary in temperature measuring schemes using thermocouples? What is the recent trend in making such compensation?	7 Marks
	b)	What are the possible sources of errors in filled-in system thermometers and how it is compensated?	7 Marks
		(OR)	
2	a)	How does IC temperature sensor work? Draw a simple scheme and explain the thermometric operation.	7 Marks
	b)	How temperature scale has been standardized? What are fixed points and how are they used in temperature standards?	7 Marks

UNIT-II

3	a)	Prove that the position of float gives direct indication of flow rate in rotameter.	7 Marks
	b)	List the various types of positive displacement flow meter. Explain about Nutating disc type flow meter.	7 Marks
		(OR)	
4	a)	Discuss about various tap positions used in head type flow meter installation.	7 Marks
	b)	Explain the principle of liquid bridge mass flow meter with necessary equations and diagram.	7 Marks

UNIT-III

5	a)	How piezoelectric crystal or an optical method can be adopted for level control at a specified height in a tank? Draw necessary diagrams and explain their operations.	7 Marks
	b)	What are the precautions and/or additional accessories necessary when, i) a liquid contains suspensions and ii) the liquid is corrosive in nature, in the normal liquid level measurement techniques.	7 Marks
		(OR)	
6		Why air-purge method is so popular in industrial liquid level measurement system? Draw the schematic of such a system and explain its operation, and discuss the precautions to be taken in its operations including starting and stopping of the level process.	14 Marks

UNIT-IV

7	a)	A cantilever beam with four strain gauges mounted on it is used for weight measurement. Explain the details of the measuring circuit to	7 Marks

display the weight.

b) Bring out the differences between DC and AC amplifier. 7 Marks

(OR)

8 a) Describe the principle of low resistance measuring bridge. Derive expression for balance equation. 7 Marks

b) Explain the principle of charge amplifier. Mention the applications. 7 Marks

UNIT-V

9 a) Explain the construction and working of ultrasonic limit switch. 7 Marks

b) Can we use the hydrostatic tests to detect leakage in pressure vessels such as pipelines, plumbing, gas cylinders, boilers and fuel tanks? Justify your answer. 7 Marks

(OR)

10 a) Discuss how hall effect can be used to detect proximity. 7 Marks

b) With a neat schematic, explain principle construction and working of Thermal conductivity leak detectors. 7 Marks

CODE No.:14BT61002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the concept of degrees of freedom with an example and discuss how does the degrees of freedom effect the number and the selection of the control objective.	7 Marks
	b)	Explain in detail about characteristics and modeling of a gas process.	7 Marks

(OR)

2	a)	Explain continuous and batch process with an example.	7 Marks
	b)	Explain about actuator and connecting line symbols used for P&ID in instrumentation. Sketch and explain the P&ID for a closed loop liquid system.	7 Marks

UNIT-II

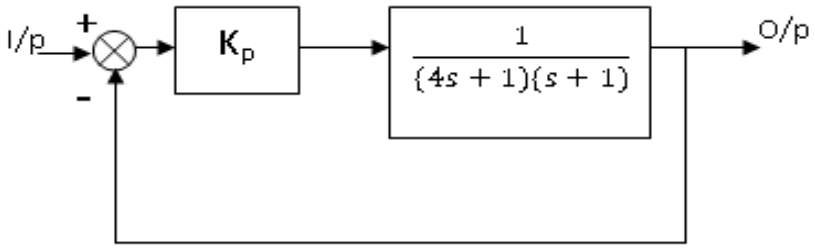
3	a)	Explain in detail about single speed floating control with suitable example.	7 Marks
	b)	Discuss about two-position control with example. Why differential gap is used in the system.	7 Marks

(OR)

4	a)	Explain the force type pneumatic P controller with neat sketch.	7 Marks
	b)	Explain the electronic type P controller with a neat sketch.	7 Marks

UNIT-III

5	a)	Explain process reaction curve method for tuning the controller.	7 Marks
	b)	Find the value of K_p which will have One-Quarter decay ratio in the servo response for the control loop shown in the figure below.	7 Marks



(OR)

6	a)	Explain the method and procedure for tuning a control loop using Cohen-Coon method.	7 Marks
	b)	Explain Ziegler Nichols method for tuning controller.	7 Marks

UNIT-IV

7	a)	Explain with a sketch the working of a pneumatic actuator.	7 Marks

	b)	Discuss the factors to be considered before the selection of control valve for a given application.	7 Marks

(OR)

8	a)	Explain in detail about sliding-stem control valve.	7 Marks
	b)	Discuss the various factors associated with selection of control valve and write a note on control valve sizing.	7 Marks

UNIT-V

9	a)	Explain cascade control with a block diagram and example. When do you prefer cascade control mode.	7 Marks
	b)	Explain control of a heat exchanger using feed forward control.	7 Marks

(OR)

10	a)	With the help of neat block diagram, explain the drying process.	7 Marks
	b)	Explain a control scheme for constant reflux rate in distillation column.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

DATAWAREHOUSING AND DATA MINING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the terms Data Mining and Data Warehousing.	7 Marks
	b)	What is Data Mining? Explain the steps in Knowledge Discovery.	7 Marks
		(OR)	
2	a)	Briefly explain the various Data Mining issues.	7 Marks
	b)	What is Business Intelligence?	7 Marks

UNIT-II

3	a)	What is noise? Describe the possible reasons for noisy data. Explain different techniques to remove the noise from data.	7 Marks
	b)	Explain Data Discretization and Concept Hierarchy Generation.	7 Marks
		(OR)	
4	a)	What is Redundancy? Explain Correlation analysis with suitable example.	7 Marks
	b)	Write short notes on: i) Histograms ii) Sampling iii) Clustering	7 Marks

UNIT-III

5	a)	What are Closed Patterns and Max-Patterns? Give one example.	7 Marks
	b)	What is Divide and Conquer? How it could be helpful for FP Growth method in generating frequent item sets without candidate generation?	7 Marks
		(OR)	
6	a)	Explain following terms. i) Support. ii) Confidence. iii) Minimum confidence threshold. iv) Minimum support threshold.	7 Marks
	b)	What is frequent pattern analysis? Why is frequent pattern mining important?	7 Marks

UNIT-IV

7	a)	What are Bayes Classification Methods?	7 Marks
	b)	What is difference between bagging and boosting?	7 Marks
		(OR)	
8	a)	What is difference between Classification and Prediction? Explain issues of Classification and Prediction.	7 Marks
	b)	What is Discriminative Frequent pattern-based classification?	7 Marks

UNIT-V

9	a)	Explain the density based method “DBSCAN”.	7 Marks
	b)	Explain the Density-Based outliers detection using outlier detection.	7 Marks
		(OR)	
10	a)	Discuss about the evaluation of clustering in cluster analysis.	7 Marks
	b)	Briefly explain the outlier detection in high -dimensional data.	7 Marks

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CODE No.:14BT61202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the different types of lists in HTML? Explain how these lists are created in HTML with suitable examples.	7 Marks
	b)	How a table is creating using HTML? Explain.	7 Marks
		(OR)	
2	a)	Explain, how images can be inserted in to a HTML document.	7 Marks
	b)	Create a HTML document that marks up your resume.	7 Marks

UNIT-II

3	a)	State and explore various CSS selectors.	7 Marks
	b)	What is the role of *JavaScript* in web designing? Explain its features.	7 Marks
		(OR)	
4	a)	What is a box model? Give an example for usage of margins of a web page.	5 Marks
	b)	Write a *JQuery* code to add content to the selected HTML element.	9 Marks

UNIT-III

5	a)	Write a PHP program to implement Multilevel Inheritance.	7 Marks
	b)	Discuss about Multidimensional arrays in PHP.	7 Marks
		(OR)	
6	a)	Write PHP program to read today's date and print tomorrow's date.	7 Marks
	b)	Briefly explain about functions concept in PHP.	7 Marks

UNIT-IV

7	a)	How to create destroy session and manage session variables? Explain.	7 Marks
	b)	Why session handling is necessary and useful? Explain.	7 Marks
		(OR)	
8		Explain the following: i) Cookies ii) Web forms iii) Session Handlers	14 Marks

UNIT-V

9	a)	What are the goals of XML?	7 Marks
	b)	Clearly explain the advantages of XML Schema over DTD's.	7 Marks
		(OR)	
10		Explain the following terms related to Document Type definition. i) Elements ii) Attributes and Entities iii) Internal and External entities.	14 Marks

CODE No.:14BT61204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

CYBER SECURITY AND LAWS

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain how criminals planning on attacks.	7 Marks
	b)	What are Bot nets?	7 Marks
		(OR)	
2		Explain the following: i) Cyber crime. ii) Cyber stalking. iii) Cyber cafe.	14 Marks

UNIT-II

3		Explain Proxy servers and Anonymizers.	14 Marks
		(OR)	
4		Explain about Trojan horses and backdoors.	14 Marks

UNIT-III

5		Explain about cyber crime and punishment.	14 Marks
		(OR)	
6		Explain the digital signatures and the Indian IT Act.	14 Marks

UNIT-IV

7	a)	What are the various threats?	7 Marks
	b)	Explain firewall with DMZ networks.	7 Marks
		(OR)	
8		Explain the Security and Privacy implications from Cloud Computing.	14 Marks

UNIT-V

9	a)	What is smart card? Difference between credit card and debit card.	7 Marks
	b)	Define Intellectual Property Rights. How intellectual properties can be protected? Explain.	7 Marks
		(OR)	
10	a)	Discuss about online fraud and online gambling.	7 Marks
	b)	What is criminal justice in India and implication on cyber crime?	7 Marks

CODE No.:14BT70109 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

RURAL TECHNOLOGY

[Mechanical Engineering, Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain in detail about the role of Science and Technology for eradicating poverty in rural areas.	14 Marks
		(OR)	
2		Explain the functions of various organizations involved in development of rural areas.	14 Marks

UNIT-II

3	a)	Explain in detail the sources of non conventional energy.	8 Marks
	b)	Why we use biomass? What are eligible biomass sources?	6 Marks
		(OR)	
4	a)	Write short notes on waste management in rural area.	6 Marks
	b)	Explain in detail the production of biomass products and their utilization.	8 Marks

UNIT-III

5	a)	Write short notes on: i) Tissue culture ii) Economic plants.	8 Marks
	b)	Mention the importance of low cost housing technology in improving the rural infrastructure facility.	6 Marks
		(OR)	
6	a)	Mention the advanced technologies used in cultivation and processing of economic plants.	6 Marks
	b)	Explain the role of Cottage and Social industries in rural development.	8 Marks

UNIT-IV

7	a)	What are the different techniques used for water conservation in rural areas.	6 Marks
	b)	Write short notes on: i) Aquaculture ii) Pisciculture	8 Marks
		(OR)	
8	a)	Explain the advantages of Medical and Aromatic plants cultivation in community development.	6 Marks
	b)	Write short notes on Bio-fertilizers and its impact on society.	8 Marks

UNIT-V

9		What are the impacts of Information Technology in developing the communities? How to overcome those impacts by using their principles?	14 Marks
		(OR)	
10		State the role of private sector in rural development.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

INDUSTRIAL AUTOMATION AND ROBOTICS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Enumerate about various hardware components needed for automation and explain the significance of each.	7 Marks
	b)	Describe with neat sketches about configurations of automated flow line.	7 Marks
		(OR)	
2	a)	Describe about various methods of line balancing.	7 Marks
	b)	Explain about various elements of the parts delivery system.	7 Marks

UNIT-II

3	a)	Define control resolution and accuracy of robot.	7 Marks
	b)	Explain briefly about any four types of working of mechanical grippers with neat sketch.	7 Marks
		(OR)	
4	a)	Discuss briefly about working of linear and rotary actuators with neat sketch.	7 Marks
	b)	A vacuum cup is used to lift flat plates of stainless steel weighing 50kg. The gripper will utilize two suction cups of diameter 5mm. If the friction coefficient is 0.1 and factor of safety is 2.0, determine the negative pressure required to lift the weight.	7 Marks

UNIT-III

5	a)	Define forward and reverse kinematics of robot.	4 Marks
	b)	Find the forward and reverse kinematics of transformation of 3DOF of robot arm.	10 Marks
		(OR)	
6	a)	Consider the effect of a translation in x, y, z direction -1, -1, -1 respectively followed successively by a $+30^{o}$ rotation about x-axis and $+45^{o}$ rotation about y-axis on the homogeneous coordinates position vector [3, 2, 1, 1]. Find the concatenated transformation matrix.	8 Marks
	b)	The point P is (6, 2) scaled by a factor 3 and rotated by 45° with respect to x-axis. Find the position vector.	6 Marks

UNIT-IV

7		Discuss about the common types of motion that a robot manipulator can make in traveling from point to point.	14 Marks
		(OR)	
8		Explain the machine vision systems of robot.	14 Marks

UNIT-V

9		Explain about robot arc welding application. What are the features of the welding robot?	14 Marks
		(OR)	
10		Explain the robot programming languages in detail.	14 Marks

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CODE No.:14BT70501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

COMPILER DESIGN

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate between compiler and interpreter.	7 Marks
	b)	What is compiler? Explain in brief about phases of a compiler.	7 Marks
		(OR)	
2	a)	What is LEX? Explain in detail different sections of LEX program.	7 Marks
	b)	Write regular expressions for the following patterns: i) The set of words having a, e, i, o, u appearing in that order, although not necessarily consecutively. ii) Comments in C.	7 Marks

UNIT-II

3	a)	Explain the input buffer scheme for scanning the source program. How the use of sentinels can improve its performance?	8 Marks
	b)	Prove that the following grammar is ambiguous. **E → E+E / E*E / E-E / a**. Find the unambiguous grammar.	6 Marks
		(OR)	
4		Eliminate left recursion from the following grammar and then construct predictive parse table for the resultant grammar. **E → E+T / T** **T→ T*F / F** **F→ (E) / id** Is the grammar LL(1)? Show the moves of the parser for **a + a * a**.	14 Marks

UNIT-III

5	a)	Explain syntax directed translation with an example.	7 Marks
	b)	With an example, explain the process of bottom up evaluation of S-attributed definitions.	7 Marks
		(OR)	
6	a)	Define Syntax Directed Definition. Write the syntax directed definition for a simple desktop calculator program (grammar). Draw the annotated parse tree for **3 + 4 *5**.	10 Marks
	b)	Give the translation scheme for checking the type of statements and explain.	4 Marks

UNIT-IV

7	a)	Explain the limitations of static allocation.	6 Marks
	b)	What is a Symbol Table? Explain briefly the data structures for symbol table.	8 Marks
		(OR)	
8	a)	Explain storage organization in runtime environments.	8 Marks
	b)	Illustrate how the access of non-local data on stack is possible with examples.	6 Marks

UNIT-V

9 a) Construct the DAG for the basic block 7 Marks

```
X      =      A [ i ]
A[ j ] =      Y
Z      =      A [ i ]
```

b) Explain in detail the procedure that eliminates global common sub-expression. 7 Marks

(OR)

10 a) Discuss the simple Code Generator algorithm with suitable example. 7 Marks

b) Explain in detail Register and Address Descriptors in Code Generator algorithm. 7 Marks

CODE No.:14BT71507 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Regular Examinations May - 2017

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How to overcome late risk resolution issues in waterfall model.	7 Marks
	b)	Explain the relationship between parameters use for software cost model.	7 Marks
		(OR)	
2		Describe about the pragmatic software cost estimation.	14 Marks

UNIT-II

3		Explain the principles of modern software management in detail.	14 Marks
		(OR)	
4		Describe the primary objectives, essential activities and primary evaluation criteria of the elaboration phase.	14 Marks

UNIT-III

5	a)	What is an artifact? Explain about various management artifacts in detail.	7 Marks
	b)	What is workflow? Explain about various process workflows in detail.	7 Marks
		(OR)	
6	a)	What are constraints? How they are affecting the workflows?	7 Marks
	b)	Describe the Life cycle evolution of the artifact sets.	7 Marks

UNIT-IV

7	a)	Write the five types of software, a project typically needs.	6 Marks
	b)	Explain about pragmatic planning.	8 Marks
		(OR)	
8	a)	Explain about the planning guidelines of software projects.	7 Marks
	b)	Write default agendas for the life-cycle architecture milestone.	7 Marks

UNIT-V

9	a)	Explain about the process instrumentation.	6 Marks
	b)	Explain risk management of CCPDS-R.	8 Marks
		(OR)	
10	a)	What are management and quality indicators?	7 Marks
	b)	What were metrics collected in CCPDS-R? What is the purpose of each metric?	7 Marks

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. What is demand forecasting? Briefly discuss different methods of demand forecasting.

2. What is Break-even Point? Explain how management of a firm can use it as a tool for profit planning.

3. What are the features of perfect competition? How do you determine price of a product under perfect competition?

4. What is partnership deed? Explain the merits and demerits in partnership business.

5. Journalize the following transactions and prepare trial balance.
   2013
   January, 1 Prakesh commenced his business with a capital of Rs.5, 00,000.
   10 Purchased Office furniture for cash Rs.50, 000.
   15 Paid office rent Rs.5, 000 and wages Rs.2, 000.
   18 Cash purchases for Rs.1,50,000.
   19 Purchased from Ravi & Sons for Rs.50, 000.
   25 Cash sales for Rs.45, 000
   27 Goods sold on credit for Rs.25, 000 to Mahesh & Co.
   30 Paid salaries Rs.8000.

6. The following balances were taken from the books of Sandeep with the help of which, prepare Trading, Profit & Loss Account for the year ending 31st March 2008 and the Balance Sheet.

Particulars	Dr. (Rs)	C r. (Rs)
Capital		33000
Furniture & Fittings	8000	
Sales		60,000
Purchases	50,000	
Opening stock	9,000	
Postage	400	
Wages	5,000	
Salaries	4,000	
Drawings	5,600	
Debtors	4,000	
Buildings	15,000	
Creditors		6,600
Interest received		1,400
Total	**1,01,000**	**1,01,000**

Adjustments:
i) Closing stock was valued at Rs. 20,000
ii) Wages were outstanding by Rs. 1000

7. A choice is to be made between two competing proposals which require an equal investment of Rs.5,00,000 and are expected the following cash inflows of each project. The cost of capital is 10%. Select the project under NPV method.

Year	Project-I (Rs.)	Project-II (Rs.)
1	2,50,000	1,00,000
2	1,50,000	1,20,000
3	1,00,000	1,80,000
4	Nil	1,50,000
5	1,20,000	80,000
6	60,000	40,000

8. Define Computerized accounting .Explain in detail the advantages of computerized accounting system.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the three fundamentals of the object oriented programming language?
b) Explain several language features that have significant effects on reliability of the programs in a given language. Why is readability important to writability?

2. a) Suppose that a language includes user defined enumeration type and that the enumeration values could be overloaded, that is the same literal value could appear in two different enumeration type, as in the following.

```
type
    colors = (red,blue,green);
    mood = (happy,angry,blue);
```

Use of the constant 'blue' cannot be type-checked. Propose a method of allowing such type checking without completely disallowing such over-loading.
b) Write and analyze a comparison of C's malloc and free functions with C++'s new and delete operators. Use safety as the primary consideration in the comparison.

3. a) Explain about unconditional statements and guarded commands.
b) What are the implementation details of arithmetic, relational and Boolean expression?

4. a) Define separate and independent compilation.
b) In what ways are coroutines different from conventional subprograms? Explain.

5. a) What is resolution and unification in Logic Programming? Why is the unification algorithm used byPrologincorrect?
b) What are the different ways to specify semantics?
c) Why is the following assignment illegal?

```
int x;
&x = (int *) malloc (sizeof(int));
```

---

6. a) Define Exception, Exception handler, Raising an Exception, Disabling an Exception, Continuation and Built in Exception.
b) "In what way are the list-processing capabilities of scheme and Prolog different". Explain.

7. a) Define functional form and referential transparency.
b) Explain and elaborate the First Functional Programming Language: LISP.

8. a) What are the concepts of Python, PERL and PHP?
b) Discuss in detail about Module Library.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is an op-amp? List and explain the four building blocks of an op-amp. Explain briefly the difference between digital and linear I.C's.
b) For a given op-amp CMRR=10^5, differential gain $A_d=10^5$.Determine the common mode gain A_{CM} of the op-amp.

2. a) Draw the circuit and discuss the working of an instrumentation amplifier. What are its important features? Derive an expression for its output.
b) Explain with a neat circuit diagram the working of voltage to current converter with floating load.

3. a) What is Phase Locked Loop? List the basic building blocks of the discrete PLL. What is the major difference between digital and analog PLLs?
b) List the applications of PLL? Explain each.

4. a) Design a CMOS transistor circuit that has the functional behavior of **f(a) = (P+Q).(Q+R)** also explain its functional operation.
b) Design a CMOS transistor circuit for 3 input AND gate with the help of function table and explain the circuit.

5. a) Give the comparison between TTL and CMOS.
b) Draw and explain the operation of AND gate using diode logic.

6. a) With examples explain the VHDL design flow and program structure.
b) What are the functions and procedures of VHDL?

7. a) Write a VHDL program for 8-to-1 mux and use it as a component for the realization of 64-to-1 mux.
b) Draw the logic diagram for a 16 -to- 4 encoder using four 8- input NAND gates. Write VHDL coding for it.

8. a) Write down the truth table and VHDL code for the 4-bit left to right shift register. Also draw the circuit and output waveforms.
b) Explain briefly about the synchronous design methodology.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. How an autocorrelation function of a signal related to its energy/power spectral density? Derive the suitable expression.

2. a) Explain the square-law diode modulation method for AM generation.
b) An SSB transmission contains 10 kW. This transmission is to be replaced by a standard modulated signal with the same power content. Determine the power content of the carrier and each of the sidebands when the percent modulation is 80%.

3. a) Draw the block diagram to generate NBFM wave and explain.
b) What is pre-emphasis and de-emphasis? Explain.

4. a) Explain the concept of TDM with an example. Give one application of it.
b) Discuss about the operation of PWM circuit with suitable sketches.

5. Explain the working of adaptive delta modulation system with block diagram.

6. a) Give the comparison of M-ary digital modulation schemes.
b) Explain the power spectra of binary PSK and FSK signals along with graphs.

7. a) List out the implications of Shannon-Hartley theorem and explain them with suitable examples, if any.
b) Apply the Huffman coding procedure for the following message ensemble to find the code word:

Signal	X1	X2	X3	X4	X5	X6	X7
Probability	0.5	0.2	0.1	0.05	0.05	0.05	0.05

8. Write the following:
i) Block codes ii) Convolutional codes

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

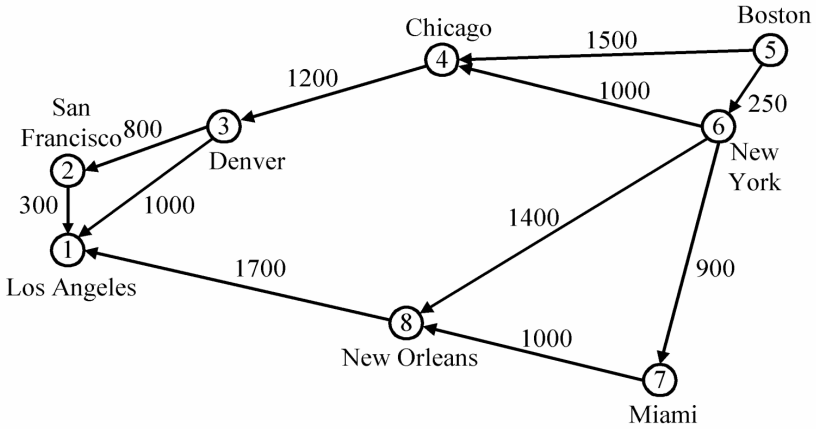
Answer any FIVE questions
All questions carry equal marks

1. a) What is the use of asymptotic notations? Explain different asymptotic notations with suitable examples.
b) Find the complexity of below recurrence:
$T(n) = 3T(n-1)$, if $n > 0$
$= 1$, otherwise.

2. a) Describe Union and Find algorithms with examples.
b) Define biconnected component. How can you find the biconnected components?

3. a) Sort the following array of elements by using merge sort technique.
520, 234, 678, 123, 897, 450, 310, 285.
b) Discuss Strassen's matrix multiplication in detail.

4. Consider the Digraph given in the following figure. Find shortest paths from vertex 5 to other vertices. Explain each step in detail.



5. Let n = 4 and ($\mathbf{a_1}$, $\mathbf{a_2}$, $\mathbf{a_3}$, $\mathbf{a_4}$) = (do, if, need, while) Let P(1 : 4) = (3, 3, 1, 1) and Q(0 : 4) = (2, 3, 1, 1, 1). Construct Optimal Binary Search Tree with detailed explanation.

6. a) Write a recursive backtracking algorithm to solve sum of subset problem.
b) Discuss Graph coloring problem and its time complexity.

7. Draw the portion of the state space tree generated by LCKNAP for the knapsack instances: N = 5; ($\mathbf{p_1}$,$\mathbf{p_2}$,…$\mathbf{p_5}$) = (10, 15, 6, 8, 4); ($\mathbf{w_1}$,$\mathbf{w_2}$,…$\mathbf{w_5}$)=(4, 6, 3, 4, 2) and M = 12.

8. a) Write the program for n-Queen's problem.
b) Write a note on Minimum Spanning Trees.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

COMPUTER GRAPHICS

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the working principle of CRT with neat diagram.
b) With the help of a diagram, explain the architecture of Raster displays.

2. a) Explain Midpoint circle algorithm. Given a circle radius r =10, demonstrate the Midpoint circle algorithm by determining positions along the circle octant in the first quadrant from x =10 to x = y.
b) Explain DDA line drawing algorithm between points (a, b) and (c, d).

3. a) Write a note on Window-to-Viewport Transformation.
b) Determine sequence of basic transformations that are equivalent to the rotation of a point (x, y) around (1, 3).

4. a) Implement the Cohen-Sutherland line-clipping algorithm.
b) Explain the steps in two-dimensional viewing transformation pipeline.

5. a) Determine the blending functions for uniform, periodic B-spline curves for d = 5.
b) What is spline curve? What are the different kinds of spline specifications used in graphics applications? Explain.

6. a) Explain about the three dimensional transformation on Translation and rotation.
b) Discuss about the matrix representation in three dimensions.

7. a) Write the steps of depth-buffer algorithm to detect visible surfaces.
b) Develop a routine to implement the scan-line algorithm for displaying the visible surfaces.

8. a) List out and explain methods of controlling animation.
b) How would you create a Weiman-style translation algorithm? Suppose a pixmap has alternating columns of black and white pixels, what are the results of translating this pixmap by ½ pixel? What is the result of applying Weiman's scaling algorithm to stretch this image by a factor of 2 ? What do you think of these results?

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

TRANSPORTATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare Nagpur road plan and Bombay road plan.
b) Discuss factors affecting alignment of highway.

2. a) Derive an expression for finding length of transition curve on horizontal alignment of highways.
b) Calculate the length of transition curve and the shift using the following data.
Design speed = 65 kmph;
Radius of circular curve = 220 m;
Allowable rate of introduction of super elevation (pavement rotated about the centre line) =1 in 150;
pavement width including extra widening = 7.5 m.

3. a) Describe briefly about desirable properties of road aggregates.
b) Marshal method of bitumen mix design. Discuss.

4. a) What are the different layers of Flexible Pavements and what are their functions?
b) Explain the Westergaard's Method of Rigid Pavement design. What are the assumptions in this analysis?

5. a) How the seepage flow and capillary rise can be controlled in sub surface drainage? Explain.
b) What are the problems related to road construction in water logged areas and what precautions are to be taken?

6. a) Describe the functions of rails, sleepers and ballast in detail.
b) Explain Creep of rails theories related to creep.

7. a) Transit curves are provided on both sides of a circular curve on railway, justify.
b) Determine the length of transition curve for BG track of 4^0 having a cant of 8cm. Maximum permissible speed on the curve is 75kmph.
c) Write notes on various gradients used in Indian railway.

8. a) Explain about the geometric standards required for the design of airport.
b) Write notes on runway lighting system and marking.

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe in brief, various geophysical methods. Discuss their limitations and uses.
b) How would you obtain a hand-carved sample?

2. a) A retaining wall with a smooth vertical back of height 8m, supports a cohesionless backfill of unit weight 19kN/m^3 and angle of shearing resistance 30°. The surface of the soil is horizontal. Find total active earth pressure per lineal metre of the wall by Rankine's theory. What is the increase in horizontal pressure if the soil slopes up from the top of wall at an angle of 30° to the horizontal?
b) What are the types of earth pressures? What is the state of equilibrium of soil corresponding to each type of earth pressure.

3. A masonry retaining wall 1.2m wide at the top and 3.6m wide at the base is 4.5m high with a vertical back face. The unit weight of sand is 17kN/m^3 and the angle of shearing resistance is 32°. Unit weight of masonry is given as 19kN/m^3. Determine the maximum and minimum intensities of pressure at the base of the wall and also check for stability against sliding.

4. a) Classify the types of failures of a slope.
b) Calculate the safe height for an embankment rising 70° to the horizontal and to be made with a clayey soil having unit weight of 16 kN/m^3, $\varphi = 15°$ and a cohesion of 20 kN/m^2. Factor of safety may be taken as 2.5. Value of stability number N, corresponding to slope angle $\alpha = 70°$ and $\varphi = 15°$ is 0.14.

5. a) Explain Terzaghi's bearing capacity theory for a shallow foundation. State the assumptions involved. Explain how the bearing capacity equation is modified for:
i) Local shear failure ii) Finite plan dimensions.
b) A square footing 2.5m×2.5m and carries a load of 2000kN. Find the factor of safety against bearing failure if the soil below the footing has following values: c = 50 kN/m^2, Ø = 15°, $\gamma = 17.5$ kN/m^3 and foundation is taken to a depth of 1.5m. Take $N_c = 12.5$, $N_q = 4.5$ and $N_\gamma = 2.5$.

6. a) With the help of neat sketch, describe the procedure for conducting a plate load test and explain how the safe load is determined from the test data. What are its limitations and uses?
b) What is the settlement of a footing? How to estimate elastic settlement of a footing?

7. a) A cast in place concrete pile in medium sand is 0.5m in diameter and 10m long. The water table is 2m below the top of pile. Properties of the sand are C = 0, $\phi = 38°$, $\gamma_{sat} = 19.5$ kN/m^3 and $\gamma = 18.0$ kN/m^3. Determine the ultimate load for the pile. Let $N_q = 60$ and K tan $\delta = 0.5$.
b) Write short notes on settlement of pile groups.

8. a) Discuss the problems associated with well sinking. How to overcome them?
b) Describe the component parts of a Pneumatic Caisson with a neat sketch.

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CODE No.:10BT60201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How are electrical drives classified? Explain briefly the status of D.C and A.C drives.
b) A 250V D.C shunt motor has an armature resistance of 0.5ohms and field resistance of 250ohms. When driving a constant torque load at 600 r.p.m, the draws 21A. What will be the new speed of the motor if an additional 250ohms resistance is inserted in the field circuit?

2. a) What are the causes of failure in heating element?
b) A low frequency induction furnace whose secondary voltage is maintained constant at 12V takes 300kW at 0.65pf when the heat of charge and reactance to remain constant, find the height up to which earth should be filled to obtain maximum heat.

3. a) Define the term ' Welding' and enumerate the various welding processes.
b) With necessary figures, explain the processes of carbon arc welding and metallic arc welding.

4. a) What is an integrating sphere? Explain its use in illumination engineering.
b) A lamp of 500 candle power is placed at the centre of a room, 20m x 10m x 5m. Calculate the illumination in each corner of the floor and point in the middle of a 10m wall at a height of 2m floor.

5. a) Compare a tungsten filament lamp with fluorescent tube.
b) Discuss about flood lighting in detail.

6. a) Write various types of traction systems.
b) Explain different methods of electric braking applied to three-phase induction motor.

7. a) An electric train has an average speed of 42km/h on a level track between stops 1400 meters apart. It is accelerated at 1.7km/h/s and is braked at 3.3km/h/s. Draw the speed time curve for the run.
b) Explain the terms:
i) Adhesive weight.
ii) Train resistance.
iii) Specific energy consumption.

8. a) Explain the energy audit procedure for electric motors.
b) Write short notes on smart meters and energy efficient motors.

CODE No.:10BT60202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of 1-Ø semi converter fed DC separately excited motor for continuous current operation and also obtain speed-torque characteristics.
b) A 200 V, 950 r.p.m., 12.8 A separately excited DC motor has armature circuit resistance and inductance of 2 Ω and 150 mH respectively. It is fed from a 1-Ø half controlled rectifier with an AC source voltage of 230 V, 50 Hz. Calculate motor speed for $\alpha = 160°$ and T = 20 N-m.

2. a) Write short notes on rheostatic braking for separately excited dc motor with neat diagrams.
b) A 230V, 960 r.p.m. and 200A separately excited DC motor has an armature resistance of 0.02Ω. The motor is fed from a chopper, which is capable of providing both motoring and braking operations. The source has a voltage of 230V. Assuming continuous conduction, calculate the time ratio of chopper for the motoring action at rated torque and 350 r.p.m.

3. a) Explain the operation of four quadrant operation of DC separately excited motor.
b) Discuss relative merits and demerits of four quadrant DC drives employing non-circulating and circulating current dual converters.

4. a) Discuss I quadrant and II quadrant choppers with the suitable diagrams.
b) A 220V, 24A, 100 r.p.m., separately excited DC motor has an armature resistance of 2Ω. Motor is controlled by a chopper with frequency of 500Hz and source voltage of 230V. Calculate the duty ratio for 1.2 times the rated torque and 500 r.p.m.

5. a) With the help of block diagram and necessary characteristics, explain the variable frequency speed control of induction motor.
b) Explain briefly voltage source inverter (uses transistors as switches) fed induction motor drive.

6. a) With the help of a block diagram, explain the closed loop control of static Scherbius drive.
b) Explain the operation of static Kramer drive.

7. a) What is a self control mode of Synchronous motor?
b) Draw the block diagram of a self controlled synchronous motor fed from a three phase inverter and explain.

8. Explain briefly the following drives:
i) Solar powered pump drives.
ii) Battery powered vehicles.

CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

OPERATIONS RESEARCH

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State the advantages and limitations of operations research.

b) The manager of an oil refinery must decide on the optimal mix of two possible blending processes of which the inputs and outputs per production run are as shown below table:

Process	Input (units)		Output (units)	
	Crude A	Crude B	Gasoline A	Gasoline B
1	5	3	5	8
2	4	5	4	4

The maximum amount available of crude A and crude B are 200 units and 150 units respectively. Market requirements show that at least 100 units of Gasoline X and 80 units of Gasoline Y must be produced. The profits per production run for process 1 and process 2 are Rs. 300 and Rs. 400 respectively. Formulate as linear programming problem and find optimum solution using graphical method.

2. a) Discuss the steps of Hungarian method.

b) Solve the following transportation problem to maximize profit. Cell entries are Profits in Rs/unit.

	Destination				
Source	**1**	**2**	**3**	**4**	**Supply**
A	40	25	22	33	200
B	44	35	30	30	60
C	38	38	28	30	140
Demand	80	40	120	60	

3. a) Define E.O.Q. List various costs associated with E.O.Q.

b) Determine the optimal replacement policy for the data given below:

Group replacement cost Rs. 20 per unit.
Cost of individual replacement of failure is Rs. 90 per unit.
Total number of units in a system is 1000 units.
Mortality data of units to be used in the system is as follows:

Interval of time period (hours)	Probability of failure
0 - 200	0
200.01 - 400	0.06
400.01 - 600	0.30
600.01 - 800	0.48
800.01 - 1000	0.16

4. A railway reservation system has 3 counters. On an average 48 people arrive in an 8-hour day. Each reservation counter person spends 15 minutes on an average on an arrival. If the arrivals are Poissonly-distributed and service times are according to exponential distribution, then find:

i) Average number of customers in the system and average number of customers waiting to be served.
ii) Average time a customer spends in the system and average waiting time for a customer.
iii) The probability that a customer has to wait before he gets service.

5. a) Distinguish between PERT and CPM.

b) In the table given below gives the values of t_o, t_m, t_p for each activity. Calculate the expected time, the standard deviation and the variance for each activity. Also, calculate the probability that the project will meet the schedule or due date of 38 days.

Activity	1-2	1-6	2-3	2-4	3-5	4-5	6-7	5-8	7-8
Optimistic time (t_o)	2	2	5	1	5	2	3	2	7
Most likely time (t_m)	5	5	11	4	11	5	9	2	13
Pessimistic time (t_p)	14	8	29	7	17	14	27	8	31

6. An oil company is constructing a service station on a high way. Traffic analysis indicated that customers arrivals over most of the day would approximate a Poisson distribution with a mean of 40 automobiles per hour. Previous studies show that one pump could service a mean of 12 automobiles per hour, with the service time distribution approximating the negative exponential. If 5 pumps are installed.

i) What is the probability that an arrival would have to wailt in line?
ii) Find out the average waiting time, average time spent in the system and the average number of automobiles in the system?
iii) For what percentage of time would a pump be idle on an average?

7. a) What are decision trees? What are the situations best suited for using the decision tree technique in decision making?

b) A customer has approached a bank for a Rs. 50,000 one year loan at 12% interest. If the bank does not approve the loan, the Rs. 50,000 will be invested in bonds that earn a 6% annual return. Without further information, the bank feels that there is a 4% chance that the customer will totally default on the loan. If the customer totally defaults, the bank loses Rs. 50,000. At a cost of Rs. 500, the bank can thoroughly investigate the customer's credit record and supply a favorable or unfavorable recommendation. Past experience indicates that;

p(favorable recommendation | customer does not default) =77/96

p(favorable recommendation | customer defaults) = 1/4

How can the bank maximize its expected profits? Also find EVSI and EVPI.

8. a) Players A and B play a game in which each player has three coins (Rs.20, Rs.25 and Rs.50). Each of them selects a coin without the knowledge of the other person. If the sum of the values of the coins is an even number, A wins B's coin. If that sum is an odd, B wins A's coin.

i) Develop a pay-off matrix with respect to Player A.
ii) Find the optimal strategies for the players.

b) Explain the following terms:

i) Two-person zero-sum game ii) Mixed strategy

CODE No.:10BT60302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

METROLOGY AND MEASUREMNTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe briefly the manufacturing of slip gauges.
b) Enumerate the advantages of using wave length standard as basic unit to define primary standards.

2. a) State and explain the Taylor's Principles of Gauge Design.
b) For each of the following hole and shaft assembly, find the shaft-tolerance, hole tolerance and state the type of fit.

$(i) Hole: 50^{+0.025}_{+0.00}\ mm$ $shaft: 50^{+0.05}_{+0.005}\ mm$

$(ii) Hole: 30^{+0.05}_{+0.00}\ mm$ $shaft: 30^{-0.02}_{+0.05}\ mm$

3. a) What is a comparator? Classify different types of comparators. Describe Mechanical comparator and clearly explain the magnification method adopted in it.
b) Describe the measuring principle and working of sine bar.

4. a) Draw an illustrative line diagram of a pitch measuring machine and describe its working.
b) Indicate briefly the effect of the lead angle on a three wire measurement for an effective diameter of a screw thread.

5. a) Explain generalized measurement system elements with block diagram describe its function with suitable example.
b) Explain the following terms:
i) Threshold and Resolution ii) Sensitivity and Hysteresis

6. List the various methods for torque measurements and explain any two of them.

7. a) Explain the construction and working principle of a McLeod gauge.
b) Draw simple sketches of a non contact type temperature measuring instruments and describe each element.

8. Write a short note on:
i) Mechanical systems in control engineering.
ii) Zero order system.
iii) Time constant.

CODE No.:10BT60303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the governing laws for three modes of heat transfer.
b) Write down the general heat conduction equation in Cartesian coordinates. Deduce Poisson, Diffusion equation and Laplace equation from it.

2. a) Explain the overall heat transfer coefficient through a plane wall with electrical analogy.
b) Aluminum fins of rectangular profile are attached on a plane wall with 5mm spacing. The fins have thickness of 1mm and length of 10mm and thermal conductivity of 200W/mK. The wall is maintained at 200°C and the fins dissipate heat by convection into the ambient air at 40°C with heat transfer coefficient of 50W/m^{2}K. Determine
i) fin efficiency. ii) heat loss from the wall per square meter of wall surface.

3. a) Explain significance of Biot number.
b) Consider a rod (mass = 0.1kg, surface area = 0.005m^2, c = 350J/kg.k and k = 7 W/m°C, $\alpha = 1.5 \times 10^{-5}$ m^2/s) of diameter 1.2cm initially at uniform temperature of 100°C, cooled to 40°C in 110seconds by placing an atmosphere at 35°C.
Determine heat transfer coefficient of air.

4. a) State Colburn-Reynolds analogy.
b) Calculate the distance from leading edge of flat plate at which transition occurs if air at 25°C flows on it at 10m/s speed.

5. a) Define the local and average skin friction coefficients for a flat plate at zero incidence for laminar flow.
b) Lubricating oil at a temperature of 60°C enters 1cm diameter tube with a velocity of 3m/sec. The tube surface is maintained at 40°C. Assuming that the oil has following average properties, calculate the tube length required to cool the oil to 45°C.
ρ = 865 kg/m^3, k = 0.14W/mK, C_p = 1.78kJ/kg°C.
Assume the flow to be laminar and fully developed.

6. a) Give examples of natural convection.
b) Calculate heat to be supplied to a vertical plate at 60°C, which is in an atmosphere of 25°C.

7. a) Sketch the temperature variations in parallel flow and counter flow heat exchangers.
b) A counter flow concentric tube heat exchanger is used to cool engine oil (C=2130 kJ/kg-K) from 160°C to 60°C with water available at 25°C as the cooling medium. The flow rate of cooling water through the inner tube of 0.5m diameter is 2 kg/s while the flow rate of oil through the outer annulus O.D= 0.7m is 2.5 kg/s. If the value of the overall heat transfer coefficient is 250 w/m^2-K, how long must be the heat exchanger be to meet its cooling requirement?

8. Consider the 5m **x** 5m**x** 5m cubical furnace, whose surfaces closely approximate black surfaces. The base, top and side surfaces of the furnace are maintained at uniform temperatures of 800 K, 1500 K, and 500 K respectively. Determine (i) the net rate of radiation heat transfer between the base and the side surfaces, (ii) the net rate of radiation heat transfer between the base and the top surface, (iii) the net radiation heat transfer from the base surface.

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CODE No.:10BT60304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

CAD/CAM

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various types of CAD/CAM systems?
b) Describe the various stages in the design process and discuss how CAD/CAM accelerates the design process.

2. a) Classify various types of drafting commands and discuss about display control commands.
b) Reflect the polygon whose vertices are A(-1, 0), B(0,-2), C (1, 0) and D (0,2) about the (i) horizontal line y =2, (ii) vertical line x =3.

3. a) Explain the parametric representation of B-Spline surface.
b) A cubic Bezier curve is described by the four control points: (0,0), (2,1), (5, 2), (6,1). Find the tangent to the curve at t = 0.25.

4. a) Explain the difference between absolute and incremental programming methods.
b) What is the general configuration of CNC? What are the programming operating features of CNC? Write the advantages of CNC.

5. a) What are the advantages of G.T.?
b) Explain the importance of each digit in an OPITZ coding system.

6. a) Why JIT concepts are not implemented in Indian and Western foreign industries? Explain.
b) Describe a material handling system.

7. a) What is meant by Capacity Planning? Mention its advantages and limitations.
b) Define CIM and discuss about the advantages of CIM in a manufacturing scenario.

8. Explain two contact and non-contact inspection methods.

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CODE No.:10BT60305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. A vertical two start square threaded screw of a 100mm mean diameter and 20mm pitch supports a vertical load of 18 kN. The axial thrust on the screw is taken by a collar bearing of 250mm outside diameter and 100mm inside diameter. Find the force required at the end of a lever which is 400mm long in order to lift and lower the load. The coefficient of friction for the vertical screw and nut is 0.15 and that for collar bearing is 0.20.

2. a) Differentiate between differential screw and compound screw.
b) What is self locking property of threads and where it is necessary?

3. A ball bearing subjected to a radial load of 4000N is expected to have a satisfactory life of 12000 hours at 720 r.p.m. with a reliability of 95%. Calculate the dynamic load carrying capacity of the bearing, so that it can be selected from manufacturer's catalogue based on 90% reliability. If there are four such bearings each with a reliability of 95% in a system, what is the reliability of the complete system?

4. Following data is given for a 360^0 hydrodynamic bearing:
Radial load = 2kN; Journal diameter = 50 mm
Bearing length = 50mm Viscosity of oil = 20 m Pa s
Specify radial clearance that need be provide so that when the journal is rotating at 2800 r.p.m, the minimum film thickness is 30 microns. Evaluate the corresponding coefficient of friction.

5. a) Explain wedge film and squeeze film journal bearings.
b) Write short note on the lubricants used in sliding contact bearings.
c) List the important physical characteristics of a good bearing material.

6. A reciprocating compressor is to be connected to an electric motor with the help of spur gears. The distance between the shafts is to be 500mm. The speed of the electric motor is 900 r.p.m and the speed of the compressor shaft is desired to be 200 r.p.m. The torque, to be transmitted is 5000 N-m. Taking starting torque as 25% more than the normal torque. Determine:
i) Module and face width of the gears using 20 degrees stub teeth,
ii) Number of teeth and pitch circle diameter of each gear.
Assume suitable values of velocity factor and Lewis factor.

7. A composite spring has two closed coil helical springs. The outer spring is 15mm larger than the inner spring. The outer spring has 10 coils of mean diameter 40mm and wire diameter 5mm. The inner spring has 8 coils of mean diameter 30mm and wire diameter 4mm. When the spring is subjected to an axial load of 400N. Find:
i) Compression of each spring. ii) Load shared by each spring.
iii) Shear stress induced in each spring.
The modulus of rigidity may be taken as $84kN/mm^2$.

8. Derive the expression for the radius of neutral axis of a curved beam with
i) Circular section ii) T-section

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CODE No.:10BT60306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is chassis? Draw a simple diagram and list out the components of an automotive chassis.
b) What are the advantages of front engine-front wheel drive? Explain.

2. a) What are different diesel fuel injection systems? Explain the working of a in-line injection system.
b) Describe the method of testing of a fuel pump.

3. a) Describe the operation of the thermostat. What is the main advantage of using a thermostat in the cooling system?
b) Write a detailed note on the electronic ignition system. What are the advantages over the conventional ignition system?

4. a) Explain how common rail diesel injection will help in reduction of pollution.
b) Explain the merits and demerits of use alcohols as fuels in engines.

5. a) With a simple circuit, describe the mechanism of an automotive engine starting system.
b) Explain the working-principle of a temperature indicator of the engine-coolant.

6. a) Explain the working and functions of propeller shaft and universal joint.
b) Explain the functions of overdrive and hydraulic coupling.

7. a) What is power-steering? How it works? Explain.
b) What do you understand about front-wheel geometry? Explain the importance of front- wheel geometry.

8. a) Explain the working of rear independent suspension system with neat sketch.
b) Explain the mechanical brakes with neat sketch.

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Find the frequency response and impulse response of the DTLTI described as **y(n) = y(n-1)+y(n-2)+x(n-1).**

2. a) Discuss the properties of DFT.

b) Find inverse Z - transform of $X(Z) = \frac{1}{1 - 1.5z^{-1} + 0.5z^{-2}}$ if,

i) **ROC : |Z| > 1**
ii) **ROC : |Z| < 0.5**.

3. Compute the eight point DFT of the given sequence **x(n) = { ½, ½, ½, ½, 0, 0, 0, 0}** using radix - 2 DIT - DFT algorithm.

4. a) Compare direct form I and direct form II realisations of IIR system.
b) How will you develop direct form realisations of third and fourth order functions of linear phase FIR systems?

5. a) Write advantages and disadvantages of digital filters.
b) Explain about analog lowpass butter worth filter.

6. a) Name the different types of window functions. How are they defined?
b) The desired frequency response of a low pass filter is

$$H_d(e^{j\omega}) = \begin{cases} 1 \; for \; \frac{-\pi}{2} \le \omega \le \frac{\pi}{2} \\ 0 \; for \; \frac{\pi}{2} \le \omega \le \pi \end{cases}$$

Find the filter coefficients using rectangular window with M=3.

7. a) Explain decimation of sampling rate by an integer factor D and derive spectra for decimated signal.
b) Discuss on sampling rate conversion of rational factor I/D.

8. Write Short notes on:
i) Discrete multitone transmission of digital data.
ii) Signal Compression.

CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

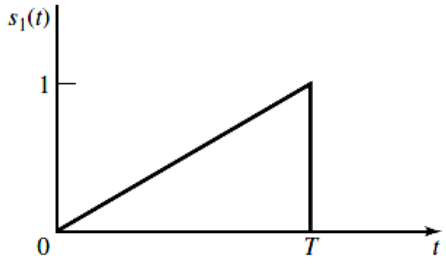
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different elements of digital communication system with the help of neat block diagram.
b) Explain the requirement of sampling of signal prior to transmission through digital communication system, also explain the conditions for sampling rate to sample a signal for reconstruction.

2. a) Explain the conditions to minimize the Slope overload distortion and Granular noise.
b) Let $x(t) = 2\cos(2\pi \times 100t)$. If this signal is sampled at 1 KHz for delta modulator, what is the maximum achievable SNR in dB?

3. a) Give the comparison between the various digital modulation techniques for data transmission.
b) Explain power spectra of BPSK and BFSK.

4. a) Explain the operation and derive the signal-to-noise ratio of a base band signal receiver.
b) What is a matched filter? Derive the impulse response of the matched filter for the below transmit signal.



5. a) Consider a random sequence of 16 binary digits where the probability of occurrence is 0.5. How much information is contained in this sequence?
b) Discuss in detail about the 'mutual information'.

6. a) Describe the Huffman Coding method with an example.
b) Calculate the channel capacity of a low pass, Gaussian, white channel with a bandwidth of 3KHz and $S/N_0 = 3$ where S is the signal power and N_0 is the one sided power spectral density of noise at the output of the channel.

7. a) Explain the decoding of encoded message word using linear block codes with relevant expressions
b) The generator polynomial of a (7, 4) cyclic code is $g(x) = 1 + x + x^2$. Find the all 8 possible code words of this code.

8. a) Explain time domain and transform domain approaches for convolution encoding.
b) Explain the decoding of convolution codes using Viterbi Algorithm.

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CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) An air-filled rectangular waveguide has dimension of a = 6cms and b = 4cms. The signal frequency is 3 GHz. Compute the following for the TE_{10}, TE_{01}, TE_{11}, TM_{11} modes.
i) Cut off frequency ii) Wavelength in the waveguide iii) Group velocity
iv) Phase constant v) Phase velocity vi) Wave impedance of the waveguide.
b) Distinguish between strip and micro strip lines.

2. a) What is a microwave cavity? Draw and explain about the rectangular cavity resonator.
b) A rectangular cavity resonator is formed with a = 2.2cm, b = 1.1cm and distance between two end plates is 8cm. Calculate the resonator frequency of TE_{110} mode.

3. a) Explain the working principle of H - Plane Tee junction with neat diagram.
b) A 100W power source is connected to the input of a directional coupler with coupling factor = 20dB, directivity = 60dB and an insertion loss of 0.8dB. Find the output power at the through, coupled and isolated ports. Assume all ports to be matched.

4. a) What are the properties of S - matrix?
b) Why Ferrites are used in Micro wave passive devices? Explain.

5. a) What is velocity modulation? Explain how amplification takes place in a two cavity Klystron amplifier.
b) What is transit time? How it is made use of in realization of microwave tubes.

6. a) What is a slow wave structure? Explain and differentiate between different structures.
b) Explain the working principle of TWT amplifier.

7. a) Explain the working principle of Gunn diode.
b) Explain the principle of operation of IMPATT diode.

8. a) Explain the different methods of measuring Q of a cavity.
b) What are the different methods involved in measuring the frequency.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss various types of addressing modes in 8085.
b) Write logical steps to add the following two Hex numbers. Both the numbers should be saved for future use. Save the sum in the accumulator.
Numbers: A2H and 18 H.

2. Explain the memory segmentation in 8086 microprocessors.

3. a) Explain procedure and macros with examples.
b) Write an 8086 assembly language program and algorithm for printing a string stored in a memory location (with own assumptions).

4. Explain how to convert an analog signal into digital signal.

5. a) Write a note on the types of serial data transmission methods available.
b) Explain about conversion of RS232C to TTL.

6. a) Differentiate polling and handshaking policies.
b) Write a note on interrupt vector table.

7. Explain the architecture of 8051 microcontroller with a neat diagram.

8. Explain in detail about the timer/counter logic in 8051.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

THEORY OF COMPUTATION

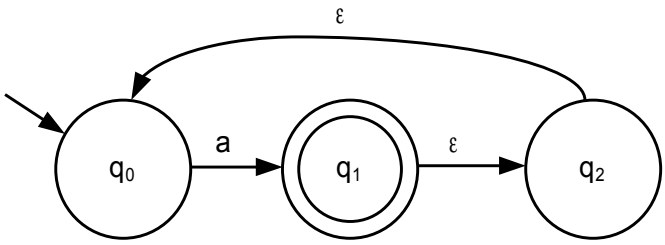
[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define alphabets, strings, languages and discuss about various operations on sets.
b) Design a deterministic finite automaton accepting the language that accepts set of all strings ending in 00 over the alphabet {0, 1}.

2. a) Convert the following NFA with ε-transition to NFA without ε-transitions.



b) Differentiate Moore and Mealy machines.

3. a) Generate the regular expression for the CFL given below
$S \rightarrow aS / bS / a / b$
Generate the automata for the above grammar and write the language that is accepted by the above automata. Do both the derived automata and the given CFG generate same language?
b) Prove that the Closure properties of regular sets are closed.

4. a) What is meant by ambiguous in CFG? Show that $S \rightarrow aSbS / bSaS / \varepsilon$ is ambiguous.
b) What is parsing? Describe top-down and bottom-up parsing technique with suitable example.

5. a) What is meant by CNF? Write a procedure to convert context free grammar to CNF.
b) Eliminate useless symbols from the following grammar.
$S \rightarrow AB / CA,$
$B \rightarrow BC / AB,\ A \rightarrow a,\ C \rightarrow aB / b$

6. a) Define deterministic PDA and explain with an example.
b) Construct a pushdown automata for the language with set of palindromes over alphabet $\{a,b\}$.

7. Design a Turing machine that accepts the language $L = \{ 0^n1^n \mid n \geq 1\}$.

8. Construct the LR(0) items for the given grammar.
$E \rightarrow E + T / E * E$
$T \rightarrow T * F / F$
$F \rightarrow (E) / a$

CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

UNIX PROGRAMMING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat diagram, briefly describe the structure of UNIX operating system.
b) Describe about the features of UNIX operating system.

2. a) Discuss the following commands in detail with suitable examples.
i) cat ii) egrep iii) join iv) sort
b) What are Environmental variables? Explain the following environmental variables with examples.
i) SHELL ii) LOGNAME iii) PATH

3. a) What is a Shell? What are Shell responsibilities? What are different types of shells in UNIX?
b) Write a shell script and explain how it works.

4. a) How the unix file system characterized?
b) What is meant by inode? What does it contain? Explain.

5. What is a process? What are process identifiers? What is a process table? What are system processes? What are various commands used for managing the processes explain in detail with a sample for each?

6. Explain in detail advisory locking and mandatory locking.

7. a) What is a semaphore? Explain.
b) Explain **shmat, shmget, shmdt** and **shmctl** commands.

8. Write a socket program and explain its operations and various functions used in it.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about a Three-Tier Data Ware House Architecture.
b) What is a Data Ware Housing? List the distinguishing features between OLTP and OLAP.

2. a) Explain about Data Mining functionalities.
b) Explain how the Data Mining systems are classified.

3. a) Briefly discuss the parametric and non parametric methods of numerosity reduction.
b) Suppose that the minimum and maximum values for the attribute price are 16500/- and 78300/-, map the attribute between [0-1] using Min-max normalization for a value of 66750/- .

4. a) A database has five transactions Let Min-Sup=60% and Min-conf=80% .

TID	items-bought
T100	{K,A,D,B}
T200	{D,A,C,E,B}
T300	{C,A,B,E}
T400	{B,A,D}
T500	{C,A,D}

Find all frequent item sets using FP growth.
b) Explain the approaches for mining Multi level Association Rule mining.

5. a) What is a prediction? Explain the various Prediction techniques.
b) How does tree Pruning Work? What are some enhancements to basic decision tree induction?

6. a) Explain in detail DBScan Algorithm.
b) Explain any one hierarchical clustering method.

7. a) Explain about Hoeffding Tree Algorithm.
b) Explain the Methodologies for Stream Data Processing and Stream Data Systems.

8. a) Explain about Latent Semantic Indexing.
b) How do identify Authoritative We Pages in web mining?

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

OPTOELECTRONIC AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain about different modes of operation and their properties in optical fibers.
b) Derive the expression for the numerical aperture of the fiber.

2. a) Explain in detail about splicing and connectors for optical fiber.
b) With neat diagrams, explain in detail about different types of photo detectors.

3. a) With a neat diagram, explain the interferometric method of measurement of length.
b) Explain in detail about fiber optic gyroscope with a neat diagram.

4. a) Classify types of Q-switching phenomena and how pulse energy and repetition rate of pulse can be altered using this principle in Nd:YAG laser.
b) Discuss about "stability of the laser output mainly depends on the configuration of the resonators".

5. a) Explain with neat diagrams, application of lasers in melting and trimming of material.
b) With a neat diagram, explain in detail about laser heating.

6. a) Explain, how lasers are useful in dermatology.
b) Explain, how lasers are useful in gynecology.

7. a) What is holography? Explain the basic techniques in it.
b) With the help of neat sketches, explain holographic computer memories.

8. a) Explain in detail about Electro-optic modulator.
b) Why Dragg diffraction modulators are preferred than Raman-Nath modulator?

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) List the characteristics of Bio-amplifier.
b) Discuss the problems encountered with measurements from human beings.

2. a) Draw the diagram of a neuron and explain its electrical properties.
b) Discuss the sources of bioelectric potentials.

3. a) Explain the principal and working of transducers in biomedical applications.
b) Give the equivalent circuit diagram of surface electrode placed over the skin and explain its function.

4. a) Explain in detail the direct(strain gauge) and indirect(sphygmomanometer) methods of blood pressure measurement.
b) Write short notes on interpretation of ECG waveform.

5. a) Explain EMG recording giving details of its origin, recording setup and analysis.
b) Explain the function of central nervous system with a neat diagram.

6. a) Discuss about microwave diathermy.
b) Explain about external pacemaker.

7. a) Write a short note on Spiro meter.
b) Explain the working of Ventilators.

8. Discuss about computerized radiography.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Model. What are the principles and importance of Modeling? Explain.
b) Write notes on Conceptual model of UML.

2. a) Explain the steps to model the vocabulary of a system.
b) Write short notes on the following
i) Advanced relationships ii) Types and roles.

3. a) Write the Common Modeling Techniques used for class diagram design.
b) Describe the steps to modeling Object Structures.

4. a) Write notes on realization of usecase in terms of Interaction Sequence and Collaboration diagrams.
b) Draw a Sequence diagram and collaboration diagram for Dispense of Cash Usecase in ATM transactions.

5. a) Draw an Activity diagram for ATM Transactions.
b) Give the requirements modeling for Online Reservation System.

6. a) Explain in detail about the substates and history states.
b) Draw and explain the state machine to control in a home security system.

7. a) What relationship exists between components and interfaces? Explain with suitable example.
b) Explain the common modeling techniques for deployment diagrams.

8. Draw and explain the activity diagram for typical digital library system.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Describe the following with suitable diagrams:
   i) Compare Connection oriented and connectionless Services.
   ii) Draw the OSI/ISO reference model.

2. Explain the following:
   i) Time division multiplexing.
   ii) Wavelength division multiplexing.

3. Discuss in detail about error correction using Hamming method with a numerical example.

4. a) What is ALOHA? Differentiate between pure and slotted ALOHA.
   b) Write the flowchart of CSMA.

5. Write the Dijktra's algorithm in calculating shortest path from source node to all other nodes in the network and illustrate the calculation of the shortest paths from source node to all the other nodes by taking a subnet by using Dijktra's algorithm. Also write the shortest path tree from source node to other nodes.

6. a) Explain how UDP supports CRC encoding process.
   b) Briefly explain usage of different flags in TCP header.

7. a) Explain the domain name system for www.aicte.gov.in
   b) Draw the working model of client side and server side connections establishment in WWW.

8. a) Give the traditional model for cryptography.
   b) Explain Wi-Max.

CODE No.:10BT61301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

DIGITAL CONTROL SYSTEMS

[Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Using different examples of data control systems, explain analog to digital conversion.
b) State and explain sampling theorem.

2. a) Find the Z-Transform of unit ramp function.
b) Obtain the Z-Transform of $x(t) = \frac{1}{a}\left(1 - e^{-at}\right)$ where a is a constant.

3. a) Write about Z-Transform method for solving difference method.
b) Solve the following difference equation
$2x(k) - 2x(k-1) + x(k-2) = u(k)$, Where x(k) = 0 for k < 0 and

$$u(k) = \begin{cases} 1, k = 0,1,2 \\ 0, k < 0 \end{cases}$$

4. Explain different methods of computing the state transition matrix.

5. Obtain the complete controllability and observability for a linear time-invariant discrete-time control system.

6. a) Describe the mapping of constant frequency loci and constant damping ratio loci from S- plane into the Z- plane.
b) Consider the following characteristic equation

$$P(Z) = Z^3 - 1.3Z^2 - 0.08Z + 0.24 = 0$$

Determine whether or not any of the roots of the characteristic equation lie outside the unit circle in the Z- plane. Use the bilinear transformation and the Routh Stability criterion.

7. a) Describe the functioning of digital PID controllers with neat diagram.
b) Explain the design procedure of digital controller through bilinear transformation.

8. a) Explain clearly about necessary and sufficient condition for state observation.
b) Write about the error dynamics of the "Full - Order" State Observer.

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

MODELING AND SIMULATION

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How to Select an Evaluation Technique? Explain.
b) Explain about the Key Characteristics of Binomial Distribution.

2. a) Explain about the various types of Stochastic Processes.
b) Explain about any two Operational Laws with an example.

3. a) Briefly explain about the different types of Workloads.
b) Explain about the multi parameter histogram in detail.

4. Briefly Explain about the Distributed System Monitors.

5. a) Mention common Mistakes while evaluating the Mean.
b) Discuss the key characteristics of Geometric Mean and Harmonic Mean.

6. a) What is the Goal of proper experimental design? Write and Explain the types of Experimental Design.
b) Write and Explain the steps to Prepare a sign table for a full factorial design with k-p factors.

7. Define Simulation and explain simulation of inventory system with suitable example.

8. a) Explain the output analysis for a single model terminating simulation.
b) Explain about the CPU Simulation of Computer System.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

PRINCIPLES OF COMPILER DESIGN

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different phases of a compiler, showing the output of each phase using the example of the following statement:
position : = initial + rate * 60
b) Compare compiler and interpreter with suitable diagrams.

2. a) What is recursive descent parser? Construct recursive descent parser for the following grammar:
E ! E + T|T
T ! TF|F
F ! F_|a|b
b) What is ambiguous grammar? Eliminate ambiguities in the following grammar:
E ! E + E|E_E|(E)|id.

3. a) Explain the method of error recovery in Parsing.
b) Explain the YACC-Automatic Parser Generator and give its specification.

4. a) Define three-address statement and explain the different types of three address statements.
b) Define the terms quadruples, triples and indirect triples. Give their representation for the assignment statement **A= B+(C*D)** by generating an appropriate three address code.

5. Write an algorithm to perform the table lookup and insertion operation for hashed symbol table.

6. Explain different principal sources of optimization technique with suitable examples.

7. Describe about principal sources of optimization.

8. a) Explain the generic issues in the design of code generators.
b) Explain about peephole optimization.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

WEB PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the types of lists with suitable examples.
b) Design and create the page(s) for accepting the values of name and marks in a table and display them in descending order of marks.

2. a) Write a JavaScript code block, which checks the contents entered in a form's Text element. If the text entered is in the lower case, convert to upper case. If the text entered is in the upper case, convert to lower case.
b) Discuss the following JavaScript concepts with an example program:
i) Objects ii) Strings

3. What is DOM? What are the benefits of using DOM? Write XML document for Messaging application and generate DOM tree for that XML documentation.

4. a) Explain briefly about life cycle methods of a Servlet.
b) Difference between GET and POST request.

5. a) List and briefly discuss the steps required to utilize JDBC in a program.
b) How the JDBC optional package connection pooling works? Explain with an activity diagram.

6. a) Describe various directive elements in JSP.
b) How to handle Syntax Errors in JSP? Explain.

7. a) Discuss any three extensions of JSP tag.
b) Discuss the primary tag extension interfaces and support classes.

8. How to develop, deploy and use custom actions in JSP? Explain with an example code.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2016

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about various security mechanisms.
b) Explain poly alphabetic and mono alphabetic ciphers with examples.

2. a) Explain different cipher block modes of operation.
b) Explain Hamac.

3. a) What is secret key, public key and private key?
b) Consider a Diffie-Hellman scheme with a common prime q =11 and a primitive root $\alpha = 2$
i) If user 'A' has public key Y_A=9, What is A's private key X_A?
ii) If user 'B' has public key Y_B=3, What is shared secret key K?

4. Explain about S/MIME.

5. a) Explain the fields in ESP Header.
b) What is meant by security association?

6. a) What are the web security requirements? Elucidate.
b) Explain about steps in SET transactions.

7. a) Explain about SNMPv3 protocol with a diagram.
b) Write about virus counter measures.

8. a) What is a firewall? Mention the design principles of a firewall.
b) Explain Application Level gateway protocol.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. What is demand forecasting? Explain the methods of demand forecasting.

2. What are economies of scale? Explain different types of internal and external economies of scale.

3. Differentiate between market penetration and market skimming.

4. What is partnership deed? Explain the merits and demerits of partnership business.

5. Define 'Accounting'. Explain its concepts and conventions.

6. Prepare Trading and Profit & Loss account of Sri Sandeep Sharma for the year ending 31-03-2015.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
Opening stock (01-04-2014)	52,000	Telephone expenses	975
Purchases	87,500	Vehicle expenses	1,000
Sales	96250	Interest (Debit)	3,700
Carriage on sales	1,750	Discount allowed	100
Import duties	3,675	Commission received	200
Rent	350	Wages	700
Advertisements	575	Salaries	3,700
General expenditure	350	Closing stock	55,000

7. What is the importance of Capital Budgeting? Explain the basic steps involved in evaluating Capital Budgeting proposals.

8. Distinguish between Manual Accounting and Computerized Accounting and list out the advantages of computerized accounting.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

MANAGEMENT SCIENCE

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the functions of management.
b) What is corporate planning? State and explain the elements of corporate planning.

2. What is matrix organization? Illustrate it with a suitable example. Also list out its merits and demerits.

3. a) Define standard time. Explain the procedure to determine standard time through work sampling.
b) Explain Single sampling plan with an example.

4. a) What are the different types of distribution channels?
b) What is stores management? Explain receipt and issue of materials in a store.

5. Discuss the functions of HRM.

6. Consider the following table summarizing the details of a project involving 11 activities.

Activity	Predecessor(s)	Duration (weeks)		
		a	*m*	*b*
A	–	6	7	8
B	–	1	2	9
C	–	1	4	7
D	A	1	2	3
E	A, B	1	2	9
F	C	1	5	9
G	C	2	2	8
H	E, F	4	4	4
I	E, F	4	4	10
J	D, H	2	5	14
K	I, G	2	2	8

a) Construct the project network.
b) Find the expected duration and variance of each activity.
c) Find the critical path and the expected project completion time.

7. a) Define an Entrepreneur. State and explain the various entrepreneurial traits.
b) State the various opportunities for Entrepreneurs in India.

8. What is ERP? List and explain the modules of ERP.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the influences on Language design?
b) Explain the deferent concepts of programming languages.

2. a) What are the design issues for pointer types?
b) Explain solutions to the dangling pointer problem highlighting the difference between tombstone and non-tombstone methods.
c) Explain and elaborate heap management.

3. a) Explain about unconditional statements and guarded commands.
b) What are the implementation details of arithmetic, relational and boolean expression?

4. a) Describe about scope and life time of a variable.
b) Explain the design issues of functions and user defined overloaded operators.

5. a) Define abstract data types. What are the advantages of the two parts of the definition of abstract data type?
b) Describe briefly seven design issues for object oriented languages.

6. a) Explain the following terms with respect to object oriented programming languages:
i) Abstraction ii) Encapsulation
iii) Polymorphism iv) Data hiding

b) What is meant by method overloading? Explain.

7. a) Describe the semantics of COND and LET.
b) Explain and elaborate the static-scoped functional programming language: ML.

8. a) Why goto is a bad programming construct? Explain with an example. Also discuss on the programming language constructs that can replace goto statement.
b) Considering an appropriate example, explain how problems can solved using concurrency in Ada.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) List out the AC characteristics of an op-amp and discuss about them.
b) With neat circuit diagrams, explain the techniques used for minimizing offset voltage and offset current.

2. Draw a neat circuit diagram of an integrator circuit. Explain its functioning with the input-output wave forms. Derive the output voltage V_0 of an integrator circuit.

3. Explain PLL with a block schematic and enlighten the terms:
i) free-running frequency f_0,
ii) lock range,
iii) capture range,
iv) pull-in time.

4. a) Design a CMOS transistor circuit that has the functional behavior of **f(a)=(P+Q).(Q+R)** also explain its functional operation.
b) Design a CMOS transistor circuit for 3 input AND gate with the help of function table and explain the circuit.

5. a) Mention the DC noise margin levels of ECL 10k family.
b) Draw the circuit diagram of two input 10k ECL NOR gate and explain the circuit.

6. Explain the following:
i) Libraries and packages.
ii) Structural design elements.

7. a) Design a full adder using two half adders. Write VHDL dataflow program for the above implementation.
b) Design full subtractor with logic gates and write VHDL dataflow program.

8. a) Distinguish between latch and flip-flop. Show the logic diagram for both.
b) Write VHDL dataflow program for the Shift Register.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the time-shifting and frequency shifting properties of Fourier Transform.
b) What is Convolution? Explain time-convolution and frequency convolution theorems.

2. a) Explain the generation of DSBSC.
b) Determine the percentage power saving when the carrier wave and one of the sidebands are suppressed in an AM wave modulated to a depth of
i) 100% and ii) 50%

3. a) Discuss about the concept of pre-emphasis and de-emphasis with regard to Frequency modulation.
b) An FM radio link has a frequency deviation of 30 kHz. The modulating frequency is 3 kHz. Calculate the bandwidth needed for the link.

4. a) State and explain sampling theorem.
b) Illustrate the generation and detection of PWM signals.

5. a) With suitable block diagram, explain the principle of operation of a PCM system.
b) Explain the generation of Delta modulation signal.

6. a) Give the comparison of M-ary digital modulation schemes.
b) Explain the power spectra of binary PSK and FSK signals along with graphs.

7. a) Find the channel capacity for a binary symmetric channel having two binary symbols.
b) A discrete source emits one of five symbols once every milliseconds with probabilities 1/2, 1/4, 1/8, 1/16 and 1/16 respectively. Determine the source entropy and Information rate.

8. a) Generate a cyclic code of message length 4 and code length 7.
b) Draw Trellis diagram, Tree diagram and state diagram for the convolution code with K=2, k=2 and n=3 with generators given by (13, 15, 12).

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Kruskal's Algorithm with an example.
b) Distinguish between Eulerian Graph and Hamiltonian Graph.

2. a) Discuss graph traversal techniques with suitable examples.
b) Prove that two biconnected components can have at most one vertex in common and that vertex is an articulation point.

3. a) Explain Binary search algorithm. Trace out the algorithm with an example.
b) Explain Strassen's matrix multiplication algorithm. Analyze its time complexity.

4. a) Explain the Greedy algorithm for sequencing of unit time jobs with deadlines and profits.
b) Explain, how the Greedy approach is useful in the optimal storage on tapes problem.

5. Let n = 4 and (a_1, a_2, a_3, a_4) = (do, if, need, while). Let P(1 : 4) = (3, 3, 1, 1) and Q(0 : 4) = (2, 3, 1, 1, 1). Construct optimal binary search tree with detailed explanation.

6. a) Write a short note on optimal binary search trees.
b) Explain **Big Oh, Big Omega** and **Big Theta** notations.

7. What is the theory over the use of Greedy methodology? What are its applications? Write a program which can best explain the concept of Greedy methodology

8. a) Write and explain non-deterministic satisfiability algorithm.
b) Give an overview of NP-hard Scheduling problems.

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

TRANSPORTATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the salient features and recommendations of Jayankar committee?
b) Discuss about the requirements and objectives of highway alignment.

2. a) Derive an expression for finding the stopping sight distance at level and at grades.
b) A valley curve is formed by a descending grade of 1 in 25 meeting an ascending grade of 1 in 30. Design the length of valley curve to fulfill both comfort condition and head light sight distance requirements for a design speed of 80 kmph. Assume allowable rate of change of centrifugal acceleration C = 0.6m/sec^3, f = 0.35 and t = 2.5 sec.

3. a) Clearly explain the procedure of Los Angeles Abrasion test on aggregates.
b) What are the desirable qualities of bituminous mix? How do these qualities affect road structure?

4. a) What the different types of pavements?
b) Explain the triaxial method or CBR method of design of pavement.

5. a) By what measures the water table can be lowered in sub surface drainage? Explain.
b) How can proper surface drainage can be ensured in a road structure? Explain.

6. a) What are the functions of ballast in a railway track? Explain. Give the requirements of good ballast material.
b) Explain about the following:
i) Adzing of Sleepers
ii) Coning of Wheels
iii) Sleeper density

7. a) Define superelevation. What are the objects of providing superelevation on curves of a railway track?
b) Explain various gradients used on railway tracks.

8. a) Enumerate the factors affecting site selection for airport.
b) Explain wind rose diagram. How is it obtained?

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe in brief, various geophysical methods. Discuss their limitations and uses.
b) How would you obtain a hand-carved sample?

2. a) What are the various types of earth pressures? Give field example for each type.
b) A retaining wall with a smooth vertical back has to retain a backfill of cohesionless soil up to height of 5m above G.L. The soil has a void ratio of 0.83 and the specific gravity of soil solids is 2.68. The water table is located at a depth of 2m below the top of the backfill. The soil above the water table is 20% saturated. The angle of internal friction of the soil above and below water table is found to be 32^0 and 28^0 respectively. Plot the active earth pressure distribution diagram and determine the magnitude and point of application of the resultant thrust.

3. A trapezoidal masonry retaining wall 1m wide at top and 3m wide at its bottom is 4m high. The back of the wall is vertical and is retaining a soil ($\phi = 30°$) at a surcharge angle of 20° with the horizontal. Determine the maximum and minimum intensities of pressure at the base of the retaining wall. Unit weights of soil and masonry are 20kN/m^3 and 24kN/m^3 respectively.

4. a) Explain briefly the standard method of slices to compute the stability of slope.
b) Calculate the factor of safety with respect to cohesion of a clay slope laid at 1 in 2 to a height of 10m, if $\varphi = 12^0$, c = 25 kN/m^2 and γ = 19 kN/m^3. What is the critical height of the slope in this soil? Assume Taylor's stability number as 0.064.

5. a) Discuss the various types of foundations and their selection with respect to different situations.
b) What is the safe bearing capacity of a footing resting on the surface of a saturated clay of unconfined compressive strength of 90 kN/m^2. Let F.S. = 3.0.

6. a) Differentiate between Safe bearing capacity and Allowable bearing capacity.
b) A footing 2m square, is founded at a depth of 1.5m in a sand deposit, for which the observed SPT value (N) is 35.Water table is at a depth of 1.5m from the surface. Determine the net allowable bearing pressure, if the permissible settlement is 40mm and factor of safety of 3 is desired against shear failure.

7. A group of 9 piles with 3 piles in a row was driven into a soft clay extending from ground level to a great depth. The diameter and the length of the piles were 30cm and 10m respectively. The unconfined compressive strength of the clay is 70kPa. If the piles were placed 90cm center to center, compute the allowable load on the pile group on the basis of a shear failure criterion for a factor of safety of 2.5.

8. a) Explain the procedure adopted in well sinking and bring out problem that are encountered in open sinking.
b) What are the components of a well foundation? Discuss briefly the function and design of each component.

CODE No.:10BT60202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain the fundamentals of thyristor controlled rectifier fed dc drives and their operation.

2. a) Explain the Speed - Torque characteristics of a separately excited dc motor connected to a three phase semi controlled converter.
b) A 220V, 600 r.p.m., 500A separately excited motor has armature and field resistances of 0.02 and 10 Ω respectively. Armature is fed from a three-phase fully-controlled rectifier and field from half-controlled single-phase rectifier. A three-phase ac source with a line voltage of 440V is available. Armature rectifier is fed from a three-phase transformer with Y-Δ connection and field rectifier from a single-phase transformer. Calculate the turn's ratio of the transformer.

3. a) Explain briefly the different methods of electric braking for dc motors.
b) Explain four-quadrant operation of dc motors by 1- Ø dual converters in detail with circulating current mode of operation.

4. a) Write short notes on dynamic braking for separately excited dc motor with neat diagrams.
b) A 230V, 1200 r.p.m., 15A separately excited motor has an armature of 1.2Ω. Motor is operated under dynamic braking with chopper control. Braking resistance has a value of 20Ω. Calculate duty ratio of chopper for motor speed of 1000 r.p.m. and braking torque equal to 1.5 times rated motor torque.

5. a) Explain variable voltage characteristics of Induction motor.
b) Explain Torque and Speed characteristics of Induction motor.

6. a) Write short notes on CSI fed IM operation.
b) Draw a suitable diagram and explain the working of slip-power recovery system using commentator less Kramer drive.

7. With suitable circuit diagrams, discuss in detail the principle of operation of Self controlled Synchronous motor drive employing a Cycloconverter.

8. a) What are Stepping motors? Explain the drive circuits of the stepping motor with a neat diagram.
b) Explain the operation of Battery powered vehicles.

CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

OPERATIONS RESEARCH

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Use Simplex method to solve the following LP problem
Maximise: Z= 50x+60y subject to the following constraints
$2x+y \leq 300$
$3x+4y \leq 480$
$4x+7y \leq 812$ and $x, y \geq 0$

2. A Securable Sales Group wishes to purchase the following quantities of uniforms:

Uniform type:	A	B	C	D	E
Quantity:	150	100	75	250	200

Tenders are submitted by four different manufacturers who undertake to supply not more than the quantities indicated below.

Manufacturers:	P	Q	R	S
Total Uniform quantity:	300	250	150	200

The group estimates that its profit (in Rs.) per uniform will vary with the manufacturer as shown in the following table:

	A	B	C	D	E
P	27.50	35.00	42.50	22.50	15.00
Q	30.00	32.50	45.00	17.50	10.00
R	25.00	35.00	47.50	20.00	12.50
S	32.50	27.50	40.00	250.00	17.50

How should the order for uniforms be placed?

3. For the following data, draw the network diagram and then crash the activities to find the time-cost trade-off points that the company should want to consider. Start with the plan that has the longest duration.

Activity	**Preceding Activity**	**Time (weeks)**		**Cost ($000s)**	
		Normal Program	**Crash Program**	**Normal Program**	**Crash Program**
A	-	2	2	5	5
B	A	5	3	11	21
C	A	2	1	7	16
D	B, C	4	2	8	22
E	B	3	2	9	18
F	D, E	3	3	9	9

4. a) The cost of a new machine is Rs.5000. The maintenance cost of n^{th} year is given by Rn=500(n-1); n=1,2…. . Assuming that the money value will not change with time, after how many years will it be economical to replace the machine by new one?

b) A pipeline is due for repairs. It will cost Rs.10,000 and last for 3 years. Alternatively, a new pipeline can be laid at a cost of Rs.30,000 and lasts for 10 years. Assuming cost of capital to be 10% and ignoring salvage value, which alternative should be chosen?

5. The data for the duration and costs of each activity are given in the following Table. The indirect costs of project are Rs. 3000/week. Determine the optimum duration of the project and the corresponding minimum cost.

Activity 'i'	Normal time (weeks)	Normal cost (Rs.)	Crash time (weeks)	Crash cost (Rs.)
1 - 2	6	7,000	3	14,500
1 - 3	8	4,000	5	8,500
2 - 3	4	6,000	1	9,000
2 - 4	5	8,000	3	15,000
3 - 4	5	5,000	3	11,000

6. An oil refinery receives crude oil, at an average rate of Five tankers per day. The unloading facilities which operate 24 hours per day can handle five tankers at a time, but can unload tankers at an average rate of 10 per day. Under the usual assumptions of poisson arrival and exponential service times, determine:

a) Average number of tankers in the systems
b) Average time spent by the tanker in the system
c) Average waiting time of a tanker in the queue.

7. Compute E.O.Q and variable costs for the item having annual demand of 5000 units, unit price of Rs 20 per item, ordering cost at Rs 16 per order, storage rate at 20% per annum. What will the variable cost and E.O.Q if the price per item is changed to Rs 12.50?

8. a) Explain the dominance properties.
b) Solve the following game by graphical method:

		Player B			
		I	II	III	IV
Player A	I	2	2	3	-2
	II	4	3	2	6

CODE No.:10BT60302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the characteristics of line standards and end standards.
b) Discuss the possible effects upon accuracy of measurement due to
i) Temperature variation
ii) Elastic deformation
iii) Cosine errors

2. a) Explain different types of gauges used in inspection.
b) Determine the tolerances on the hole and shaft and maximum and minimum sizes of both hole and shaft for a precision running fit designated by 50 H7 g6, 50 mm lies between the range of 30-50 mm. $i = 0.45(D)^{0.333} + 0.001(D)$ and the fundamental deviation of the shaft = $- 2.5(D)^{0.34}$.

3. a) How does a comparator differ from a measuring machine? Explain the principle and operation of optical comparators.
b) Describe the measuring principle and working of optical bevel protractor.

4. With a neat sketch explain the working of tool makers microscope and also explain its applications.

5. What is a transducer? Explain principle of working of capacitive transducers; also discuss advantages, disadvantages and uses of capacitive transducers.

6. a) List the various methods for force measurement.
b) Explain the construction and working of a hydraulic force dynamometer with a neat diagram.

7. a) Describe the different methods used for measurement of resistance of RTDs.
b) Explain about bonded wire strain gauges and various bonding techniques.

8. Write a short note on
i) Transfer functions
ii) Mathematical models of systems
iii) Zero order system

CODE No.:10BT60303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Wein's Law, Kirchoff's law and Stefan-Boltzman law of Radiation along with mathematical formulae.
b) A surface at 250^{o}C exposed to the surroundings at 110^{o}C convects and radiates heat to the surroundings. The convection coefficient and radiation factor are 75W/m^{2} ^{o}C and unity respectively. If the heat is conducted to the surface through a solid of conductivity 10W/m^{o}C, what is the temperature gradient at the surface in the solid?

2. Consider a brick wall (k = 1 W/m^{o}C) of thickness 10cm, inner surface is at 930^{o}C is exposed to air at 30^{o}C with average heat transfer coefficient of 20 W/m^{2} ^{o}C.
Determine heat Transfer through wall and outer surface temperature.

3. a) Explain significance of Biot number.
b) Consider a rod (mass= 0.1kg, surface area= 0.005m^{2}, c=350J/kg.k and k = 7 W/m^{o}C, α=1.5x10^{-5}m^{2}/s) of diameter 1.2cm initially at uniform temperature of 100^{o}C, cooled to 40^{o}C in 110 seconds by placing an atmosphere at 35^{o}C.
Determine heat transfer coefficient of air.

4. Explain the various parameters used in Forced Convection. Using the dimensional analysis obtain an expression for Nusselt Number in terms of Reynolds and Prandtl Numbers.

5. a) Explain regimes of boiling with neat diagram.
b) Steam at 0.2 bar condenses on the outer surface of a 0.75m long, 50cm outer diameter horizontal tube maintained at a uniform temperature 40^{o}C. Calculate condensation rate and heat transfer.

6. a) Give examples of natural convection.
b) Calculate heat to be supplied to a vertical plate at 60^{o}C, which is in an atmosphere of 25^{o}C.

7. a) How are heat exchangers broadly classified?
b) A heat exchanger is required to cool 55000 kg/h of alcohol from 66^{o}C to 40^{o}C using 40000 kg/h of water entering at 5^{o}C.
Calculate i) exit temperature of water.
ii) heat transfer rate.

8. a) Define total emissive power and intensity of radiation.
b) A 30 mm diameter spherical container used for storing liquid nitrogen under atmospheric conditions (boiling point = 90K) is insulated by enclosing it concentrically within another sphere of 45mm diameter. The intervening annular space between the spheres is completely evacuated and the material for both spheres has emissivity of 0.3. Make calculations for the radiant heat flow if the temperature of the outer container is 300K. Proceed to calculate the surface emissivity of the container material if heat flow rate is to be reduced by 80%.

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CODE No.:10BT60304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

CAD-CAM

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain the computerized product cycle in the manufacturing environment.
b) Briefly describe colour raster display system with a neat sketch.

2. a) Discuss about raster scan graphics coordinate systems.
b) Find the transformed coordinates when a square [(1,1), (2,1), (1,2) & (2,2)] is rotated by 90° anticlockwise about a line passing through one of its vertex (1,1) and parallel to x-axis. Solve the problem by homogeneous transformations.

3. a) Write on the importance of studying geometric modeling in CAD.
b) What are entities? Explain the methods of defining lines, arcs and circles in wire frame modeling.

4. a) Briefly discuss about the coordinate systems in NC system.
b) Discuss the principal functions of Direct Numerical Control Systems.

5. a) Explain MICLASS coding system in G.T.
b) Explain generate process planning method.

6. a) Discuss the following flexibilities in FMS:
i) Machine flexibility ii) Routing flexibility iii) Production flexibility.
b) What are the advantages and disadvantages of JIT manufacturing system?

7. a) Distinguish between MRP and MRP II.
b) What is meant by CIM? What are the various benefits of CIM?

8. Define quality in respect to production. Explain various non contact inspection methods.

CODE No.:10BT60305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

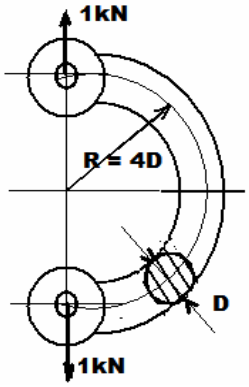
DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. A curved link of the mechanism made from a round steel bar is shown in figure given below. The material of the link is plain carbon steel 30C8 (S_{yt} = 400 N/mm^2) and the factor of safety is 3.5. Determine the dimensions of the link.



2. a) What are the advantages and disadvantages of V-belt drive over flat belt drive?
b) A V-belt drive system transmits 100 kW at 475 r.p.m. The belt has a mass of 0.6 kg/m. The maximum permissible tension in the belt is 900 N. The groove angle is 38° and the angle of contact is 160°. Find minimum number of belts and pulley diameter. The coefficient of friction between belt and pulley is 0.2.

3. An electric motor drives an exhaust fan. A fan leather belt is to be used.
The following data are known:

	Motor pulley	**Fan pulley**
Diameter	400mm	1600mm
Angle of wrap	2.5 radian	3.78 radian
Coefficient of friction	0.3	0.25
Speed	700rpm	
Power transmitted	22.5kW	

The belt is 5mm thick and the permissible stress is 2.3 N/sq.mm.
Calculate the width of the belt.

4. a) Write short note on classifications and different types of antifriction bearings?
b) The rolling contact ball bearing are to be selected to support the overhung countershaft. The shaft speed is 720 r.p.m. The bearings are to have 99% reliability corresponding to a life of 24000 hours. The bearing is subjected to an equivalent radial load of 1 kN. Consider life adjustment factors for operating condition and material as 0.9 and 0.85 respectively. Find the basic dynamic load rating of the bearing from manufacturer's catalogue specified at 90% reliability.

5. a) What is meant by hydrodynamic lubrication?
b) Design a journal bearing for a centrifugal pump running at 1440 r.p.m. The diameter of the journal is 100 mm and load on each bearing is 20 kN. The factor *ZN/p* may be taken as 28 for centrifugal pump bearings. The bearing is running at 75°C temperature and the atmosphere temperature is 30°C. The energy dissipation coefficient is 875 W/m2/°C. Take diametral clearance as 0.1 mm.

6. A reciprocating compressor is to be connected to an electric motor with the help of spur gears. The distance between the shafts is to be 500mm. The speed of the electric motor is 900 r.p.m and the speed of the compressor shaft is desired to be 200 r.p.m. The torque, to be transmitted is 5000 N-m. Taking starting torque as 25% more than the normal torque,
Determine:
i) Module and face width of the gears using 20 degrees stub teeth,
ii) Number of teeth and pitch circle diameter of each gear.

Assume suitable values of velocity factor and Lewis factor.

7. A closely coiled helical spring is made of 10 mm diameter steel wire, the coil consisting of 10 complete turns with a mean diameter of 120 mm. The spring carries an axial pull of 200 N. Determine the shear stress induced in the spring neglecting the effect of stress concentration. Determine also the deflection in the spring, its stiffness and strain energy stored by it if the modulus of rigidity of the material is 80 kN/mm^2.

8. Derive the expression for the radius of neutral axis of a curved beam with
i) Circular section
ii) T-section

CODE No.:10BT60306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How do you classify automotive engines? List out their specific applications.
b) With a neat sketch, explain the constructional features of an oil-filter.

2. a) What are the requirements of Diesel injections system and name types of Injection systems.
b) Draw the simplified sketch of Solex carburetor and explain its working.

3. a) Why the liquid-cooling is preferred over air-cooling for automotive engines? Explain.
b) With a neat circuit, describe the working principle of battery-ignition system of a six-cylinder spark ignition engine.

4. a) What are the advantages of multi-point fuel-injection (MPFI) engines over the carbureted-petrol engines?
b) What are the advantages of compressed natural gas (CNG) engines over conventional diesel- engines?

5. a) With a simple circuit, describe the mechanism of an automotive engine starting system.
b) Explain the working principle of a temperature indicator of the engine-coolant.

6. a) Compare hydraulic and mechanical methods of operating clutches.
b) Explain the working of a constant mesh gear box.

7. a) Write a short note on Ackermann Steering Mechanism.
b) Explain the necessity of power steering in an automobile.

8. a) Explain the working of rear independent suspension system with neat sketch.
b) Explain the mechanical brakes with neat sketch.

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What do you understand by linear convolution?
b) What is the condition for system stability?

2. a) Using DFT and IDFT method, perform circular convolution of the sequence x(n) = {1, 2, 2, 1} and h(n) = {1, 2, 3}.
b) Write any three properties of Discrete Fourier Series.

3. Compute the eight point DFT of the given sequence x(n) = { ½, ½, ½, ½, 0, 0, 0, 0} using radix-2 DIT-FFT algorithm.

4. a) Derive the relation between Z-transform and DFS
b) Realize the system **y(n) = y(n-1) + 2y(n-2) + x(n)** using direct form II realization.

5. a) Using impulse invariance with T = 1 sec determine

$$H(z) \text{ if } H(s) = \frac{1}{s^2 + \sqrt{2}\, s + 1}$$

b) Apply impulse invariant method and find H(z) for

$$H(s) = \frac{s + a}{(s + a)^2 + b^2}$$

6. a) Distinguish between FIR and IIR filters.
b) What are the properties of FIR filter? Explain.

7. Explain about polyphase structure of decimator.

8. Write Short Notes on
i) Transmultiplexers ii) Signal Compression

CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss various types of data formats (Electrical representation of binary signals).
b) Discuss A and μ laws of compounding in PCM system.

2. a) Explain with a neat diagram the adaptive delta modulation system.
b) Derive the SNR in a delta modulation system.

3. a) Give the comparison between the various digital modulation techniques for data transmission.
b) Explain power spectra of BPSK and BFSK.

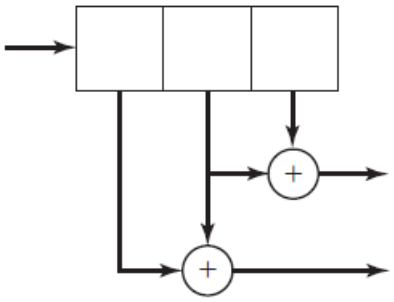
4. a) Compare and contrast optimum and matched filters.
b) Determine the probabilities of occurrence of errors in BFSK and QPSK.

5. a) Consider a random sequence of 16 binary digits where the probability of occurrence is 0.5. How much information is contained in this sequence?
b) Discuss in detail about the 'mutual information'.

6. a) Derive the channel capacity of a discrete channel.
b) A discrete memory less source with probabilities 0.4, 0.3, 0.2, 0.1. Obtain the binary source code using Shannon-Fano algorithm and calculate the efficiency.

7. a) Describe the matrix description of linear block codes.
b) Draw the cyclic encoder and decoder of a (7, 3) cyclic code with generator polynomial $g(D) = 1 + D + D^2 + D^4$.

8. a) Distinguish between convolutional codes and block codes.
b) Draw the state diagram and trellis diagram of the convolutional encoder shown below.



CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Prove that the rectangular waveguide is high pass filter. Define the terms Cutoff frequency and cutoff wave length.
b) Determine the cutoff wavelength and wave impedance in case of rectangular waveguide with dimensions of 5 x 2 cm propagating TM11 mode at f = 9 GHz.

2. a) A circular waveguide has radius of 3cm and is used as a resonator for TM_{011} mode at 10 GHz by placing two perfectly conducting plates at its two ends. Determine the minimum distance between the two end plates. (Take $P_{01} = 2.405$).
b) Derive an expression for f_o in rectangular and circular cavity resonator.

3. a) Explain the operation of Magic Tee as tuner, duplexer and mixer.
b) What are waveguide windows? How they are used for load matching.

4. a) Explain the symmetry property of $\boldsymbol{S}$ matrix.
b) Derive the $\boldsymbol{S}$ matrix of an ideal directional coupler.

5. a) With the Applegate diagram, describe the mechanism of operation of two cavity Klystron amplifier. Write the assumptions on which the analysis for RF amplification by this amplifier is based.
b) What is reflex Klystron ? What are its important applications?

6. a) What are the slow wave structures?
b) Explain the operation of travelling wave tube (TWT) with neat diagram. What is the function of attenuator in travelling wave tube (TWT)?

7. a) What is a RWH theory?
b) Explain about different modes of operation in Gunn effect diode.

8. a) Explain the frequency measurement technique using
i) slotted line ii) resonant cavities
b) Explain the double minima method of VSWR measurement.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about the different types of interrupts in 8085 processor.
b) Write an 8085 assembly language program and algorithm for finding the largest number in an array of six 8-bit numbers.

2. a) Explain in detail about 8086 memory banks and associated signals for byte and word operation.
b) List out the maskable and non maskable interrupts available in 8086.

3. a) Explain procedure and macros with examples.
b) Write an 8086 assembly language program and algorithm for printing a string stored in a memory location (with own assumptions).

4. a) Explain the different methods of parallel data transfer.
b) Discuss about the interfacing of keyboard to 8086 processor with necessary diagrams.

5. a) Discuss about the methods of serial data transfer.
b) Write a Program for Initialization of 8251 and Receiving Serial data depending on your own assumptions.

6. Write a note on DMA controller interface and its significance.

7. a) Discuss the internal RAM organization of 8051 microcontroller.
b) State any 10 instructions from the instruction set of 8051 microcontroller.

8. a) Discuss briefly about the significance timer interrupt and serial communication interrupt with examples.
b) Explain the interfacing of LEDs with 8051 microcontroller using diagrams.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about MOS, CMOS and BiCMOS features.
b) Explain the processing steps in the fabrication of N-Well CMOS technology with neat sketches.

2. a) Draw and explain the significance of various pull up forms.
b) Draw and explain the characteristics of nMOS transistor and its body effect.

3. a) Explain the different VLSI circuit design processes with suitable example.
b) What are limitations of scaling for VLSI circuits? Briefly explain them.

4. a) Define and explain the following:
i) Sheet resistance concept applied to MOS transistors and inverters.
ii) Standard unit of capacitance.
b) Explain the requirement and functioning of a delay unit.

5. a) Explain, how the transistor might be sized to optimize the delay through the carry stage in parallel adder.
b) Design a two input XOR using a ROM.

6. a) Explain semiconductor integrated circuit design approach using programmable logic arrays.
b) Compare the performance parameters of Complex Programmable Logic Devices and Field Programmable Gate Arrays.

7. a) Explain the terms simulation and synthesis pertaining to VLSI Design.
b) Discuss about design capture and design verification tools.

8. a) Explain how serial scan testing is implemented.
b) Discuss about testing of combinational circuits.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

THEORY OF COMPUTATION

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Construct DFA for the following language on $\Sigma = \{a, b\}$ ρ
$L = \{ W : n_a (w) \bmod 3 > 1\}$
b) Describe the instantaneous description of FSM.

2. a) Design a Moore Machine to determine the residue mod 4 for each binary string treated as integer.
b) Design a Mealy machine that uses its state to remember the last symbol read and emits output `y' whenever current input matches to previous one, and emits n otherwise.

3. Construct regular expressions for the following over the alphabet **{a,b}**
i) All the strings have atmost two a's
ii) $L = \{a^n b^m / n \geq 4, m \leq 3\}$
iii) $L = \{ a^n b^m : m + n \text{ is even} \}$
iv) Set of all strings, whose 6^{th} symbol from right end is b.

4. a) Give the context - free grammar for the following language.
i) $L = \{a^n b^{2n} / n > 1\}$
ii) $L = \{a^m b^n / n > m\}$
b) Show that the grammar $S \rightarrow SaSaS/b$ is ambiguous.

5. a) Find a Greibach normal-form grammar equivalent to the **CFG:** $S \rightarrow AA \mid 0,\ A \rightarrow SS \mid 1.$
b) Find a CFG with no useless symbols equivalent to
$S \rightarrow AB \mid CA,\ B \rightarrow BC \mid AB,\ A \rightarrow a,\ C \rightarrow aB \mid b.$

6. a) Define deterministic PDA and explain with an example.
b) Construct a pushdown automata for the language with set of palindromes over alphabet **{*a,b*}**

7. a) Explain about 2-way Turing machines.
b) Explain about Church's Hypothesis.

8. a) Explain about universal tuning machine.
b) State and explain post correspondence problem with suitable example.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about a Three-Tier Data Ware House Architecture.
b) What is a Data Ware Housing? List the distinguishing features between OLTP and OLAP.

2. a) Discuss in detail with examples whenever necessary, what a multi dimensional data model is and the three associated schemas.
b) Discuss in detail with examples whenever necessary, various OLAP operations.

3. a) Explain about the Discretization and Concept Hierarchy generation for numerical data.
b) List the different forms of Data Pre Processing and explain about Data Integration.

4. a) Discuss FP - growth algorithm with an example.
b) Briefly discuss about Multi dimensional Association rules.

5. a) What is a prediction? Explain the various Prediction techniques.
b) How does tree Pruning Work? What are some enhancements to basic decision tree induction?

6. a) Given the following measurements for the variable age 18,22,25,42,28,43,33,35,56,28. Standardize the variables by the following
i) Compute the mean absolute deviation of age.
ii) Compute the Z-Score for the first four measurements.
b) Explain about density based methods.

7. a) Explain the process of Mining Time Series Data.
b) Discuss in detail about Mining Sequence Patterns in Biological Data.

8. a) Explain how you Perform similarity search in multimedia data.
b) Explain clearly about Text Mining.

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

OPTOELECTRONIC AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about step index and graded index fibers.
b) Explain about linear and non linear scattering losses.

2. a) Explain about following splices
i) Fussion splices ii) Mechanical splices
b) Explain about fiber alignment and joint losses.

3. a) With a neat diagram explain in detail about measurement of liquid level using fiber optic sensors.
b) Explain in detail about fiber optic gyroscope with a neat diagram.

4. a) Explain the construction and working principles of laser with a neat diagram.
b) Discuss in detail about semiconductor lasers.

5. a) Explain with neat diagram the application of lasers in material processing.
b) Explain operation of laser Doppler velocity meter with neat sketches.

6. a) Explain in detail about laser instrumentation for surgery.
b) Explain how vocal card tumors are removed using lasers.

7. a) What is holography? Explain the basic methods in it.
b) With the help of neat sketches explain about holographic components.

8. a) Why Dragg diffraction modulators are preferred than Raman-Nath modulator?
b) Explain in detail about magnetic-optic modulators.

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the importance of measurements in a Biomedical Instrumentation System.
b) With a neat black diagram, explain about various components present in a Biomedical Instrumentation System.

2. a) Draw the diagram of a neuron and explain its electrical properties.
b) Discuss the sources of bioelectric potentials.

3. a) Discuss various types of Biochemical electrodes and give their applications.
b) Distinguish between external and internal electrodes and give some examples.

4. a) With a neat sketch, give interpretation of ECG waveform.
b) Discuss about blood flow and heart sound measurement.

5. a) Describe the working of central nerve system.
b) Describe the components of a typical EMG recording system.

6. a) Explain the operation of Hemodialysis machine with a neat block diagram.
b) Discuss briefly different modes of operation of cardiac pacemaker.

7. a) Explain the principal and working of Pnemuotachograph ventilators.
b) Explain in detail the physiology of respiration.

8. a) Explain the principle and working of CT scanning system.
b) Compare ultrasonic diagnosis with X-ray diagnosis.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain ISO OSI Model in detail.

2. a) Briefly discuss the functionalities of different reference points in ISDN.
b) Explain different modes of operation in fiber optic cables.

3. Discuss in detail about error correction using Hamming method with a numerical example.

4. a) Explain different persistence strategies in CSMA protocol.
b) Briefly discuss different DLL switching techniques.

5. a) Explain different classes of IPV4 address.
b) What is congestion? Explain any one congestion control technique.

6. a) Explain how UDP supports CRC encoding process.
b) Briefly explain usage of different flags in TCP header.

7. a) Explain the architectural overview of World Wide Web.
b) What is HTTP? List the operation that can be performed on HTTP.

8. Differentiate between substitution and transposition techniques in network security.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

PRINCIPLES OF COMPILER DESIGN

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is LEX ? Explain in detail specifications and features of LEX.
b) Show how NFA recognizes the language **(a|b)* abb**.

2. Construct predictive parsing table for the following grammar.
E ! T E?
E? ! +T E?|?
T ! F T?
T? ! ?FT?|?
F ! (E)|id

3. a) Explain the method of error recovery in Parsing.
b) Explain the Yacc-Automatic Parser Generator and give its specification.

4. a) Explain the concept of syntax directed definition with an example.
b) Give the syntax directed definition to process a simple variable declaration in C and construct annotated parse tree for the input **int a,b,c.**

5. a) Give the specification of simple type checker for statements, expressions and functions.
b) Explain the concept of Type Systems in detail.

6. a) Discuss the various methods for translating Boolean expression.
b) Explain the process of generating the code for a Boolean expression in a single pass using back patching.

7. a) Explain reducible and non-reducible flow graphs with an example.
b) Explain natural loops and inner loops of a flow graph with an example.

8. a) Explain the concept of object code forms.
b) Generate optimal machine code for the following C program.
main()
{int i, a[10];}

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

WEB PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the functionality of the following tags:
i) COLGROUP ii) COORDS iii) MAP iv) PRE.
b) How do you make an image clickable in HTML? Give an example code.

2. a) Write a *JavaScript* program that reads an integer and display whether it is an odd or even number.
b) Explain the characteristics of DHTML.

3. a) How to create an XML document? Explain with an example.
b) Discuss different techniques that are used to process XML files.

4. a) Explain any six interfaces from *Javax.servlet* package.
b) How to read cookies from Servlet? Explain.

5. Explain the purpose of Prepared Statement in JDBC. Write a program to insert and update the data in a table using prepared statement.

6. Write JDBC program to display the all records of student table in a tabular form.

7. a) Develop a JSP to accept users first name and then welcome the user by name.
b) What are the benefits of using custom tag libraries?

8. How to develop, deploy and use custom actions in JSP? Explain with an example code.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2017

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) List and briefly define categories of security services.
b) With a flow chart, explain Internet RFC Publication process.

2. a) "It is possible to convert any block cipher into a stream cipher by using the CFB mode." Explain.
b) Explain the use of link encryption and end-to-end encryption across a packet-switching network.

3. a) Explain RSA Algorithm in detail.
b) Explain the fields in X.509 certificate format.

4. Explain about S/MIME.

5. a) What is Integrity check value? What algorithms are used for calculating ICV in AH protocol? On what fields ICV is calculated?
b) Discuss about various ISAKMP exchange types.

6. Explain the following in detail:
i) Dual signature
ii) Web security approaches
iii) Change cipher spec protocol

7. a) Write about Bot nets.
b) Write about virus counter measures.

8. Explain firewall design principles.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

MANAGEMENT SCIENCE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the contributions of F.W.Taylor to the evolution of management thoughts.
b) Discuss the managerial skills which bring out effective management.

2. What is Departmentation? Discuss the methods of departmentation.

3. a) State the advantages and disadvantages of Acceptance Sampling Plan.
b) In an automatic filling process ± 4 gm, to investigate the capability of the process, samples of 5 each, were taken from 10 successive batches and data were recorded as given below:

Batch (Sample Number)	Observations Weight of each sample of 5				
	1	2	3	4	5
1	177	176	177	178	175
2	176	178	178	180	175
3	174	177	177	176	175
4	175	178	180	172	176
5	175	175	174	173	174
6	176	177	178	178	175
7	170	175	178	177	173
8	177	177	172	176	177
9	174	181	174	176	175
10	175	175	174	175	173

Determine the control limits for $\bar{x}$ -chart and R-chart. Comment on the process.

4. a) What are the types of inventories? Also explain the need for inventory control.
b) Discuss the different channels of distribution.

5. a) Explain the process of 360 degree performance appraisal.
b) Define merit rating. What is its importance in job evaluation?

6. The following is the project schedule.
i) Draw the network and calculate the length and variance of the critical path.
ii) What is the probability that the jobs on the critical path will be completed with a due date of 40 days?
iii) What due date has 94% chance of being met?

Activity	OT	MLT	PT
1-2	3	6	15
2-3	6	12	30
2-4	5	11	17
3-4	3	9	27
3-5	1	4	7
5-6	2	5	8
3-6	4	19	28
4-6	2	5	14

7. a) List the qualities of an Entrepreneur.
b) Classify different types of Entrepreneurs.

8. a) What is TQM? Explain its elements and state its advantages.
b) Write short note on Enterprise resource planning.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Write a C++ program by defining a class STUDENT with USN, Name and Marks in 3 tests of a subject as data members. Declare an array of 10 STUDENT objects.
Use member functions:
i) average( ): to find the average of two better marks for each student.
ii) display( ): to print the USN, Name and the average marks of all the students.
b) Define Object Oriented Programming. Explain any two basic Object Oriented Programming concepts.

2. a) What is the need to make a function as virtual? List any four rules to make a function as virtual.
b) Write a C++ program to create a class called STRING and implement the following operations:
i) Include constructor that uninitializes the STRING s1, string with length zero
ii) Include constructor that initializes the STRING s2= "ISE"
iii) Using copy constructor achieve s1=s2
Display the results after every operation.

3. a) Write a Java program to arrange 30 random numbers in a triangular array.
b) Write a java program uses big numbers to compute the odds of winning the grand prize in a lottery.

4. a) What is an interface? Explain how to define and implement an interface.
b) Create class box and box3d. box3d is extended class of box. The above two classes going to pull fill following requirement.
- Include constructor.
- set value of length, breadth, height
- Find out area and volume.

Note: Base class and sub classes have respective methods and instance variables.

5. a) What is CLASSPATH? How can you import a package?
b) Briefly explain the concepts and benefits of exception handling.

6. a) Explain thread life cycle.
b) What are the types of applets?

7. a) Briefly explain any four commonly used Event Listener Interfaces.
b) Write a program that creates a frame window that responds to mouse clicks and keystrokes.

8. a) Explain the architecture of MVC with the help of diagram.
b) Write a simple swing application that displays a short message.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2016

PRINCIPLES OF COMMUNICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove the Duality and frequency shifting properties of Fourier transform.
b) Explain in detail about auto correlation and cross correlation.

2. a) What is SSB modulation and what are its advantages? Draw the Block diagram of SSB generation using phase discriminator method. Explain its operation.
b) Show that the diode detector output is $\mathbf{k \cos\omega_m t}$ if the waveform $\mathbf{u(t) = (1+m \cos\omega_m t) \cos\omega_c t \ \ (m < 1)}$ is applied to it.

3. a) Explain the indirect method of generation of FM waves.
b) Compare AM, FM and PM Modulations.

4. a) State and explain the Sampling theorem for low pass signals.
b) Compare TDM and FDM systems and explain merits and demerits of each system.

5. a) What is PCM? Explain the working of a typical PCM system with the help of a block diagram.
b) Draw block diagram of QPSK transmitter and explain its operation.

6. a) Compute the bit error rates for ASK, FSK, and PSK with Non-coherent detection.
b) Explain in detail about QAM with a neat block diagram.

7. a) Write about Shannon-Heartly theorem and its implementation.
b) Apply Shannon-Fano coding procedure for m=2 given. Also compute coding efficiency.
$[X] = [x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8]$
$[P] = [0.1, 0.25, 0.15, 0.05, 0.15, 0.1, 0.05, 0.15]$

8. a) Explain error detection and correction codes.
b) What is Shannon Theorem? What is means of capacity of Gaussian channel?

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

VLSI DESIGN

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is doping? Explain Ion-implantation technique with neat sketch.
b) Explain the metallization process in detail.

2. a) Derive an expression for $Gm = \frac{\mu \in_{ins} \varepsilon_o}{D} \frac{W}{L(V_{gs} - V_t)}$

b) In the inverter circuit what is meant by Zp.u, and Zp.d. Derive the required ratio between Zp.u. and Zp.d. if an n-MOS inverter driven by another.

3. a) Draw a stick diagram and layout for a two-input CMOS NOR gate.
b) Discuss the limitations of scaling.

4. a) Realize the function $y = \overline{A(B+C) + DE}$ in CMOS logic.
b) Explain the concept of sheet resistance applied to MOS transistors and inverters. What are silicides?

5. a) Explain the operation of a carry-select adder.
b) Draw the schematic of a 4x4 array multiplier and explain its operation.

6. a) Describe Semi-Custom Design Flow.
b) Distinguish FPGA and CPLD.

7. a) Explain different types of Modeling's in VHDL.
b) Briefly describe about Design Capture and Verification Tools.

8. Write short notes on
i) Automatic test pattern generation (ATPG) method.
ii) IDDQ testing.
iii) Fault models.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

DATA WAREHOUSING AND DATA MINING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about multidimensional data model.
b) Explain three-tier data warehouse architecture with neat diagram.

2. a) Describe the different kinds of data.
b) Explain the following data mining functionalities with suitable examples.
i) Class/Concept description.
ii) Classification and prediction.

3. a) What is the need for data preprocessing? Explain the method of data cleaning.
b) Discuss entropy-based discretization.

4. a) How functional dependencies among attributes in a relation are different from Association rules mined from a relational database.
b) Write and explain Apriori Algorithm with example.
c) Write the differences in methodologies used in Apriori and FP Tree algorithm.

5. a) Explain naïve Bayesian classifier and explain with an example.
b) What are the various classification accuracy measures? Also write the differences between Classification and Prediction.

6. Briefly explain BIRCH, ROCK and Chameleon clustering methods.

7. a) Discuss in detail with examples whenever necessary, a categorization of major clustering methods.
b) Write the k-means algorithm for clustering.

8. Discuss the following in detail with examples:
i) Multimedia data mining.
ii) Spatial data mining.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

COMPUTER NETWORKS

[Electronics and Communication Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with neat sketch, the functions of the protocols in each layer of the OSI reference model.
b) Provide a brief description of how the Internet's connection oriented service provides reliable transport.

2. What is the need for switching techniques? Explicate different types of switching techniques.

3. a) Explain sliding window protocol with neat diagram.
b) An 8-bit byte with binary value 10101111 is to be encoded using an even-parity Hamming code. What is the binary value after encoding?

4. Describe the following in details:
i) Limited contention protocol.
ii) MACAW.

5. a) Discuss link state routing in detail with suitable example.
b) "IP datagram has a checksum field; still it is called an unreliable protocol". Justify.

6. Explain the use of socket call by using an Internet file server as an example.

7. a) Discuss email architecture in brief. How is IMAP different from POP?
b) Why is DNS necessary?

8. Explain public key algorithms in detail.

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

REMOTE SENSING AND GIS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is GCP? Explain the use of GCP in Aerial Photogrammetry.
b) Derive the expression for determination of Scale of a Vertical Photograph from fundamental geometry of Photograph.

2. a) Describe the principle of Remote Sensing with the help of a neat sketch.
b) Explain the along track operation of scanner.

3. a) Explain the significance of Spectral Reflectance Curves.
b) Describe the characteristics of any two satellites.

4. a) What are the different techniques of graphic representation of spatial data?
b) What are the basic requirements of GIS?

5. a) Why do you need Map Projection? Classify Map Projections.
b) Differentiate Vector and Raster models of GIS data representation.

6. a) Explain Arc-Node data structure used for Vector data storage in GIS.
b) What is Reclassification? Classify Reclassification of vector data.

7. Enumerate the steps involved in land use and land cover mapping by using Remote Sensing and GIS techniques.

8. Discuss the role of Remote Sensing and GIS in the identification of sites for Artificial recharge structures.

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe objectives of sewerage systems of sewage collection and disposal.
b) Differentiate between separate, combined and partially combined systems of sewerage. Give the conditions favourable for the adoption of each of them.

2. a) How do you estimate quantity of flow in sewers? For a specific area explain what data you require to estimate flow in sewers.
b) List commonly used sewer appurtenances in sewer construction. With help of sketches explain the functions of any two appurtenances.

3. a) Present a detailed discussion on various characteristics of domestic wastewater.
b) How is industrial wastewater different from domestic wastewater? Explain the possible impacts of disposal of wastewater into receiving waters.

4. a) What do you mean by primary and secondary treatment in wastewater? Sketch a schematic flow diagram indicating the units in primary and secondary treatment of domestic wastewater along with the objectives of each unit.
b) Two PSTs 26m in diameter and 2.1m depth to treat wastewater at the rate of 26000cum/day. Find the overflow rate (cum/sq.m/day) in the PSTs and the DT.

5. a) Differentiate the aerobic and anaerobic process in sewage treatment.
b) Design a single stage trickling filter using NRC equations for the following data:
wastewater flow from a sugar industry : 3.5 Mld
Recirculation ratio : 1.5
BOD of the raw wastewater: 2855 mg/l
BOD of the final effluent desired: 250 mg/l

6. a) Explain the biological process of removal of organic nitrogen from wastewater.
b) What you mean by tertiary treatment? How the refractory organics will be removed from wastewaters?

7. a) What are the methods of effluent disposal? Distinguish the merits and demerits.
b) What is self purification? Write the Streeter-Phelps equation and explain the terms in the equation.

8. a) Explain the chemical characteristics of solid wastes along with their importance in the solid waste management.
b) List the types of landfills in solid waste management. Describe various methods of landfills.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

STEEL STRUCTURES - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Design main section of a plate girder section to carry a uniformly distributed load of 100 kN/m over a span of 20m. A full lateral support is provided to the compression flange.

2. Design the central cross section of a welded plate girder for 18m span simply supported beam carrying a UDL of 40KN/m. Design the vertical stiffners.

3. a) Give the stepwise procedure for the design of purlins in a roof truss.
b) A roof truss shed is to be built in Hyderabad for an industry. The size of a shed is 18m x 30m. Height of the building is 16m at the eaves. Determine the basic wind pressure.

4. A tubular member of 4m carries a reversal load of 100kN tension and 80kN compression. Design the member.

5. Design a simply supported gantry girder carrying manually operating traveling crane for the following data:

Carne Capacity	: 200 kN
Self weight of the crane girder excluding trolley	: 200 kN
Self weight of the trolley	: 40 kN
Minimum hook approach	: 1.20 m
Wheel base (distance wheels)	: 3.50 m
Center to centre distance between gantry rails (span of crane girder)	: 16.0 m
Center to centre distance between columns (span of gantry girder)	: 8.00 m
Diameter of crane wheels	: 150 m
Self weight of rails	: 0.3 kN/m

6. An overhead pressed tank is to be designed for a capacity of 85000 liters at Kerala railway station. Pressed steel plates of size 1.25m x 1.25m are available. The height of the tank from the ground level to the bottom of the supporting beam is 10m. Design the tank.

7. Design a simply supported steel beam of 8m span carrying a reinforced concrete floor capable of providing lateral restraint to the top compression flange (I section). It carries a total uniformly distributed load of 260 kN/m including self weight. In addition, the beam also carries a point load of 90 kN at it's mid span.

8. a) Define shape factor and determine the shape factor for a triangular section of base **b** and height **h**.
b) Find out the collapse load of a simply supported beam subjected to a concentrated load at mid span.

CODE No.:10BT70104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

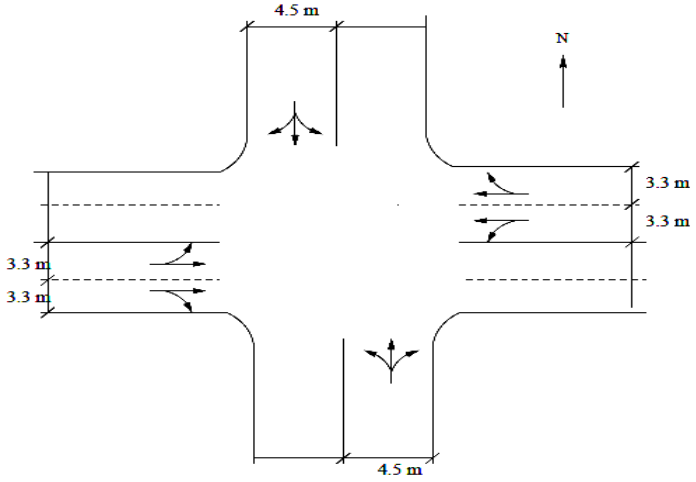
1. a) Write the definitions for speed, flow and concentration and explain the fundamental diagram of traffic flow.
b) What are spot speed studies and how the data can be presented?

2. A study of flow at a particular location resulted in a calibrated speed-density relationship as follows **v = 52.5(1- 0.35k)**. For this relationship, determine free flow speed, jam density, and maximum flow.

3. The following data is obtained in a Parking Usage Study by patrolling method.
Compute the Parking load, Parking Turnover and the Parking Volume.

Time	8.00	8.30	9.00	9.30	10.00	10.30	11.00	11.30
Registration Numbers	1456	2335	2335	1456	1456	1456	1456	1456
	5784	1456	1456	5784	5784	5784	5555	5555
	6398	5784	5784	4785	5555	5555	9698	3333
	5878	9966	4785	5555	9698	9698	2354	9698
	9656	4785	1245	7417	3693	2354	5679	2354
		1245	5555	9698	2354	2121	8888	5679
			7417	2354	2121	5679	8287	
			9698	5679	5679			

4. The traffic flow in vehicles per hour at a four-legged intersection is as shown in the following figure and table. Design a four-phase signal with an additional pedestrian phase using HCM method. Calculate green times and show the phase timing diagram.



Direction	East bound	West bound	North bound	South bound
Left turn	65	30	30	40
Through	620	700	370	510
Right turn	35	20	20	50

Assume Pedestrian volume = 100 pedestrians/hour, Pedestrian Walking speed= 1.2 m/s, Saturation headway =2 seconds, Peak hour factor and critical v/c ratio = 0.9, Amber time = 3 s, Lost time =2 seconds/phase.

5. Briefly discuss about various measures required to reduce noise and air pollution from traffic.

6. a) Explain various types of Road markings commonly used.
b) Explain different types of road traffic signs with neat sketches.

7. Explain about different factors causing road related accidents and various engineering measures required to reduce accidents.

8. Write short notes on the following:
i) Travel Demand Management.
ii) One Way Streets and their Advantages and Disadvantages.
iii) Tidal Flow Operations as part of TSM

CODE No.:10BT70107

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

DESIGN AND DRAWING OF IRRIGATION STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any ONE question
All questions carry equal marks

1. Design a surplus weir for a tank, which forms system of tanks. The combined catchment area of the group of tanks is 32.85Sq.Km and the area of the catchments intercepted by the upper tanks is 27.15 Sq.Km.
It is decided to store water in the tank to a level of +17.00M, limiting the submersion of foreshore lands up to a level of +17.75M. The general ground level at the proposed site of work is +16.00M, and the ground level below the proposed surplus work slopes till it reaches +15.00M in a distance of 6m. The tank bund has a top width of 2m at level +19.50M with 2:1 side slopes on either side. The tank bunds are designed for a saturation gradient of 4:1 with 1 metre clear cover. Provision may be made to provide kutcha regulating arrangements to store water up to MWL in times of necessity. The foundations are of hard gravel at a level of +14.50M near the site of work.
Draw to a suitable scale:
i) Half plan at top and half plan at foundation level.
ii) Longitudinal elevation of the surplus weir.

2. Design a sloping Glacis weir for the following data.

Maximum discharge intensity on the weir crest	= 12m^3/s/m length
HFL before construction of weir	= +155.00
River Bed Level	= +149.50
Pond Level	= +154.00
Height of crest shutters	= 1m
Anticipated downstream water level in the river when the weir is discharging with pond level upstream	= +151.50
Bed retrogression	= 0.5m
Lacey's silt factor	= 0.9
Permissible exit gradient	= 1/7
Permissible afflux	

Calculate crest level and scour depth. Perform hydraulic jump calculations. Design glacis, impervious floor, upstream and downstream protection works. Draw longitudinal sectional elevation of sloping Glacis weir to a suitable scale.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Briefly describe the ground improvement techniques suitable for various soils.

2. a) What are the main aims of compacting the soil at a site?
b) What are various rollers available in the field for densification of soils? Indicate the applicability of each compactor to the soil type.

3. a) Explain briefly various methods of in-situ densification in cohesive soils.
b) Explain how dewatering improves cohesive soil properties.

4. a) Discuss various methods of grouting.
b) Explain the principle and application of soil-lime stabilization.

5. a) How can you have in-situ ground reinforcement?
b) Briefly describe different types of ground anchors and discuss their uses with neat sketches.

6. a) Describe the reinforced earth with its principles.
b) Discuss the design principle of reinforced earth.

7. a) What are the problems associated with expansive soils?
b) Explain any two tests to identify the expansive soils.

8. Write short notes on the following:
i) Physical properties of Geo-textiles.
ii) Functions of Geo-membranes.
iii) Design for filtration and drainage using Geo-textiles.
iv) Endurance tests on Geo-grids.

CODE No.:10BT70201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is a 3-ø unsymmetrical fault? Discuss the different types of unsymmetrical faults that can occur on a 3-ø system.
b) Derive an expression for fault current for single -line-to ground fault by symmetrical components method.

2. a) Explain with a neat sketch, the working of a Minimum oil circuit breaker.
b) Explain the following terms:
i) Restriking Voltage ii) Recovery Voltage iii) RRRV

3. Draw schematic diagrams for:
i) Impedance relay ii) Reactance relay iii) Mho relay
Discuss operating characteristics of these relays.

4. a) What is a 'static' relay and give the merits and demerits of static relay over electromagnetic relays?
b) What is an IDMT characteristic? Explain how this is achieved in practice.

5. a) Describe the construction and working of Buchholz relay with neat sketch.
b) A 120 MVA, Δ-Y connected, 11/220 kV transformer is to be protected by percentage differential scheme. CT's used are of 5000/5 and 400/1 respectively. Draw the sketch of complete scheme.

6. Explain the following carrier distance protection schemes:
i) Carrier transfer ii) Carrier blocking iii) Carrier acceleration

7. a) Define the term Earthing. What are the functions of grounding in power system?
b) A 230kV, 3-phase, 50 Hz, 200 km transmission line has a capacitance to earth of 0.01μF/km per phase. Calculate the inductance and kVA rating of the Peterson coil used for Earthing the system.

8. a) Name the various devices used for protection against over voltage due to lighting.
b) What are the requirements of lightning arrester?

CODE No.:10BT70202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. The fuel cost functions in Rupees/hour for three thermal plants are given by:

$C_1 = 400 + 8.4P_1 + 0.006P_1^2 ; 100 \le P_1 \le 600$

$C_1 = 600 + 8.93P_2 + 0.006P_2^2 ; 60 \le P_2 \le 300$

Where P_1, P_2, are in MW. Neglecting line losses and including generator limits.
Determine the optimal generation scheduling, where P_D = 820MW.

2. a) Derive the condition for the optimum scheduling of generation of units in a steam power plant by considering lossless line.

b) The fuel cost for a two unit steam power plant are given by
$\mathbf{C_1 = 0.1\ P_1^2 + 25\ P_1 + 1.6}$ Rupees/hour
$\mathbf{C_2 = 0.1\ P_2^2 + 32\ P_2 + 2.1}$ Rupees/hour
Where P's are in megawatts. If there is an error of 1% in the representation of the input data, find the loss in operating economy for a load of 250 MW.

3. Describe different methods for solving hydro thermal scheduling.

4. a) Explain the mathematical modeling of speed governing system with block diagram approach.
b) Discuss briefly about small signal transfer function.

5. For a two area frequency control employing integral of area control error, obtain an expression for steady values of change in frequency for unit step disturbance in one of the areas. Assume both areas to be identical. Comment upon the stability of the system for parameter values given below:
TSG=0.4s; T_t=0.5s; T_{ps}=20s; K_{ps}=100; R=3; K_i=1; b= 0.425; a_{12}=1; $2\pi T_{12}$=0.05.

6. What do you mean by compensation of a line and discuss briefly different methods of compensation.

7. a) Discuss generation and absorption of reactive power.
b) Explain how voltage control can be affected by injection of reactive power.

8. a) Explain about deregulation.
b) Discuss about key issues in deregulation.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

POWER SYSTEM ANALYSIS

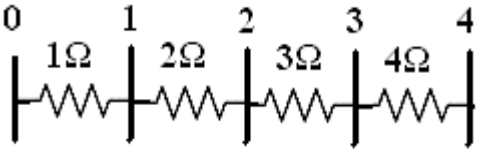
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms: Subgraph, Connected graph, Basic Cut-Set and Basic Tie-Set.
b) Derive the equation for bus admittance matrix Y_{BUS} using singular transformations.

2. a) Derive the equations for Z_{qi} and Z_{qq} in Z_{BUS} building algorithm when the added element is a link.
b) Obtain Z_{BUS} for the system shown below. Choose node 0 as reference.



3. a) Derive the Static load flow equations.
b) Explain the procedure of finding the line flows for the given power system.

4. Discuss in detail the methods to improve the steady state stability of a power system.

5. Write the performance equation of a three-phase network element in:
i) Impedance form.
ii) Admittance form.

6. Define the power angle equation, P = EgEm/X and with usual notations. What are the assumptions commonly made in stability studies?

7. a) Explain a condition for steady state stability, when small increment in the electrical power keeping the input from the prime mover constant.
b) A synchronous generator of reactance 1.2 p.u. is connected to an infinite bus bar of voltage 1.0 p.u. through transformers and a line of total reactance of 0.6 p.u. The generator Z no load voltage is 1.2 p.u. and its inertia constant is 4 MW-Sec/MVA. The resistance and machine damping may be assumed negligible. The system frequency is 50 Hz. Calculate the frequency of natural oscillations if the generator is loaded to 50% and 80% of its maximum power limit.

8. Derive the equation that defines the dynamics of a synchronous machine.

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CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

FLEXIBLE AC TRANSMISSION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of power facts in AC Transmission System.
b) What are the factors limits the loading capability?

2. a) Briefly explain description of FACTS controllers.
b) Discuss the relative importance of Controllable parameters in AC Transmission System.

3. Explain the principle of 3-level voltage source converter with relevant waveforms.

4. a) What is Shunt Compensation and what are the objectives of the Shunt Compensation?
b) Explain the Shunt Compensation can enhance the dynamic performance of Electrical Power System.

5. a) Explain the following:
i) Midpoint voltage regulation for line segmentation
ii) Power oscillation damping.
b) Explain briefly the variable impendence type static **VAR** generators.

6. a) Explain the operating principle of STATCOM.
b) Explain the implementation of VAR reserve control by STATCOM.

7. What are the objectives of series compensation? Show that how it can improve transient stability and voltage stability of power system?

8. Explain different modes of operation of TCSC.

CODE No.:10BT70301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

MANUFACTURING SYSTEMS DESIGN

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain the classification manufacturing system.

2. What are the different Performance measures in manufacturing system? Explain the term in detail Manufacturing lead time.

3. a) Define throughput and explain the concept of it with an example.
b) Discuss the capacity planning in manufacturing system.

4. a) Explain rotary transfer mechanism and explain with reference to work part transport.
b) Write short notes on Manual Assembly lines.

5. How Group Technology Layout is different from Conventional Layout? Justify in detail.

6. Define FMS and discuss the salient features of FMS.

7. a) Discuss the steps in the optimization process.
b) List out different engineering optimization applications.

8. Explain in detail about:
i) Event models.
ii) Process models.

CODE No.:10BT70302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

INDUSTRIAL AUTOMATION AND ROBOTICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How various automated production systems are classified? Explain about them in detail.
b) Enumerate about various hardware components needed for automation. Explain the significance of each component.

2. a) Explain transfer lines with more than two stages with storage buffer.
b) What is qualitative analysis?

3. a) Describe about various methods of line balancing.
b) Explain about various elements of the parts delivery system.

4. a) Describe the classification of robots by co-ordinate system.
b) What are the different components of industrial robotics? Explain in brief.

5. Derive the Jacobian matrix for a cylindrical robot with 3 degrees of freedom.

6. a) Discuss about the joint interpolation motion of a robot manipulator that can make in travelling from point to point.
b) Enumerate about pick-and-place, palletizing operations.

7. a) Write a short note on potentiometers and resolver.
b) Discuss in detail about velocity sensors and their uses.

8. What is spot welding? Explain the functioning of a robot in spot welding process.

CODE No.:10BT70303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

FINITE ELEMENT METHODS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Stress- strain relations and develop the Strain Displacement (D) matrix for plane stress and plane strain conditions.

b) If a displacement field is described as follows, $\mathbf{u = (-x^2 + 3y^2 + 7xy)\ 10^{-4}}$ and $\mathbf{v = (2x + 4y - 2y^2)\ 10^{-4}}$, determine the 3 planar stresses and strains at the point x=0, y=1. Assume E = 2 x 10^5 N/mm², υ = 0.3.

2. a) Solve the ordinary differential equation

$$\frac{d^2y}{dx^2} + 10x^2 = 0 \quad for \quad 0 \le x \le 1$$

Subject to boundary conditions y (0) = y (1) = 0 using the Galerkin method with trail functions $\mathbf{N_0(x) = 0;\ N_1(x) = x\ (1 - x^2).}$

b) Consider a 2 bar-truss supported by a spring shown in Fig. 1. Both bars have E=210GPa and A = 5.0 x 10^{-4} m². Bar one has a length of 10 m. The spring stiffness is k = 2 kN /m. Determine the horizontal and vertical displacements at the joint 1 and stresses in each bar.

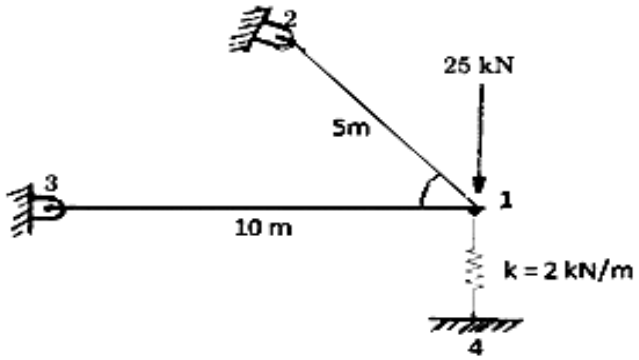

Fig. 1

3. Find the deflection at the load and slopes at the supports for the steel shaft shown in the Fig. 2. Consider the shaft is simply supported at bearings A and B. E = 200GPa.

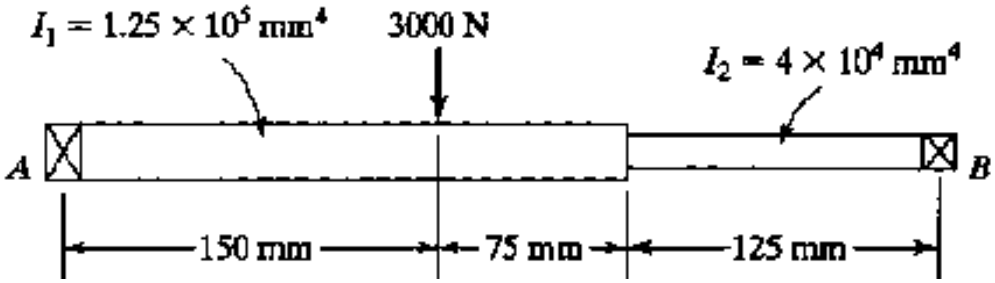

Fig. 2

4. Derive the strain displacement matrix for CST element and formulate the same for the element shown in the Fig. 3. Assume Poisson's ratio equal to zero and Young's modulus as constant

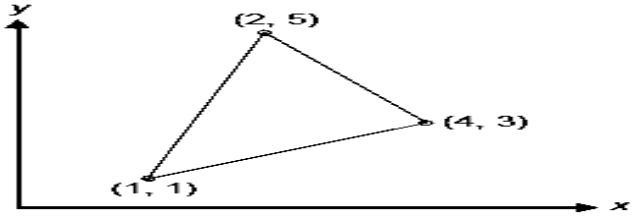

Fig.3

5. A long cylinder of inside diameter 80mm and outside diameter 120mm snugly fits in a hole over its full length shown in Fig. 4. The cylinder is then subjected to internal pressure of 2 MPa. Using two elements on the 10mm length shown find the displacement at the inner radius.

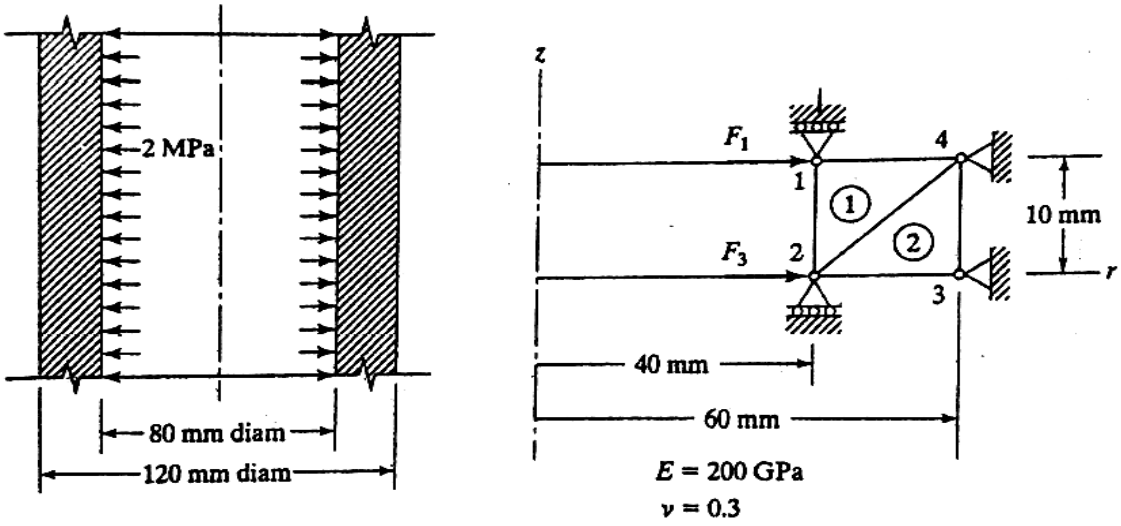

Fig. 4

6. Derive the element conduction matrix and equations for a two dimensional heat-transfer problem.

7. For a smooth pipe of variable cross section shown in Fig.5, determine the potentials at the junctions the velocities in each pipe and the volumetric flow rate. The potential at the left end is 10m and that at the right end is 2m. The permeability coefficient is 1 m/s.

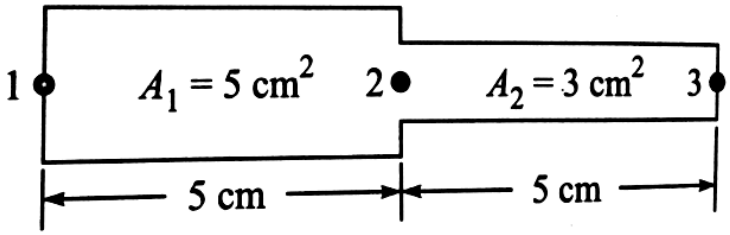

Fig. 5

8. Find the natural frequencies of the longitudinal vibrations of the constrained stepped bar shown in Fig. 6.

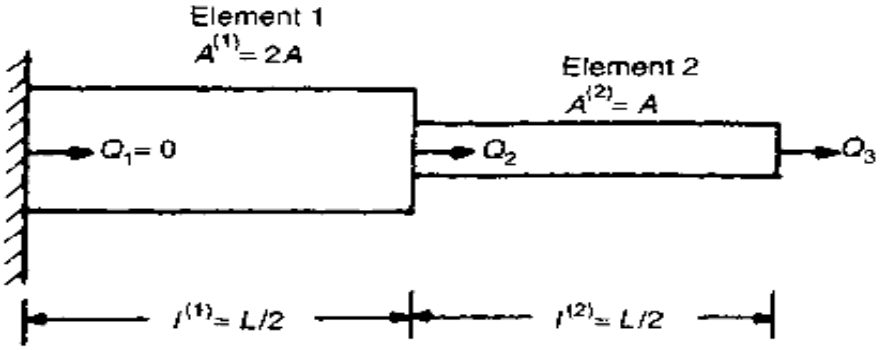

Fig. 6

CODE No.:10BT70304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various phases in the study of operation management? Explain with suitable example.
b) Describe the history of production management.

2. a) Explain the need for forecasting. How do you select a forecast model?
b) Using the exponential smoothing technique, compute the forecasts from the following data (time series) under two situations when α=0.3 and α=0.7. Compute forecast for the 11th period assuming initial forecast for the period 1 is 27. Which forecast do you accept? Give reasons.

Period	1	2	3	4	5	6	7	8	9	10
Demand	27	30	32	31	28	27	30	33	33	31

3. a) State the objectives of aggregate planning.
b) Bombay Fibers produces a line of clothes that exhibits a varying demand pattern. Given the following demand forecast, production costs and constraints, design a production plan for the company using the transportation method.
Also calculate the cost of production plan.

Period	Demand
September	100
October	130
November	200
December	300

Max. Regular production 100 units/month.
Max. Overtime production 50 units/month.
Max. Subcontracting 50 units/month.
Regular production costs Rs.10/unit.
Overtime production cost Rs.25/unit.
Subcontracting cost Rs.35/unit.
Inventory holding costs Rs.5/unit/month.
Beginning inventory 0.

4. a) "Data integrity is a major issue for many organisations while using an MRP system". Comment on this statement.
b) Explain Enterprise Resource Planning.

5. a) Explain the difference between Flow shop scheduling and Job shop scheduling with example.
b) Use graphical method to minimize the time needed to process the following jobs on machines A, B, C, D and E. Find the total time elapsed to complete both jobs.
Also find for each job, the machine on which it should be processed first.

Job 1	**Sequence**	**A**	**B**	**C**	**D**	**E**
	Time (Hours)	2	3	5	2	1
Job 2	**Sequence**	**D**	**C**	**A**	**B**	**E**
	Time (Hours)	6	2	3	1	3

6. a) "Inventory is necessary evil" - Discuss.

b) A product is produced at the rate of 50 items per day. The demand occurs at the rate of 30 items per day. Given that setup cost per order = Rs. 100 and holding cost per unit time = Rs. 0.05, find the economic lot size and the associated total cost per cycle assuming that no shortage is allowed.

7. Identify an appropriate type of supply chain for the following product categories.

i) Jewellery watches ii) Tooth paste and brushes
iii) Bicycles iv) Designer clothes.

8. a) What are the differences between continuous improvement and radical improvement? What is your recommendation to manufacturing organizations for improving their performance?

b) How does push scheduling differ from pull scheduling? What are the implications of these two methods to an operating system?

CODE No.:10BT70305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2016

REFRIGIRATION AND AIR CONDITIONING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is Refrigeration? Explain the necessity of cooling in the aeroplane? Explain its advantages.
b) A cold storage is to be maintained at -5ºC while the surroundings are at 35ºC. The heat leak from the surroundings in to the cold storage is estimated to be 29kW. The actual COP of the refrigeration plant is one third of an ideal plant working between the same operating temperatures. Find the power required to drive the plant.

2. a) Determine the COP of a VCRS when the vapor is:
i) Super heated after compression
ii) Dry and saturated at the end of the compression.
b) A vapour compression refrigeration system based on refrigerant R134a operates between an evaporator temperature of -25ºC and a condenser temperature of 50ºC. Assuming isentropic compression, find:
i) COP of the system.
ii) Work input to compressor.
iii) Area of superheat horn (additional work required due to superheat).

3. a) With the help of line diagram explain the working details and advantages of hermetically sealed compressors.
b) Explain the nomenclature and types of refrigerants along with desirable properties.

4. a) Explain the advantages and disadvantages of VARS over VCRS.
b) Derive an expression for the ideal COP of an ammonia refrigeration system and compare the same with COP of Carnot refrigerator working in the same temperature limits.

5. a) Explain the working details with the help of line diagram the Hilsch tube.
b) Estimate the motive steam required in steam jet refrigeration system.

6. An air-conditioned space is to be maintained at 28°C DBT and 50% RH. The ambient conditions are 39°C DBT and 26°C WBT. The space has a sensible heat gain 15 kW and air is supplied at 6°C and saturated.
Calculate:
i) Mass of moist air supplied to the space
ii) Latent heat gain of the space
iii) Cooling load of the conditioner if 32% of the air supplied to the space is fresh and the remaining is being recirculated.

7. What is the difference between a fan and a blower? Explain various types of fans.

8. a) What is meant by Effective Temperature in Comfort Air conditioning? Explain the use of Comfort chart of determining the effective temperature and significance of it.
b) The atmospheric air at 40°C DBT and 18°C WBT is flowing at the rate of 100m³/min through the space. Water at 18°C is injected into the air stream at the rate of 48kg/h. Determine the specific humidity and enthalpy of the leaving air. Also determine the DBT, WBT and RH of the leaving air.

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CODE No.:10BT70306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

TOOL DESIGN

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How do you improve the hardness of a HSS cutting tool? Explain.
b) What are the advantages of coated cutting materials? Name the commonly used coated materials.

2. a) What are the differences between orthogonal and oblique cutting processes? Name a few machining operations that come under the said processes.
b) Explain the mechanism of metal cutting. How do you reduce the heat generated during the machining process.

3. a) Sketch in detail, the geometry and elements of a milling cutter indicating all angles.
b) Explain with neat sketches, the design principle of a HSS twist drill.

4. a) What are the essential factors considered in designing a jig/fixture?
b) Explain the construction details of a box type jig with a suitable sketch.

5. a) Discuss briefly the various types of Material handling Equipment.
b) Explain the cutting action in punch and die operations.

6. a) Explain the process of deep drawing.
b) What is the role of spring back in bending?

7. a) What are the different areas and sources of heat generation during metal cutting? Explain.
b) The following data were recorded while turning a work piece with a lathe:
cutting speed = 25m/min; feed rate = 0.3mm/rev; depth of cut = 2.0mm;
tool life=100minutes. The following relation for tool life is given for this operation:
$VT^{0.12} f^{0.7} d^{0.3} = \mathbf{C}$
If the cutting speed, feed and depth of cut are all increased by 25% collectively, what will be their effect on tool life?

8. Discuss economics of tooling in detail. Explain how tooling cost affects the unit manufacturing cost of an end product.

CODE No.:10BT70309

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

POWER PLANT ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Draw a neat line diagram of inplant coal handling and indicate the names of equipments used at different stages. Explain the functions of each equipment.

2. a) Draw a line diagram of pneumatic ash handling system. Explain the difficulties encountered in its design and operation.
b) Explain the principle involved in the working of cyclone furnace.

3. a) Name and explain briefly the various types of fuel injection systems.
b) Explain briefly various types of cooling systems used in diesel power plant.

4. a) Compare the steam and gas turbine power plants.
b) Explain with a neat sketch the details of a simple gas turbine power plant.

5. Explain the arrangement of the components of hydro electric power plant with a neat sketch.

6. a) Describe the fuel cell technology.
b) What are the components of tidal power plant?

7. a) What do you understand by control of a reactor? What different controls are necessary in a thermal power reactor?
b) What is calcinations method? What are the major advantages?

8. a) Explain economics in plant.
b) Discuss the harmful effects of CO_2, CO, compounds of Sulphur and oxides of Nitrogen.

CODE No.:10BT70401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) A particular ammeter requires a change of 2A in its coil to produce a change in deflection of the pointer by 5mm. Determine its sensitivity and deflection factor.
b) Explain the features of a DC voltmeter and list its applications.

2. a) Describe a modern laboratory type signal generator.
b) Explain the working of standard sweep generator with a diagram.

3. a) Define a wave analyzer. Differentiate between a wave analyzer and spectrum analyzer.
b) Explain Digital Fourier analyzer with a neat block diagram.

4. a) With the help of a neat circuit diagram, explain the operation of a trigged sweep generator.
b) How is magnitude and phase measured on a CRO for two different waves?

5. a) Describe the working of a sampling oscilloscope.
b) Explain the digital measurement of Time Period.

6. a) Explain with a diagram, the operation of a Maxwell's bridge. State the limitations of the Maxwell's bridge. How it can overcome?
b) Explain with a circuit diagram, the principle of working of Q meter.

7. a) Describe the operation of LVDT.
b) State the advantages and disadvantages of semiconductor strain gauges.

8. a) Explain in detail about multichannel DAS.
b) Discuss in detail about testing radio receiver.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

DIGITAL IMAGE PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the process of image acquisition.
b) Calculate all the distance measures (Euclidian, D4 and D8) between the points.
i) A (1,4) and B (4,8) ii) P (2,5) and Q (9,20)

2. a) Compare DCT and DFT techniques.
b) Check whether DFT (N=4) is unitary or not.
c) Explain the significance of image transforms in image processing.

3. a) Explain about the Spatial Gaussian Filter with relevant mathematical expressions.
b) 'Histogram Equalization cannot produce a perfectly flat histogram'. Justify.
c) Explain briefly about weighted average filter.

4. a) Explain the image sharpening process using Butterworth high-pass filter.
b) Explain the correspondence between the spatial and frequency domain methods in Image Enhancement.

5. a) Discuss about the inverse filtering method for image restoration. Also, write the drawbacks of Inverse Filtering.
b) Explain the constrained least squaring model for image restoration.

6. a) Describe the significance of Laplacian operator. Explain with an example, how the edges are detected with this operator.
b) Explain the concept of motion in segmentation. What is its use?

7. a) Explain the need for compression with an example.
b) Briefly explain about the image compression standards.
c) Write short note on 'Huffman Coding'.

8. a) Explain the CMYK color model.
b) Explain the different color models used for image processing in detail.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the components of embedded system hardware.
   b) Explain with an example how to optimize custom single purpose processors.

2. a) Explain how pipelining improves the performance with necessary examples.
   b) Explain the function of instruction set simulator for a simple processor.

3. Define the following terms
   i) Finite State machine ii) Concurrent process
   iii) Real time system iv) Real time operating system

4. a) Explain the need for communication interfaces used in embedded systems. Consider RS485 as an example.
   b) Illustrate Bluetooth technology with suitable example.

5. a) Explain the uses of semaphore flag or Mutex as resource key.
   b) Explain the operating system units at an RTOS kernel.

6. a) Explain briefly about mailbox related functions.
   b) Give the steps to destroy a message queue.

7. a) Enumerate various operating modes of ARM.
   b) What is THUMB? How does the THUMB instruction set differ from ARM instruction set? Explain how the THUMB instructions are initiated in program.

8. Describe the functions of a typical parallel I/O interface with a neat diagram.

CODE No.:10BT70407

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

OPTICAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of Optical Fiber Communication?
b) What is meant by a graded index optical fiber? Explain it by giving an expression for the possible refractive index profile.

2. a) Consider a fiber with a 25μm core radius, a core index n_1=1.48 and Δ = 0.01
i) If λ=1320nm, What is the value of V and how many modes propagate in the fiber?
ii) What percent of the optical power flows in the cladding?
iii) If the core-cladding difference is reduced to Δ = 0.003, how many modes does the fiber support and what fraction of the optical power flows in the cladding?
b) Describe the fiber optic cables and discuss four basic advantages.

3. a) Explain the optical fiber cable design with regard to cable sheath and water barrier.
b) Write all mechanical properties of optical fibers.

4. a) Explain the quantum efficiency and LED power.
b) Describe the LASER diode modes and Threshold conditions.

5. a) How Optical Fibers can be joined permanently?
b) Explain the principle of working of a butt joined fiber connector.

6. a) Explain the physical principles of photodiodes.
b) An **InGaAs** pin photodiode has the following parameters at a wave length of 1300nm: I_D=4nA, η=0.90, R_L=1000Ω and the surface leakage current is negligible. The incident optical power is 300nW (-35dBm) and the receiver bandwidth is 20MHz. Find the various noise terms of receiver.

7. a) Explain the Rise-Time budget.
b) Describe the Multichannel Amplitude Modulation.

8. a) Discuss the key system features of WDM and explain operational principles of WDM.
b) Describe the Phase-Array-Based WDM devices.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

PRINCIPLES OF COMPILER DESIGN

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different phases of a compiler along with the need for the error handler and symbol table with a neat diagram.
b) Construct nondeterministic finite automata for the following regular expressions. Show the sequence of moves made by each in processing the input string *ababbab*
i) **((ϵ|a)b*)***
ii) **(a|b)*abb(a|b)***

2. a) What are the advantages of predictive parsers over brute force parsing?
b) Construct Recursive Descent Parser for the following grammar

List → (Sequence)
Sequence → Cell Sequence | ε
Cell → List | Atom
Atom → a

3. Construct CLR(1) parsing table for the following grammar

A → −A
A → A−id
A → id

4. a) Explain the role of a parser. What is left recursion and left factoring of a grammar? Explain their needs.
b) Write a detailed note on annotated parse tree and dependency graphs. Give examples.

5. a) Explain bottom-up evaluation of S-attributed definitions.
b) Translate the arithmetic expression **a * - (b + c)** into:
i) A syntax tree
ii) Postfix notation
iii) Three-address code

6. What are the contents of symbol table and explain various data structures used for symbol tables.

7. a) Discuss in detail the issues in the design of a code generator.
b) Write an algorithm for a simple code generator.

8. Write short notes on:
i) Peep hole optimization
ii) Issues in code generation.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss clearly about requirements, features and functionality bugs.
b) Write about different structural bugs.

2. Define path sensitization. Explain the heuristic procedure for sensitizing paths with the help of an example.

3. a) State and explain various transaction flow junctions and mergers.
b) Explain the terms inspections, reviews and walkthroughs.

4. Explain and write about Nice and Ugly domains.

5. a) How to find out minimum number of paths in a program? Explain.
b) What is the role of Regular Expression in Software Testing?

6. Draw the KV chart for the specification below.

$A1 = B\ \overline{C}\ \overline{D} + A\ \overline{B}\ \overline{C}\ \overline{D}$

$A2 = A\ \overline{C}\ \overline{D} + A\ \overline{C}\ D + A\ B + A\ \overline{B}\ C + AB\ \overline{C}$

$A3 = BD + BCD$

Explain the ambiguity in the specification.

7. Explain about
i) Data Driven Testing ii) Web Application Testing

8. a) Explain how to conduct the functional testing using Win Runner tool.
b) Explain about Testing of application using Win Runner and QTP.

CODE No.:10BT71001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is pH? Explain the principle of pH measurement.
b) Explain the working of hydrogen analyzer with a neat sketch.

2. a) Discuss Laser-Opto Acoustic Detector for the detection of nitric oxides.
b) Explain the Flame Ionisation Detector for the detection of Hydrocarbons.

3. a) Discuss the types of applications in which gas chromatography is particularly useful.
b) Name the different mobile phase delivery systems in chromatographs and explain any one.

4. a) Draw the sketch of a double beam UV spectrophotometer. Compare this with single beam UV spectrophotometer.
b) Explain and derive equation for Beer-Lambert's Law.

5. a) Give the sketch of a Flame emission type spectrophotometer and explain its working.
b) What are the different sources for Flame photometers? Explain.

6. a) Explain in detail the construction of a premix burner with a diagram.
b) Explain the operation of multi channel type instrument to calculate focal length of a monochrometer.

7. a) Define Paramagnetism. What are the elements which exhibit paramagnetic in nature?
b) Explain in detail about Oxygen Analyzer.

8. a) Explain the operation of Solid state detector.
b) Explain the principle of operation of Scintillation Counter.

CODE No.:10BT71002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

AUTOMATION OF INDUSTRIAL PROCESSES

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate centralized and distributed control systems.
b) Explain the generalized process control system with a block diagram.

2. What is smart sensor and explain how it is different from a normal sensor?

3. List the properties of P, I and D. Also discuss the selection of controller for the different process.

4. Design a Dahlin's controller for the process $G(s) = \frac{2e^{-s}}{10s + 1}$ with sampling time(T)=2.

5. With a neat block diagram, explain the feed forward control system. What are the advantages of feed forward control system over feedback control system?

6. Explain, when a cascade control is recommended? Give the dynamic response of cascade control System.

7. Develop Ladder logic diagram for
i) AND ii) OR iii) NAND iv) NOR v) X-OR Gates

8. Explain, how the DCS is integrated with PLC's and computers in a process plant?

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Give an account of evolution of micro fabrication.
b) Compare microelectronics and microsystems.

2. With the help of neat sketch, describe the three principal signal transduction methods for micropressure sensors. Provide at least one major advantage and one disadvantage of each of these methods.

3. a) What are the various serious effects on MEMS at elevated temperatures? Explain.
b) What is squeeze film damping? Explain in detail.

4. a) Explain why atomic structure of matter is considered as a decisive factor in microsystems design.
b) Give a detailed note on the application of finite element stores analysis in microsystems design.

5. a) Justify the statement 'Silicon is the ideal substrate for MEMS'.
b) Describe any two applications of Langmuir-Blodgett (LB) film in microsystems.

6. Explain briefly about oxidation processes involved in microsystems fabrication.

7. a) Discuss in detail the steps involved in the LIGA process.
b) Briefly explain about design constraints in Microsystems design.

8. Describe any three essential packaging technologies of MEMS and Microsystems.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are HTML tags? Explain the tags that are used in the creation of lists and tables with the help of examples.
b) How are comments represented in HTML? Explain with the help of examples.

2. a) Explain objects in JAVA script with an example.
b) Explain how DHTML is different from the HTML.

3. a) Create a document type definition for your diary.
b) Write the differences between HTML, DHTML and XML. Explain with an example, how valid XML is created.

4. Explain Servlet Life Cycle and how do you differentiate from applets.

5. a) Explain the classes of **java.sql** package.
b) Explain the process of creating and executing SQL statements querying the database.

6. a) What are the advantages and disadvantages of JSP over Servlets? Elucidate.
b) Write a JSP page to print "hello" and explain various tags used.

7. a) Explain the anatomy of a JSP Page .
b) Explain the **use bean tag** of a JSP with example.

8. a) What are the benefits of using Custom Tag Libraries?
b) How do you integrate JSPTL into JSP page?

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

MOBILE COMPUTING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) With the help of neat sketch, explain in detail about GSM Architecture.
b) Give the devices in mobile computing and explain them.

2. a) Differentiate SDMA, FDMA, TDMA and CDMA.
b) How priority based multiple access schemes can be implemented? Explain it in detail.

3. a) What is MAC layer of Blue tooth? Explain in detail.
b) Briefly explain the protocol architecture of HIPERLAN.

4. a) Explain how the Selective transmission takes place in Mobile transport layer.
b) Write about the functions of DHCP.

5. Write notes on Transactional models, Query processing and QoS issues.

6. With a suitable example, discuss the various types of Hybrid mechanisms.

7. a) Describe various properties and applications of MANET.
b) Explain Dynamic source routing algorithm.

8. Explain about the architecture of WAP gateway.

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Write notes on color models in images.
b) Explain different types of multimedia software tools.

2. a) Explain about Sound and Digitization.
b) Explain various types of Video Signals.

3. Discuss the various Object Oriented Programming concepts.

4. a) Explain about Package in detail. Give Example.
b) Explain about Exceptions.

5. Explain about OOP Application Development of Action Script.

6. a) What is lossy and loss less compression.
b) Explain Arithmetic coding and Run length coding.

7. a) Explain the features of G.726ADPCM.
b) Explain the features of MPEG-1.

8. Discuss multimedia over ATM networks.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about interception, modification and fabrication with diagrams.
b) Explain the terms :
i) Authentication
ii) Non repudiation with an example.

2. a) Explain Simplified DES algorithm and role of **fk** and **sw** boxes.
b) Explain about different block cipher modes.

3. a) Elucidate how authentication and secrecy is performed in public key cryptography.
b) Explain about Diffie-Hellman key exchange.

4. a) Discuss the popular phenomenon for securing your e-mail.
b) Give the message format described in RFC822.

5. a) Explain how authentication and data integrity is provided in IPSec using Authentication Header.
b) What are ISAKMP exchange types?

6. a) Discuss how SSL record protocol provides confidentiality and message integrity for SSL connections.
b) Explain in detail how payment processing is done in SET.

7. a) Explain about Rule based Intrusion Detection.
b) Explain about Intrusion detection techniques.

8. a) Mention the characteristics of a good firewall.
b) What is the common criterion for IT Security evolution?

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What constitutes a good software cost estimate?
b) How do the tools have influence on pragmatic software cost estimation?

2. a) Compare and contrast change management environment and round trip engineering.
b) Explain the process of improving automation through software environments.

3. a) What are the essential activities in construction and transition phases?
b) How do you evaluate the completion of each of the four phases in SW lifecycle?

4. a) Describe all architecture views in detail.
b) Differentiate between iterations and increments with an example of a simple development life cycle.

5. Explain iteration planning process.

6. a) What are the main features of the default organization of project organizations?
b) Define stakeholder. Explain stakeholder environment.

7. a) What is a metric? Explain reliability metrics.
b) Explain the advantages of measurement.

8. Write short notes on the following:
i) Modern project profiles next generation software economics.
ii) CCPDS-R.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

SOFTWARE ARCHITECTURE

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Architecture Business Cycle.
b) Discuss software architecture.

2. a) Explain data abstraction and how it useful in developing a good architecture.
b) Write notes on heterogeneous architectures.

3. What is Virtual Repository? Explain Repository Architecture for Database.

4. Write and explain about Architectural Structure for Shared Information Systems.

5. Explain different types of structural patterns.

6. a) Explain the variants of broker architecture.
b) Depict the dynamic behavior of MVC architecture.

7. What is ADL? How to capture Architectural information in ADL? Explain with Example.

8. Explain the features of component based systems with an example.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following
   i) Different types of learning neural network.
   ii) Artificial Neuron.
   b) Explain the Organisation of the Brain in detail.

2. a) Explain the following
   i) Perceptron Learning Rule Convergence theorem.
   ii) Delta learning Rule for several output units.
   b) How is the error back propagated in BPN?

3. a) Explain the energy analysis of Discrete Hopfield Networks.
   b) Discuss the application of Full Counter Propagation Network.

4. a) Describe in detail about bidirectional associative memory architecture with a block diagram.
   b) Explain the adaptive resonant theory algorithm.

5. a) Explain the properties of fuzzy sets:
   b) Let R, S be defined on the sets {1, 3, 5} X {1, 3, 5}, Let R : {(x, y) / y = x + 2} and S: {(x, y) / x < y}.
   Using max-min composition, find: i) R o S. ii) S o R.

6. a) Define Defuzzification. Explain different methods of Defuzzification.
   b) Explain the properties of membership function and membership value assignment.

7. Explain the step-by step procedure in designing of a Fuzzy logic Controller.

8. a) Explain inverse process identification using artificial neural networks.
   b) What are the inputs of neural network to be considered for short term load forecasting? Which inputs to be considered for normal climate conditions?

CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

NETWORK PROGRAMMING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss TCP connection establishment and termination in detail.
b) Give a brief note on Unix standards.

2. a) Why Networking protocols must specify a network byte order? Briefly discuss the ways to store the bytes in memory.
b) What is a Socket and what are the types of Internet Sockets? Demonstrate the function which is associated a socket with an IP address and port number.

3. a) Write procedure to terminate the server process.
b) Explain TCP echo server functions.

4. a) Explain '**getsockopt**' and '**setsockopt**' function.
b) Explain IPV6 socket options.

5. Explain the UDP client server application for echoing text given by the user.

6. Explain **'gethost by name**' and '**uname**' functions in detail along with examples.

7. a) Give an example application where FIFO can be used.
b) Explain about **shmget, shmat, shmdt, shmctl** functions.

8. a) Describe briefly the Transparency issues of RPC with example.
b) What are the functions done by a terminal line discipline module?

CODE No.:10BT71502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

SOFT COMPUTING TECHNIQUES

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain the classifications of optimization problems.

2. Explain model of Artificial Neurons.

3. a) Explain the concept of Back Propagation Learning.
b) Write a note on Augmented Back Propagation Networks.

4. For the fuzzy sets

$$A = \left\{ \frac{0.2}{LS} + \frac{0.5}{MS} + \frac{0.7}{HS} \right\}$$

$$B = \left\{ \frac{0.1}{PE} + \frac{0.55}{ZE} + \frac{0.85}{NE} \right\}$$

$$C = \left\{ \frac{0.25}{LS} + \frac{0.5}{MS} + \frac{0.75}{HS} \right\}$$

i) Using max-min composition, compute R=A X B
ii) Using max-product composition, compute S=B X C
iii) Justify the relation R is a fuzzy equivalence relation.

5. Write short notes on CRISP Relations.

6. a) Verify De Morgan's laws
i) $\sim (P \vee Q) = (\sim P \wedge \sim Q)$
ii) $(\sim P \wedge Q) = \sim (P \vee \sim Q)$
b) Explain inference in Propositional Logic.

7. a) Describe tournament selection strategy.
b) What do you understand by fitness function?

8. Explain Generational Cycle Convergence of Genetic Algorithm and list its applications.

CODE No.:10BT71503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

ARTIFICIAL INTELLIGENCE

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Given a full 5-gallon jug and an empty 2-gallon jug, the goal is to fill the 2-gallon jug with exactly one gallon of water. You may use the following state space formulation.
State = (x,y), where x is the number of gallons of water in the 5-gallon jug and y is number of gallons in the 2-gallon jug
Initial State = (5,0)
Goal State = (*, 1), where * means any amount
Create the search tree. Discuss which search strategy is appropriate for this problem.

2. a) What do you mean by local maxima with respect to search technique? Explain.
b) List various search algorithms. Explain any one of them with an example and evaluate them against various strategies.

3. a) Explain unification algorithm used for reasoning under predicate logic with an example.
b) Write the α-β algorithm with an example.

4. a) Describe in detail the steps involved in the knowledge engineering process.
b) Explain First Order Logic in details.

5. Discuss briefly the following:
i) Ontological Engineering
ii) Truth Maintenance Systems

6. a) Explain the use of Hidden Markov Models in Speech Recognition.
b) In Naïve Bayes (NB), what additional modifications are needed in order to classify more than 2 different types of training data (Multivariate NB)? Please give a simple mathematical form to highlight the difference to the regular NB.

7. a) Write short notes on inductive learning.
b) Give brief description about the learning of decision trees.

8. a) Explain fuzzy sets and crisp sets with suitable example.
b) Write short notes on Sugeno style of fuzzy inference processing.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2016

CLOUD COMPUTING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. List the usage, benefits and limitations of cloud computing.

2. Differentiate between grid computing and cloud computing.

3. a) Define Virtualization. Write about the history of Virtualization.
b) Explain the objectives of Virtualization technology.

4. With respect to the Virtualization technologies explain the following:
i) VMware
ii) Microsoft Hyper-V

5. a) Explain the various issues related to setting up a good and secured Cloud.
b) Write in detail about the Network security with relevant examples.

6. Explain about scaling a Cloud Infrastructure.

7. What type of service is provided by Google App Engine (GAE) and list the functionalities of GAE.

8. Discuss Google App Engine as Platform as a Service in Cloud.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

MANAGEMENT SCIENCE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State and describe the Fayol's principles of management.
b) Discuss the social responsibility of management.

2. a) State the advantages and limitations of Decentralization.
b) Explain the following:
i) Span of control ii) Delegation of authority iii) Types of communication

3. a) List and explain the steps involved in work-measurement.
b) Enumerate the factors affecting quality. How to overcome them?

4. a) Discuss the functions of Marketing.
b) State the objectives of Materials Management.

5. a) Explain the process of 360 degree performance appraisal.
b) Define merit rating. What is its importance in job evaluation?

6. The activity details along with time estimates in days and precedence relationships are given below:

Activity	Predecessor	Time estimate		
		Optimistic	Most likely	Pessimistic
A	--	1	2	3
B	A	1	2	3
C	A	2	4	6
D	A	2	5	14
E	C,D	6	12	18
F	D	1	3	5
G	E	10	12	30
H	G	3	5	7
I	H	1	2	3
J	B and I	5	10	15

i) Construct the network.
ii) Find the critical path and project duration.
iii) Probability of completing the project within the expected time.

7. a) What do you mean by an Entrepreneur? Bring out the factors that create a conducive environment for Entrepreneurship.
b) Explain the social responsibilities of Entrepreneur.

8. a) Explain the basic concepts of Just-In-Time(JIT) concepts.
b) Illustrate with examples the significance of TQM in organizational growth.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are classes and instances? What is meant by static class member?
b) Explain inline function, friend function and this pointer.

2. a) Implement the "Calculator" function using the class hierarchy "Hybrid inheritance".
b) Draw the ISA and part of relationship diagram for an example of your own.

3. a) Write a recursive program in JAVA to find the factorial of numbers.
b) Discuss how type conversion and casting is supported in JAVA.

4. a) Write a JAVA program that shows how the salary computation differs for Employee, Managers and Executive Manager using Inheritance.
b) Are inner classes useful? Secure? How?

5. a) Write a program for example of try and catch block. In this check whether the given array size is negative or not.
b) Write a program to illustrate sub class exception precedence over base class.

6. a) Illustrate Deadlocks using suitable JAVA code.
b) Describe the modern way of suspending, resuming and stopping threads with examples.

7. a) Briefly explain any four commonly used Event Listener Interfaces.
b) Write a program that creates a frame window that responds to mouse clicks and keystrokes.

8. a) Write a sample program demonstrating the ***JScrollPane***.
b) Briefly explain procedure to use tabbed pane in swings with an example.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

PRINCIPLES OF COMMUNICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Show that autocorrelation and power spectral density form Fourier Transform pair.
b) Explain the basic block diagram of the communication system.

2. a) Explain the indirect method of generation of FM waves.
b) Compare AM, FM and PM.

3. a) A carrier is frequency modulated by sinusoidal modulating signal of frequency 2kHz, resulting in a frequency division of 5kHz. What is the bandwidth occupied by the modulated waveform? The amplitude of the modulating sinusoidal signal is increased by a factor of 3 and its frequency lowered to 1kHz. What is the new bandwidth?
b) What is the difference between Time Division Multiplexing (TDM) and Frequency Division Multiplexing (FDM)? Explain FDM system with neat sketch.

4. a) With a neat block schematic diagram, explain the operation of a coherent FSK transmitter and receiver.
b) Explain the block diagram of Adaptive delta modulation.

5. a) With a neat block diagram, explain how you will generate DPSK signal. What merits does it have over FSK and PSK?
b) Compare PAM, PWM and PPM techniques.

6. a) Write the short notes on correlation receiver.
b) Explain about matched filter receiver.

7. a) Write about Shannon Heartly theorem and its implementation.
b) Apply Shannon-Fano coding procedure for m = 2 given. Also compute coding efficiency.
[X] = [x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8]
[P] = [0.1, 0.25, 0.15, 0.05, 0.15, 0.1, 0.05, 0.15]

8. a) Explain error detection and correction codes.
b) What is Shannon theorem? What is means of capacity of Gaussian channel?

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DATA WAREHOUSING AND DATA MINING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. In the context of data preprocessing, discuss in detail with examples whenever necessary, data cleaning and data integration.

2. a) "Data mining as a confluence of multiple disciplines." Discuss.
b) Discuss mining methodology and user interaction issues.

3. a) Discuss in detail with examples whenever necessary, architecture point of view of data warehouse.
b) Compare and contrast OLAP systems and statistical databases.

4. a) How can you improve the efficiency of Apriori algorithm? Explain.
b) What are the various kinds of association rules?

5. a) Briefly outline the major steps of decision tree classification.
b) Define Bayes' theorem. Explain the steps for naïve Bayesian classification.

6. a) Explain similarity measures for various kinds of data in clustering.
b) Explain any one density-based clustering method and explain its merits over other kinds of clustering methods.

7. a) Explain Sequential Pattern Mining problem and design an Apriori-kind algorithm to extract sequential patterns.
b) Discuss the methodology for stream data processing.

8. a) What are the three types of dimensions in a spatial data cube?
b) What kinds of associations can be mined in multimedia data?

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

COMPUTER NETWORKS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. What is TCP/IP model? Explain the functions, protocols and services of each layer. List two ways in which the OSI reference model and the TCP/IP reference model are the same. Also list two ways in which they differ.

2. Explain the following:
i) Time division multiplexing.
ii) Wavelength division multiplexing.
iii) ADSL.

3. What are the basic functions of the data link layer? Write down the basic features of HDLC protocol? Could HDLC be used as a data link protocol for a LAN? Justify your answer.

4. a) Explain the problem with the basic bit-map protocol. .
b) Narrate the working principle of 802.11 MAC sub layer protocol.

5. a) How hierarchy is used in routing algorithms.
b) Explain the working of distance vector routing algorithm.

6. Elucidate various fields in TCP header and UDP header with neat diagram.

7. a) What is the need for domain naming system? What are its limitations?
b) How the DNS works using distributed data bases?

8. a) What is DES? Explain the working procedure of DES.
b) Explain the 802.15 network with an example scenario.

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

REMOTE SENSING AND GIS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What do you understand by stereoscopic depth perception and stereoscopic parallax? Derive parallax equation.
b) A parallax difference of 0**.**6mm is measured between the image of the top of water tank and the image of a point near the base of the tank. The normal flying height is 4875m above the ground. The average of the distance between principal points and the transferred principal points measured on the photograph is 77**.**6mm. What is the approximate height of the tank?

2. a) What are the essential components of remote sensing system?
b) What are the advantages and disadvantages of using remote sensing system?

3. a) What is Visual Interpretation Key? Explain various elements of Visual Interpretation.
b) Describe structure of a Digital Satellite Image.

4. a) Explain the fundamental operations of GIS with a simple example.
b) Describe Geographical entities, attributes, topology and cognitive models.

5. a) Define data structure. Explain in detail the types of data structures.
b) What is map projection? What is the map projection used in the preparation of Toposheets by SOI?

6. a) Explain the terms Vector and Raster overlay concepts.
b) Explain the different types of database design for GIS.

7. a) Describe watershed management on the basis of rainfall and run-off relation.
b) Explain the role of RS-GIS in sustainable watershed management.

8. Discuss the role of remote sensing and GIS in the identification of sites for artificial recharge structures.

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following:
i) Sullage ii) Refuse iii) Garbage
b) Describe conservancy and water-carriage systems and explain their relative advantages and disadvantages.

2. a) What you mean by sewer appurtenance? Name the sewer appurtenances those will generally be provided in a sewerage network.
b) Design a circular sewer to carry a flow from a city with a population of 1lakh. Assume that the per capita water supply to the city is 150lpcd. Assume the bed slope of the sewer as 0.0001.

3. a) Present a detailed discussion on various chemical characteristics of domestic wastewater.
b) The BOD of a wastewater sample incubated for 3days at 27°C is 270mg/L. Find the 5 day BOD of the sample at 30°C.

4. a) What are the stages involved in the conventional treatment of sewage?
b) Design a rectangular sedimentation tank for the treatment of sewage generated in a city with a population of 1.5lakh. The average daily per capita water demand is 150litres. Assume that the detention period is 5 hours.

5. a) Differentiate between attached growth and suspended growth systems giving examples. Explain the underlying principles in each of the system.
b) Explain the working principles of oxidation ponds. Discuss the problems associated with using oxidation ponds.

6. Write a detailed note on removal of :
i) Nitrogen
ii) Dissolved solids

7. a) Explain the factors influencing self purification phenomena of rivers.
b) A stream, saturated with DO, has a flow of 1.2m^3/s, BOD of 4mg/L, and rate constant of 0.3 per day. It receives an effluent discharge of 0.25m^3/s having BOD: 20mg/L DO: 5mg/L and rate constant 0.13 per day. The average velocity of flow of stream is 0.18m/s. Calculate D.O. deficit at point 20km downstream. Assume that saturation DO at 20°C as 9.17mg/L.

8. a) Write short notes on sources and types of solid wastes.
b) Explain the process and methods of composting of Municipal solid wastes.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

STEEL STRUCTURES - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. The B.M. and S.F at a particular section of a plate girder are 5000kNm and 1500kN respectively. Design a plate girder using thin web and end stiffener.

2. Design the cross section of a welded plate girder of span 20.0m. It is subjected to a uniformly distributed load of 20kN/m.

3. Design the member of a tubular truss using IS 1161 grade St.35 steel for the tube.
The principal rafter in a round tubular truss carries a maximum force of 110kN.
A tension member meeting at right angles to the principal rafter carries a force of 30kN.

4. a) Discuss the salient design features with respect to members of trusses.
b) What is the effect of fatigue load on crane gantry girders? Explain how gantry girders are designed to fatigue effects.

5. Design a gantry girder to carry an electric overhead traveling crane to suit the following data.

Crane Capacity	:	190kN
Weight of Crab	:	75kN
Weight of Crane	:	145kN
Minimum approach of crane hook	:	1.2m
Distance between centers of crane wheels	:	3.1m
Distance between cranes of gantry girders	:	15.0m
Span of gantry girder	:	6m
Weight of rail section	:	0.3kN/m
Height of rail section	:	80mm

6. Design the staging of a steel water tank of 20m height assuming a uniform wind pressure of 1.5kN/m^2. Size of the tank is 5m x 5m x 4m deep.

7. Give the stepwise procedure for the design of composite beam with shear connections.

8. a) What are the advantages and disadvantages of plastic design?
b) Determine the collapse load of a fixed beam with a concentrate load at mid span.

CODE No.:10BT70104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe about different characteristics of vehicles and road users influencing traffic analysis.
b) Briefly discuss about various components of traffic engineering.

2. Describe about the different types of volume counts along with their uses and limitations.

3. a) What is Level of Service? Explain the factors affecting Capacity and Level of Service.
b) What are the common methods of on-street parking?

4. a) What are the advantages of Channelised intersections?
b) A fixed time 2-phase signal is to be provided at an intersection having a North-South and an East-West road where only straight ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given in the following table:

	North	**South**	**East**	**West**
Design hour flow(q) in PCUs/ hour	800	400	750	1000
Saturation flow(s)in PCUs/ hour	2400	2000	3000	3000

Calculate the optimum cycle time and green times for the minimum overall delay. The inter green time should be the minimum necessary for efficient operation. The time lost per phase due to starting delays can be assumed to be 2 seconds. The value of the amber period is 2 seconds. Sketch the timing diagram for each phase.

5. a) What is Noise pollution? What are the detrimental effects of traffic noise on the environment?
b) What are the various measures for controlling air pollution from road traffic?

6. a) Give the classification of road signs along with their specifications. Support your answer with neat sketches and give at least two examples for each type.
b) Discuss about various object markings used for traffic safety.

7. a) What are the major causes of road accidents? Explain.
b) What is meant by road safety audit? What are the guidelines for road safety audit? Explain.

8. a) Discuss about objectives of transportation system management.
b) Briefly discuss about different traffic forecasting techniques.

CODE No.:10BT70108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ENIVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the importance of conducting the EIA and its various Elements.
b) Write the various factors affecting the EIA their evaluation and analysis.

2. a) Discuss in detail the Environmental Media Quality Index method.
b) Write the different EIA methods. Write in detail the Network method.

3. Discuss the methodology for assessing the Ground Water Quality of any area.

4. a) What are the advantages of review of an existing EIA?
b) List out the mitigation measures for protection of biological environment in case of an irrigation project.

5. How do you evaluate environmental audit data and prepare a report?

6. a) Explain the EIA for a multi purpose HYDEL project with suitable case study.
b) What are the limitations of EIA?

7. Describe various environmental protection legislations in India and give a critical review on their implementation.

8. Give the guidelines and EIA methodology for a Dam Construction project.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the physic-chemical, electrical and hydraulic methods of ground improvement.
b) What is the need and objectives of ground improvement?

2. a) Describe the blasting technique of densifying the soil with consequential problems.
b) Discuss different methods of in-situ densification in granular soils.

3. a) What is the working principle of vacuum well point system? Explain how effective it is in fine grains with a diagram.
b) Explain the procedure of preloading with sand drains. How it will affect the time rate of consolidation?

4. a) Explain with neat sketches the various applications of grouting.
b) What are the different types of chemical stabilizations? Describe the process of any two chemical stabilizations. What is the degree of improvement achieved in each method?

5. a) How can you have in-situ ground reinforcement?
b) Briefly describe different types of ground anchors and discuss their uses with neat sketches.

6. a) What are the design checks adopted for a reinforced earth structure?
b) Identify two practical applications where gesynthetic is used as reinforcement.

7. a) What are the different design considerations of foundations on expansive soils?
b) Discuss the under reamed pile construction and its ultimate load carrying capacity aspects.

8. a) Discuss the foundation practices in expansive soils.
b) Describe the constant volume method of determining swelling pressure of expansive soil.

CODE No.:10BT70201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What do you understand by a short circuit? Discuss the possible causes of short circuit in a power system.
b) A 625kVA, 460V alternator supplies a purely resistive load of 500kW at 460 V. The sub-transient reactance of the generator is 6%. Assuming the load to be directly connected across the generator terminals, find the initial symmetrical R.M.S current in p.u. at the generator terminals for three-phase dead short at its terminals.

2. Describe the construction, principle of operation and applications of vacuum circuit breaker with neat sketch.

3. a) What is meant by a relay and give the main features of a good protective system?
b) Describe the essential features of a protective relay with reference to reliability, selectivity, speed of operation and discrimination.

4. Explain the basic principle, working and characteristics of static differential relays.

5. What are the advantages of distance protection over types of protection of feeder? Describe any type of impedance relay and shows how these relays provide discriminatory protection.

6. Explain in various systems of time grading and current grading scheme of feeder protection.

7. a) Explain, what is the necessity of neutral earthing and give the advantages of neutral grounding of an electrical system.
b) Explain briefly the following:
i) Peterson coil.
ii) Earthed transformer.

8. Write short notes on the following:
i) Switching surges.
ii) Lighting arresters.
iii) Surge absorbers.

CODE No.:10BT70202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is an incremental fuel cost? How is it used in thermal plant operation?
b) Name the components of production cost and explain.

2. a) Assuming any relevant data and notation, derive the transmission loss formula.
b) Discuss about the optimum allocation of generators without line losses.

3. Write algorithm for mathematical formulation for Hydro thermal scheduling.

4. Discuss the importance of maintaining the load frequency control in an interconnected power system.

5. Discuss the importance of combined load frequency control and economic dispatch control with a neat block diagram.

6. Explain how the tie-line power deviation can be incorporated in two-area system with a block diagram.

7. a) Discuss generation and absorption of reactive power.
b) Explain how voltage control can be affected by injection of reactive power.

8. What are the various entities of deregulated power system and explain in detail about their functional operations?

CODE No.:10BT70203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

POWER SYSTEM ANALYSIS

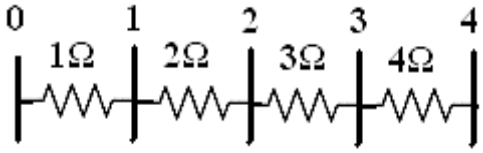
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Derive the admittance matrix using singular transformation.
b) Derive the expression for branch impedance matrix by singular transformation with usual notation.

2. a) Derive the equations for Z_{qi} and Z_{qq} in Z_{BUS} building algorithm when the added element is a link.
b) Obtain Z_{BUS} for the system shown below. Choose node 0 as reference.



3. a) Derive the static load flow equations.
b) Explain the procedure of finding the line flows for the given power system.

4. a) What is the importance to study the short circuit analysis? Discuss the possible causes of short circuits in the power system.
b) A 30kW, three phase, Y connected load is fed by a 110kVA transformer with voltage rating 11kV/415V through a feeder. The length of the feeder is 0.7km and the impedance of feeder is (0.1 + j2.5) Ω/km. If the load power factor is 0.85, calculate p.u impedance of the feeder and load.

5. a) Write the performance equation of a three-phase network element in impedance form.
b) Obtain $\mathbf{Z}_{pq}^{0,1,2}$ for a stationary element, using symmetrical components.

6. Define the power angle equation, **P = EgEm/X** and with usual notations. What are the assumptions commonly made in stability studies?

7. Define and classify the problem of power system stability. Derive the expression for synchronizing power coefficient.

8. Explain the concept of equal area criterion. Define critical clearing angle and critical clearing time. Derive an expression for the critical clearing angle, if a 3 phase fault occurs at midpoint of the one of the parallel lines of a double circuit line.

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CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

FLEXIBLE AC TRANSMISSION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with neat sketch power flow in parallel paths.
b) Write short notes on phase shifting transformer.

2. a) Discuss the relative importance of controllable parameters in AC transmission system.
b) What are the basic types of facts controllers?

3. Draw and explain the 48-pulse voltage source converter operation.

4. a) What is the importance of static shunt compensation in prevention of voltage instability? Explain.
b) Explain how shunt compensation will damp the power oscillation.

5. Explain briefly the variable impedance type static VAR generators.

6. a) Explain the regulation and slow transfer function of SVC.
b) Write note on Transfer function and Dynamic performance of SVC and STATCOM.

7. Describe the capabilities of series compensation in improving transient stability.

8. Write short notes on:
i) Operation of TCSC.
ii) Modeling of TCSC.

CODE No.:10BT70303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

FINITE ELEMENT METHODS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is FEM? Explain the principal of minimum potential energy.
b) If displacement field is described by
$\mathbf{u = (-2x+3y^2+xy)\ 10^{-4}}$ and $\mathbf{v=(x^2 + 5y - y^2)10^{-4}}$
Determine $\epsilon_x, \epsilon_y, \delta_{xy}$ at the point **x=2, y=1**.

2. Derive the element stiffness matrix for a quadratic one dimensional bar element.

3. A cantilever beam of length 3.4m has an elastic spring support of stiffness 230kN/m at its free end, where a point load of 13kN acts. Take Young's modulus as 200Gpa and area moment of inertia of the cross-section as $1 \times 10^{-4}\ m^4$.
Determine the displacement and slope at the node and reactions.

4. For the configuration shown in Fig.1, determine deflection at node 2 using a 1 element model. Also calculate the stress in the element. Given thickness of plate is 1mm, take $E = 2 \times 10^5\ N/mm^2$, $\mu = 0.3$.

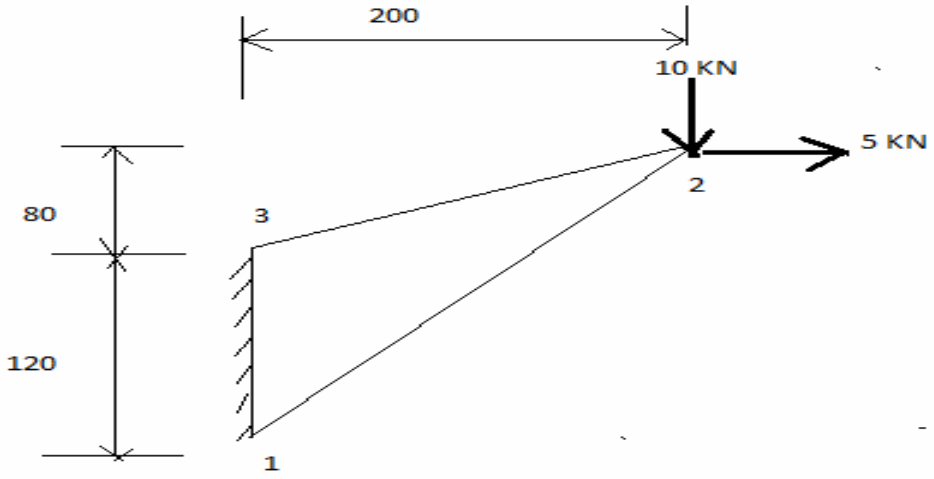

Fig. 1

5. A long cylinder of inside diameter 80mm and outside diameter 120mm fits in a hole over its full length. The cylinder is then subjected to an internal pressure of 2 Mpa. Using two elements on the 10mm length, find the displacements at the inner radius.
E = 200 Gpa and **μ = 0.3.**

6. Determine the temperature distribution in the circular fin shown in Fig. 2.
Exclude the convection Heat loss from the end of the fin. Take h=0.2 W/cm^2 ^{0}**c** , T_∞=100 ^{0}**c** and k=2 w/cm^0**c**.

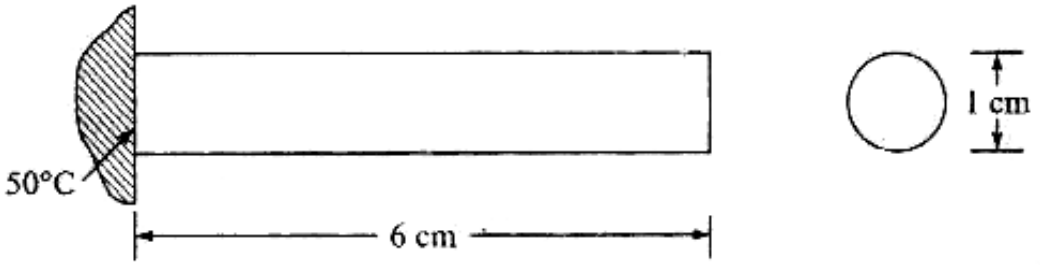

Fig. 2

7. For a smooth pipe of variable cross section shown in Fig. 3, determine the potentials at the junctions, the velocities in each pipe and the volumetric flow rate.
The potential at the left end is 10m and that at the right end is 2m. The permeability coefficient is 1 m/s.

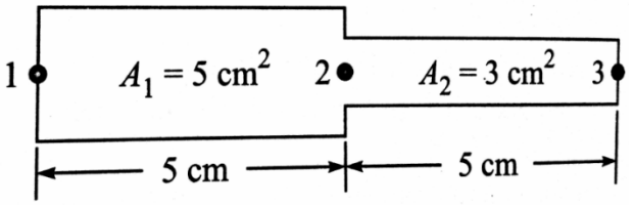

Fig. 3

8. Derive the consistent mass matrix for the beam element and CST element.

CODE No.:10BT70304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss challenges in operations management.
b) What is meant by operations strategy? Briefly explain long term planning and short term planning.

2. a) Explain what is meant by demand noise, pattern and stability in Time-series analysis.
b) Consider the following demand data. Compute a forecast using moving average. Obtain a one period ahead forecast. Use 3-period moving average.

Period	1	2	3	4	5	6	7	8	9
Demand	100	103	110	118	119	125	130	135	140

3. How does aggregate production planning impact each of the following functional areas in an organisation?
i) Marketing ii) Finance iii) Strategy iv) Materials and procurement

4. a) "Data integrity is a major issue for many organisations while using an MRP system". Comment on this statement.
b) Explain Enterprise Resource Planning.

5. a) Explain the characteristics of various types of scheduling.
b) Find the sequence for the following eight jobs as shown in the following table that will minimize the total elapsed time for the completion of all jobs. Each job is processed in the order of CAB. Calculate the minimum total elapsed time.

Job / Machine	1	2	3	4	5	6	7	8
A	4	6	3	4	5	3	6	2
B	8	10	7	8	11	8	9	13
C	5	6	2	3	4	9	15	11

6. a) Explain the steps for ABC analysis. State the advantages of it.
b) The probability distribution of monthly sales of a certain item is as follows:

Monthly sales	0	1	2	3	4	5	6
Probability	0.01	0.06	0.25	0.35	0.20	0.03	0.10

The cost of carrying inventory is Rs. 30 per unit per month and the cost of unit shortage is Rs. 70 per month. Determine the optimum stock level which minimizes the total expected cost.

7. a) Distinguish between supply chain and Keiretsu.
b) Explain the various aspects which are needed to build a supply chain.

8. Discuss the factors that effect the pull system of material flow.

CODE No.:10BT70306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

TOOL DESIGN

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the essential characteristics of tool materials? Explain in brief.
b) Discuss briefly the Error analysis. How do you quantify it?

2. a) Discuss the merchant circle diagram in detail. What is its purpose?
b) What are chip breakers? Explain.

3. Draw a neat sketch of milling cutter and explain its design features.

4. a) What are the essential factors considered in designing a jig/fixture?
b) Explain the construction details of a box type jig with a suitable sketch.

5. a) With a neat line diagram, explain various die accessories.
b) Explain the working principle of power press. Give advantages.

6. a) Discuss variables that effect metal flow during drawing.
b) Explain single and double action draw dies.

7. a) Explain the process of deep drawing.
b) What is the role of spring back in bending?

8. Describe the procedure for calculating the forces for urethane pressure pads.

CODE No.:10BT70309

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

POWER PLANT ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Write short notes on:
i) Coal Handling plant.
ii) Ash handling system.

2. a) What are the methods used for pulverized fuel burning?
b) What are the different types of pulverizing mills?

3. a) Name and explain briefly the various types of fuel injection system.
b) Explain briefly various types of cooling system used in diesel power plant.

4. a) Compare the steam and gas turbine power plants.
b) Explain with a neat sketch, the details of a simple gas turbine power plant.

5. a) Describe the various selection factors of hydraulic turbines in hydro plants.
b) Discuss how surge tank helps in reducing water hammer effect.

6. a) What are the advantages and disadvantages of direct energy conversion systems over the conventional power generation systems?
b) Explain the working of thermo-electric power generation with neat sketch.

7. a) What do you understand by control of a reactor? What different controls are necessary in a thermal power reactor?
b) What is calcinations method? What are the major advantages of this?

8. (a) Explain :
i) Load factor.
ii) Demand factor.
b) A power plant has the installed capacity of 120MW. Calculate the cost of generation, if capital cost = Rs. 120×10^6, rate of interest and depreciation =18%,
annual cost of fuel oil, salaries and taxation= Rs. 25×10^6, load factor=40%.

CODE No.:10BT70401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define static sensitivity, resolution and relative limiting error. What are guarantee errors?
b) What are the features of AC voltmeters and explain its working for multi range purpose.

2. a) Describe a modern laboratory type signal generator.
b) Explain the working of standard sweep generator with a diagram.

3. a) Discuss the characteristics and features of spectrum analyzer.
b) With block diagram, explain the working of a Harmonic distortion analyzer and state its applications.

4. a) Compare passive probes with active probes.
b) Explain how frequency can be measured by a CRO using Lissajous pattern.

5. a) Describe the operation of a sampling oscilloscope with a diagram.
b) Explain frequency counter in oscilloscopes.

6. a) Derive the balance equation for Anderson bridge.
b) Explain in detail about EMI and EMC.

7. a) Describe the construction of an LVDT with the help of a diagram.
b) Compare briefly active and passive transducers.

8. a) Write short notes on single channel data acquisition systems.
b) Explain the process of testing a Radio receiver.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

DIGITAL IMAGE PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between Binary Image, Gray scale Image and Digital Image.
b) Discuss in brief some basic relationships between pixels.

2. a) Explain the properties of discrete Fourier transforms of 2-D signal.
b) What is energy compaction property? Derive the Kernel coefficients for N=8 of DCT.

3. a) What is meant by Histogram of an image? Discuss the significance of Histogram equalization.
b) Discuss about image subtraction and averaging.

4. Explain the method of image sharpening and smoothing in frequency domain.

5. a) What is meant by noise in an image? Discuss the mean filters for restoration in the presence of noise.
b) Describe about image restoration-degradation models in detail.

6. a) What is an edge of a given image? Give the convolution masks for the following edge detectors:
i) Roberts ii) Laplace iii) Prewitt iv) Sobel
b) What is meant by region based segmentation? Discuss about region growing.

7. a) What is meant by error free compression and explain a method for it?
b) Describe image compression standards.

8. a) Explain the CMYK color model.
b) Explain the different color models used for image processing in detail.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is an embedded system? Discuss main characteristics of embedded system.
b) List and define the main design technologies. How these design technologies helpful to designers?

2. Describe the architecture of a typical microcontroller with a neat diagram.

3. a) Explain in detail about dead clock.
b) Which is derivative of concurrent model and explain the same?

4. a) What is meant by communication interface? Explain the need for communication interfaces.
b) Illustrate with suitable example, how to utilize Ethernet as a communication interface.

5. a) What are the states of a task? Explain the entity controlling the transitions from one state to another in a task.
b) Explain how tasks are different from functions and Interrupt Service Routines.

6. a) Explain Queue related functions.
b) Explain multitask and their functions in embedded system.

7. Explain the instruction sets and condition codes of ARM processor with an example for each.

8. Explain the following related to embedded system design technology.
i) RT Synthesis.
ii) Reuse of intellectual property codes.

CODE No.:10BT70407

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

OPTICAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the historical development of optical fiber communication.
   b) List and explain the various wavelength ranges for optical fiber communication.

2. a) Discuss absorption losses in optical fibers, comparing and contrasting the intrinsic and extrinsic absorption mechanisms.
   b) Explain linear scattering loss in optical fibers with regard to Mie scattering.

3. a) Describe the scattering, core and cladding losses.
   b) Discuss the overall fiber dispersion in multi mode and single mode fibers.

4. a) Explain the quantum efficiency and LED power.
   b) Describe the LASER diode modes and Threshold conditions.

5. a) Derive the power coupling calculations to provide perfect coupling between the source and the fiber.
   b) What is the power coupled into a step-index fiber whose n_1=1.48, n_2=1.46 if surface emitting LED radiates 150μW of power?

6. a) Explain the criteria which define the important performance and compatibility requirements of optical detectors.
   b) Explain the principle of operation of p-i-n photodiode.

7. Draw the optical power loss model for a point to point link and explain how to calculate Rise time Budget.

8. Write a short notes on the following:
   i) Isolators and Circulators.
   ii) Tunable Light Sources.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

PRINCIPLES OF COMPILER DESIGN

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Write a procedure for the construction of NFA from a regular expression.
b) Construct the minimum state DFA for the regular expression **(a|b)*a(a|b).**

2. a) What is backtracking? Explain with an example.
b) Construct the predictive parsing table for the grammar
E →E+T/ T
T →T*F/F
F →(E)/id

3. Construct CLR(1) parsing table for the following grammar.
A → −A
A → A−id
A → id

4. Write the syntax directed translation for Boolean expressions and trace with an example.

5. a) What is type checker? How does it work?
b) Write short notes on Dynamic and Static type checking.

6. What are the contents of symbol table and explain various data structures used for symbol tables.

7. a) What are live variables? Explain the dataflow equation for representing the live variable at the point of entry and exit of block.
b) Explain the algorithm for Redundant Sub expression elimination using global data flow analysis.

8. a) Write an algorithm for a simple code generator.
b) Discuss the issues in the design of a code generator.

CODE No.:10BT71002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

AUTOMATION OF INDUSTRIAL PROCESSES

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate supervisory control and direct digital control.
b) Explain the centralized control system with a block diagram.

2. Explain the different network topologies in detail.

3. Design a control system using heuristics and models. What is tuning of a controller?

4. State and derive the Dahlin's algorithm.

5. With a neat block diagram, explain the feed forward control system. What are the advantages of feed forward control system over feedback control system?

6. For the 2x2 multivariable system, explain how the relative gain array is calculated.

7. Develop Ladder logic diagram for the following gates
i) AND ii) OR iii) NAND iv) NOR v) XOR

8. With a neat block diagram, explain the hierarchical structure of DCS.

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare Microsystems with IC technology.
b) Explain briefly various applications of MEMS.

2. a) Explain how biomedical sensor can be used to measure glucose concentration.
b) Explain principle of operation of microfluids.

3. Considering the case of damping and resonant vibrations, formulate the necessary theory that forms the basis of micro accelerometer.

4. a) With help of mathematical expressions, derive the scaling laws for heat conduction and heat convention.
b) Estimate the associated changes in the acceleration ***a*** and the time ***t*** and the power supply to actuate a MEMS component, if its weight is reduced by a factor of 10.

5. a) Explain the method of preparation of single crystal silicon ingots.
b) On what factors the choice of wafer depends?

6. Explain briefly about Chemical Vapor Deposition technique.

7. a) Discuss in detail the steps involved in the LIGA process.
b) Briefly explain about design constraints in Microsystems design.

8. a) With suitable diagrams, explain three levels of packaging.
b) Discuss various problems encounter at the biomedical and optical interfaces.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is a frame? Write a HTML program to create a single screen with four frames, two horizontal and two vertical.
b) What is a style sheet? What are the benefits of using styles compared with placing formatting directly into the text of web page?

2. a) Explain how DHTML is different from the HTML.
b) Describe the scoping rules for the JavaScript with examples.

3. How is XML different from HTML? Elucidate with an example.

4. Explain about cookies and session tracking with an example.

5. a) How are prepared statements and exceptions useful in JDBC? Elucidate.
b) Write a program to retrieve data from fields in database using SQL.

6. a) What are the advantages and disadvantages of JSP over Servlets? Elucidate.
b) Write a JSP page to print “hello” and explain various tags used.

7. a) What are the different ways of inserting a bean property value in a JSP page?
b) What are JSP tag extensions?

8. What is Custom Tag Library and how is it defined? Give an example.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

MOBILE COMPUTING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain GSM architecture with a diagram.
b) Distinguish between soft handover and hard handover.

2. Explain multiple access with collision avoidance.

3. a) Explain the protocol architecture of 802.11.
b) Explain L2CAP protocol used in Bluetooth.

4. Explain the following with suitable diagrams.
i) DHCP.
ii) DSR.
iii) AODV.

5. Explain N-tier Client-Server Architecture.

6. Describe pull-based mechanisms.

7. a) Distinguish between any two Routing algorithms in MANET.
b) Mention the properties and applications of MANET.

8. Write short notes on:
i) RFID.
ii) J2ME.

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Multimedia. Explain in detail about World Wide Web.
b) Explain about various Color models in Images.

2. a) What is sound digitization?
b) Explain Nyquist theorem.

3. Write a note on data types and type checking with respect to Action script2.0.

4. a) Explain overriding methods and properties.
b) What is the syntax of Instance and what is its use?

5. Explain adding SetPosition() & SetSize() methods and Auto Sizing the Image View.

6. Explain the following Lossless compression techniques:
i) Dictionary Based Coding ii) Arithmetic Coding

7. a) Explain the features of G.726ADPCM.
b) Explain the features of MPEG.

8. Explain about Multimedia over ATM Networks.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with a neat sketch, the model for network security.
b) Discuss the working of ceaser cipher with an example.

2. a) Explain the design principles of block cipher.
b) Mention the differences between stream cipher and block cipher.

3. a) What are the requirements and applications of public key cryptography?
b) Write short notes on digital certificates.

4. a) Explain the authentication and confidentiality services of PGP.
b) What are the functions of S/MIME ?

5. a) Explain about functionality transport and tunnel mode in IPSEC.
b) Explain about OKAELY protocol.

6. a) Discuss how SSL record protocol provides confidentiality and message integrity for SSL connections.
b) Explain in detail how payment processing is done in SET.

7. a) Explain the nature of viruses and the countermeasures to be taken to overcome them.
b) What are the strategies for password selection?

8. a) Explain about IP address spoofing and tiny fragments attacks.
b) Explain Access Matrix and concept of trusted system.

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What constitutes a good software cost estimate?
b) How do the tools have influence on pragmatic software cost estimation?

2. State and explain the principles of conventional Software Engineering.

3. a) Explain Inception phase and Elaboration phase of life-cycle process.
b) Describe the following artifact sets.
i) Requirements set.
ii) Design set.

4. Define workflow. Explain about software process workflow.

5. a) Explain about periodic status assessments.
b) Discuss planning guidelines.

6. Explain about Line-of-Business Organizations.

7. Differentiate between small scale projects and large scale projects. Explain with examples.

8. a) Discuss about the progress profile of a modern project.
b) Explain risk management of CCPDS-R.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

SOFTWARE ARCHITECTURE

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Define Software Architecture. Write the features which make a good Architecture for Software.

2. Write short note on:
i) Layered Approach.
ii) Pipe-And-Filter approach.

3. Explain in detail about Architectural Structure for shared information systems.

4. Explain the features of World Wide Web.

5. Give the CRC cards for top level, intermediate level and bottom level PAC agents.

6. Implement Architecture of a System using Pip-And-Filter approach.

7. a) How to capture architectural information in an ADL? Explain it
b) How to choose an ADL? Discuss it.

8. Explain organizational implication of a product line.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of biological neuron with neat sketch.
b) Explain difference between biological neural networks and artificial neural networks.

2. a) Derive and explain back propagation training algorithm.
b) Explain the modifications suggested to back propagation network.

3. a) Explain the conditions of stability for continuous Hopfield network.
b) Describe application of Hopfield network in pattern recognition.

4. a) Explain how Hopfield network can act as autoassociative memory.
b) Can Hopfield network can act as heteroassociative memory? Discuss in detail.

5. a) Define classical set.
b) Differentiate fuzzy set from classical set and name the properties of classical (crisp) sets.

6. a) Discuss the features of Membership function with the help of a neat sketch.
b) Find the defuzzified values for the fig.1 shown below using first of maxima and last of maxima.

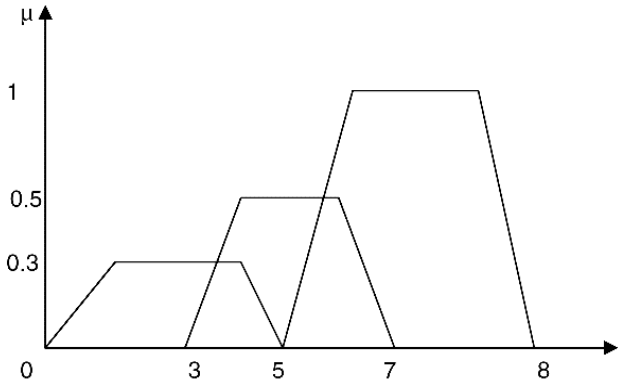

fig.1

7. a) What are the rules based format used to represent the fuzzy information.
b) Explain the importance of fuzzy logic control in various fields.

8. a) Explain how ANN is used for process fault diagnosis.
b) Explain how Fuzzy logic is used for logic control.

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CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2017

NETWORK PROGRAMMING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss TCP connection establishment and termination in detail.
b) Give a brief note on Unix standards.

2. a) Explain various socket address structures.
b) Explain 'fork' and 'exec' functions.

3. Explain the following scenario of server operations:
i) Crashing of server host
ii) Crashing and rebooting of server host
iii) Shutdown of server host

4. a) Explain the concept of **Shutdown** function with suitable example.
b) What are the scenarios used in I/O multiplexing applications? What are the five basic I/O models available in UNIX? Explain any one I/O model.

5. a) Explain UDP echo server functions.
b) What is meant by lost datagram?

6. Explain 'gethost by name' and 'uname' functions in detail along with examples.

7. a) Write the syntax for **popen( )** and **pclose( )** functions.
b) Discuss the following functions:
i) msgget ii) msgrcv iii) msgctl
iv) shmget v) shmctl

8. a) Describe 'rlogin'.
b) What are the various terminal modes?

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

MANAGEMENT SCIENCE

[Civil Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain the contributions of Taylor to the theory of management. Explain why he is regarded as the father of scientific management.
b) State limitations of Taylor theory and explain, are they resolved in Fayol theory of management.

2. a) What is departmentation? How is it essential for the management of a business enterprise?
b) " In Indian organizations, the social responsibilities are more in theory than in practice." Do you agree with this statement? Explain.

3. a) Compare Product layout with Process layout.
b) Briefly explain Method Study steps.

4. a) State the objectives of inventory control.
b) Explain the following terms with respect of inventory control.
i) Safety stock ii) Reorder level iii) Inventory carrying cost
iv) Shortage cost v) Ordering cost

5. a) What is HRM? What are its functions and objectives?
b) Define motivation. Bring out the importance of motivation in modern organizations.

6. a) Distinguish between PERT and CPM.
b) The owner of a chain fast-food restaurant is considering a new computer system for accounting and inventory control. A computer company sent the following information about the system installation:

Activity	Immediate Predecessor	Optimistic Time	Most likely Time	Pessimistic Time
A	-	4	6	8
B	A	5	7	15
C	A	4	8	12
D	B	15	20	25
E	B	10	18	26
F	C	8	9	16
G	E	4	8	12
H	D, F	1	2	3
I	G, H	6	7	8

i) Construct the network diagram for this problem.
ii) Determine the critical path and compute the expected project completion time.
iii) Determine the probability of completing the project in 55 days.

7. a) What are the entrepreneurial traits? Explain.
b) Explain the role of Entrepreneur in economic development.

8. a) State and explain salient features of Intellectual Property Rights.
b) Explain the role of information technology in management decision making.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2017

DATABASE MANAGEMENT SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following:
i) Data Model ii) Relational Model iii) Data independence
b) Describe the characteristics of database system.

2. a) Define the following with examples:
i) Entity ii) Entity set iii) Attribute iv) key
b) Explain about various constraints of ER model.

3. a) Describe the concept of Referential Integrity.
b) What is a view? How views are implemented?

4. a) Explain different relational algebraic operations with example.
b) What is a group function? List and explain how to use group functions in SQL with examples.

5. a) Show how to preserve Functional Dependencies during decomposition.
b) Explain about fourth and fifth normal forms with examples.

6. a) Draw transaction state diagram and describe each state that a transaction goes through during its execution.
b) What is serializability? Explain it.

7. a) Describe difference methods of defining indexes on multiple keys.
b) Explain B+ tree operations with examples.

8. a) Explain in detail about indexed accessing methods.
b) Explain about B tree with suitable examples.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

VLSI DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the main processing steps in a CMOS n-well fabrication.
b) Explain twin tub structure and mention its merits and demerits.

2. a) Determine the pull up to pull down ratio of an NMOS inverter driven by another NMOS transistor.
b) Draw the circuit for NMOS inverter and explain its operation.

3. a) What are design rules? Explain how these design rules are helpful for drawing layout.
b) Draw the lay-out diagram of the function $F' = AB+C$ in NMOS logic.

4. a) Explain Pseudo-NMOS and dynamic-CMOS logic and implement 2-input NOR gate in Pseudo-NMOS and dynamic CMOS logic.
b) Explain the influence of Fan-In and Fan-Out on gate design with the help of suitable example.

5. a) Draw the Booth multiplier circuit and explain the operation. Also draw the stick diagram for its standard cell.
b) Explain the various design considerations for Synchronous counters.

6. a) Design 4:1 Mux in PAL CMOS device with the help of I/O structure.
b) Explain in brief about different methods of implementation approaches in VLSI design.

7. a) Explain in detail about VHDL programming structure.
b) Discuss in detail about design verification tools.

8. a) Explain the basic sources of errors in CMOS Circuit. How they are tested in synthesis process?
b) What is adhoc testing? Explain the common techniques used in the process.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

ROBOTICS AND AUTOMATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define CAD and CAM. Explain the reasons for adopting CAD/CAM systems in engineering organizations.
b) "Though automation helps in improving the productivity, complete automation is not a good idea from some perspectives". Do you agree/disagree with this statement? In either case, give your arguments and also suggest alternate solutions.

2. What are cylindrical and polar arm configurations? Explain the advantages of the cylindrical over polar arm configuration.

3. a) What are the types of stepper motor and why DC motors are preferred over servomotors?
b) What tasks can be performed by a robotic vision system? Briefly explain.

4. a) A vacuum pump to be used in a robot vacuum gripper application is capable of drawing a negative pressure of 20N/mm^2 compared to atmospheric pressure. The gripper is to be used for lifting SS plate. Each plate having dimension of 380mm x 890 mm and weighing 25kg. Find out the diameter of the two suction cups with the factor of safety 1.5.
b) Demonstrate the working of magnetic gripper with neat sketch.

5. Draw a two link manipulator and derive the equations of motion using the Lagrangian - Euler formulation.

6. What are the basic rules and procedures followed in the use of robots in assembly and disassembly?

7. Briefly explain about FMS components and mention its applications.

8. When a work cell controller is required in an automated factory? What are its functions?

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

EMBEDDED AND REALTIME SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the salient features of single purpose processors.
b) Discuss about various approaches to improve design process for increased productivity.

2. a) Give the description of data path and memory units of general purpose processor.
b) List some of the instructions with examples for a general purpose processor.

3. a) Discuss briefly about concurrent process model.
b) Give the description of real-time systems.

4. a) Describe the process of Infrared communication interface.
b) Explain the communication interface process of USB.

5. Discuss in detail about the following types of scheduling.
i) Clock driven Scheduling.
ii) Event driven Scheduling.

6. Describe the following RTOs Components.
i) Mailboxes.
ii) Message Queues.

7. Describe the architecture of ARM processor and pipeline concept with neat diagram.

8. Write short notes on the following:
i) Logic Synthesis.
ii) RT synthesis.
iii) Behavioral Synthesis.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

SOFTWARE TESTING TECHNIQUES

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Describe a model for testing.

2. Explain in detail about the various kinds of predicate blindness.

3. a) Explain data flow model with an example.
b) Explain data flow testing strategies.

4. Describe the domains and interface testing.

5. Write short notes on the following:
i) Path Loops.
ii) Path products.
iii) Lower path count arithmetic.

6. a) Discuss the reduction procedure for converting a flow graph.
b) How do you find the maximum number of different paths in a flow graph?

7. a) Discuss the uses of KV Charts.
b) Discuss the use of decision tables in testing.

8. a) Give brief description on the different types of check points.
b) What is synchronization point? Why we need synchronization and also explain how to add synchronization points.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

MOBILE COMPUTING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. What are the elements present in GSM? Explain the handover process in GSM.

2. a) What is Exposed and Hidden Terminal problem?
b) Explain the following:
i) SDMA. ii) TDMA.

3. a) Mention the differences between Infrared and Radio Wave transmissions.
b) Explain concepts of networking and security in Bluetooth.

4. a) Describe the messages used in Client initialization using DHCP.
b) What is Indirect TCP? Explain.

5. Explain in detail caching invalidation mechanisms.

6. a) Describe the architecture of pull-based data delivery mechanism.
b) What are the advantages of hybrid mechanisms of data dissemination?

7. a) Differentiate between wired networks and adhoc wireless networks.
b) Explain the route discovery mechanism of dynamic source routing.

8. a) Explain the protocol architecture of WAP.
b) What is J2ME?

CODE No.:10BT80102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

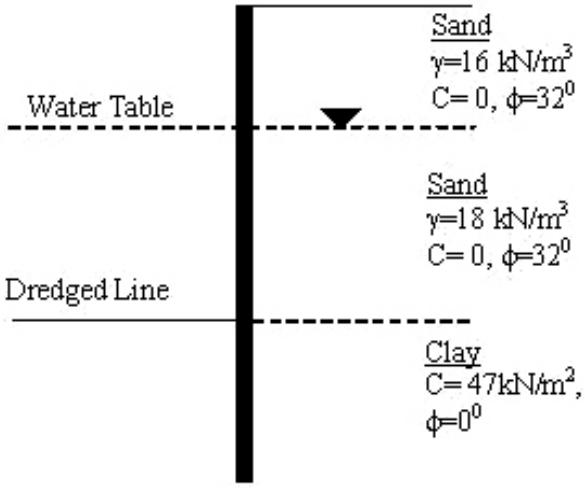
1. a) Discuss various factors that affect the bearing capacity of a shallow footing. Also describe different components of the total settlement of shallow foundation.
b) A shallow continuous footing, 1.5 *m* wide, with its base at a depth of 1 *m* resting on a sand stratum. Determine the ultimate bearing capacity, if the ground water table is located at a depth of 0.5 *m* below the ground surface. Consider γ_d**=17** kN/m^3**,** γ_{sat}**=20** kN/m^3**,** ϕ'**=38°,** c'**=0,** N_q**=60** and N_γ**=75**. Use Terzaghi's analysis.

2. a) List out different types of foundations. State the circumstances to go for combined foundations.
b) The circular foundation of ground level oil tank of 20m diameter, transmits to the soil a uniform contact pressure of 250kN/m^2 at a 2m depth. Determine the immediate settlement under the centre of the foundation. Modulus of elasticity of the soil is 58MN/m^2 and poisons ratio is 0.45 and unit weight of the soil is 19kN/m^3.

3. a) What is the necessity of pile foundation? Discuss on negative skin friction including its effect on the pile.
b) A precast concrete pile (35 *cm* × 35 *cm*) is driven by a single-acting steam hammer. Estimate the allowable load using (i) Hiley formula and (ii) Danish Formula.
Use the following data:
Maximum rated energy = 3500 *kN-cm*
Weight of hammer = 35 *kN*
Length of pile = 15 *m*
Efficiency of hammer = 0.8
Coefficient of restitution = 0.5
Weight of pile cap = 3 *kN*
No. of blows for last 25 mm drop = 6
Modulus of elasticity of concrete = $2 \times 10^7 kN/m^2$
Weight of pile = 73.5 *kN*
Assume F.S. = 4 and total elastic compression, $C = 0.0018\ Q_u$.

4. a) Sketch an open well foundation and show the various components. State the functions of various components.
b) Describe briefly the various forces acting on well foundation.

5. A cantilever sheet pile wall as shown below penetrating into saturated clay soil for retaining 6m sandy soil. Water table is at a depth of 2m below top of sheet pile wall. Determine the theoretical depth of embedment of sheet pile.



6. a) Describe the methods of determination of swell pressure in expansive soil.
b) Enumerate various ground improvement techniques and describe Lime column technique.

7. a) Explain the construction procedure of under-reamed piles in expansive soils. How their capacities are obtained in sand and clay soils?
b) Determine the safe bearing capacity of 4.0 *m* long single under-reamed pile of 0.5 *m* stem diameter. Average cohesion value both within the strata of pile depth and below the toe is 100 kN/m^2. Take $N_c = 9$, $\alpha = 0.5$ and F.S.= 3.0.

8. a) Describe the characteristics of sea waves.
b) Define a wharf. What are the types of construction and discuss their merits.

CODE No.:10BT80106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

PRESTRESSED CONCRETE

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Discuss in details about the following:
i) External prestressing. ii) Internal prestressing .
iii) Linear prestressing. iv) Partial pretensioning.

2. a) Discuss in detail about Hoyer system suitable sketches.
b) Explain the concept of "load balancing" in the design of prestressed concrete members.

3. a) Explain the losses of prestress due to shrinkage and creep of concrete.
b) How do you estimate the loss of prestress due to Elastic deformation and Relaxation of steel? Explain.

4. A Prestress concrete beam of rectangular section 375mm wide and 750mm deep has a span of 12.5m. The effective prestressing force is 1520kN at an eccentricity of 150mm. The dead load of the beam is 7 kN/m and the beam has to carry a live load of 12.5 kN/m. Determine the extreme stresses in concrete at the mid section with and without the action of the live load.

5. Design a post tensioned rectangular beam which carries an imposed load of 12 kN/m over a span of 12m. Stress in concrete is limited to 17 N/mm^2 and 1.5 N/mm^2 in tension at all stages. Assuming the loss of prestress as 15% and width of section is restricted to 250mm.

6. A simply supported prestressed concrete rectangular beam 250mm wide and 450mm deep is provided with a prestressing force of 850kN. All the cables pass through the same circular duct and anchored to a common anchor plate 200mm square with an overhang of 25mm on all sides. Find the bursting force and the reinforcement necessary for the end block. Assume the length of the end block is 450mm and zero tension occurs at 90mm from the anchoring end. Assume parabolic stress distribution.

7. a) Explain the advantages of using precast prestressed elements along with in-situ concrete.
b) Explain different types of composite construction with sketches.

8. A post tensioned concrete beam of span 9m has a rectangular section of 275mm wide and 450mm deep is prestressed by two cables of area 500mm^2 each, which are initially prestressed to 1500N/mm^2. The eccentricity of the cables throughout the length of the beam is 95mm. Find the deflection at the centre when the beam supports its own weight, ignoring all the losses. What would be the deflection at the centre when the beam carries an imposed load of 16kN/m and there is a 15% loss of prestress. Assume concrete weight as 24 kN/m^3. Modulus of elasticity of concrete as 35 kN/mm^2.

CODE No.:10BT80202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

DISTRIBUTION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly classification of loads. How is load modeling done in distribution networks?
b) What is loss factor? How it is related to load factor? Explain its significance.

2. a) How is the design of distribution system done? Discuss the factors that contribute for design.
b) What is Total Annual Cost (TAC) in distribution system? How does it help in effective design of distribution system?

3. a) What are the different distribution systems for **ac** and **dc**? Give comparison.
b) Show that the power loss due to the load currents in conductors of single-phase ungrounded neutral case is 3 times more than one in the equivalent 3-phase system.

4. a) What are the objectives of a distribution protection?
b) What are the different types of faults that can occur on distribution network? Explain them with line diagrams.

5. a) Explain the effect of shunt capacitors in distribution systems for power factor correction.
b) Write the procedure for finding the optimum capacitor location.

6. a) Why Voltage control is necessary in distribution systems? What are the disadvantages of low voltage of the system?
b) How an AVB can control voltage? With the aid of suitable diagram, explain its function.

7. What are the different methods of load forecasting available? Explain any one in detail.

8. a) Explain the need for Distribution Automation,
b) Enlist the objectives of Distribution Automation,

CODE No.:10BT80301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

WORLD CLASS MANUFACTURING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is world class manufacturing?
b) Discuss Hall's frame work of value added engineering.

2. What are the perspectives considered in Balanced Score Card? Discuss Value Stream Mapping with an example.

3. Explain the importance of 3 C's in reengineering. Explain the key words in the definition of reengineering in detail and discuss changes that occur when a company reengineers its business process.

4. What is the role of TQM in world class manufacturing? Explain Deming theory on TQM.

5. What is the difference between ISO 9000 and ISO 14000? List out ISO 14000 series of standards in brief.

6. What is lean manufacturing? How does one integrate lean with six sigma, discuss in brief with a suitable illustration.

7. Working with individually or in a team, brainstorm how total productive maintenance could be applied to some of the following service industries.
i) Photo printing business.
ii) Copy centre.
iii) Quick oil change shop.
iv) Gas station.

8. Distinguish between corporate governance and corporate social responsibility.

CODE No.:10BT80303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

NON-TRADITIONAL MACHINING PROCESSES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various machining parameters considered for comparison of unconventional machining processes?
b) What process need be suggested in case of
i) high material removal rate.
ii) best surface finish.
iii) low power consumption.
iv) low metal removal rate.

2. a) Explain in detail about tool feed mechanism in USM Process with neat sketch.
b) Discuss about Mechanics of metal removal rate in USM with neat sketch.

3. a) Write the important factors to be considered in the selection of the abrasive materials used in AWJ machining method.
b) Enumerate any four major differences between Water Jet Machining and Abrasive Jet Machining.
c) Label the important parts of Abrasive Water Jet Machine with simple sketch.

4. a) Explain the principle and the process of Electro Chemical Machining with neat sketch.
b) Explain the important characteristics of electrolytes used in ECM process.

5. Compare the working principle with neat diagram, relative merits, demerits, applications and limitations of EBM and LSM in detail.

6. What is Plasma? Describe the working principle of Plasma Arc Machining with diagram.

7. What are the process capabilities, advantages and limitations of Laser Beam Machining?

8. Describe the principle of Magnetic abrasive finishing and Abrasive flow finishing.

CODE No.:10BT80307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly decision phases of a Supply Chain.
b) Explain, why achieving strategic fit is critical to a company's overall success.

2. a) What is the difference between lot size - based and volume based quantity discounts? Explain.
b) Why is it appropriate to include only the incremental cost when estimating the holding and order cost for a firm?

3. Discuss the role of network design and operations in Supply Chain Management.

4. a) What are the key functional roles of IT in a supply chain?
b) How is supply chain planning requirement addressed by DSS?

5. Explain various methods for designing and planning transportation networks.

6. Contrast supply chain management with business logistics management.

7. You are the CEO of a small electronics manufacturing firm that is about to develop a global strategy. Would you prefer a speculative strategy, a hedge strategy or a flexible strategy? Would your answer to this question change if you were the CEO of a large electronics firm?

8. a) Briefly discuss DSS analysis tools and techniques.
b) How do you select a supply chain DSS? Explain.

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) List various Analog and Digital Cellular systems available.
b) Discuss the performance criteria of a Cellular system.

2. a) Obtain co-channel interference reduction factor for the desired C/I ratio with k = 7.
b) Write short notes on cell splitting.

3. a) Describe how to use the parasitic elements which can reduce interference at cell site.
b) Discuss the effect of mechanically down tilting antenna on the coverage pattern.

4. a) Describe foliage loss.
b) Obtain the path loss from point to point prediction model.

5. a) Differentiate between near and long distance propagation.
b) Obtain the general formula of Lee model.

6. a) Explain space diversity antennas.
b) Discuss non-fixed channel assignment algorithms.

7. a) Explain sum and difference patterns and their synthesis.
b) Explain non fixed channel assignment.

8. a) With a neat block diagram of functional architecture and principal interfaces, explain the operation of GSM.
b) Compare CDMA with TDMA.

CODE No.:10BT80402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

WIRELESS COMMUNICATIONS AND NETWORKS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the applications of speed spectrum.
b) Draw and explain the packet data protocol.

2. a) Write about the development of Wireless Networks.
b) Explain the Public Switched Telephone Networks.

3. a) What is tunnelling? Why it is needed in wireless networks?
b) Draw circuit diagram of WAP.

4. a) Explain the WAP programming model with neat diagram.
b) Draw and discuss the fields in registration request message.

5. a) Write about requirements of WLAN and Infrared LANs.
b) Explain the 802.11 Medium Access Control.

6. a) Explain the use of logical channels to carry different types of payload traffic in Bluetooth.
b) Explain about the logical link protocol.

7. a) Explain the system description of GPRS.
b) Explain mobile application protocol.

8. a) Explain the HIPERLAN1 characteristics and its layers.
b) Write about WiMAX and mention applications.

CODE No.:10BT80406

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the difference between the active and passive satellite systems. Discuss their merits and demerits.
b) List Kepler' laws and derive one of them.

2. a) What are Kepler's three laws of planetary motion? What do the term perigee and apogee when used to describe the orbit of the satellite?
b) A LEO satellite is in a circular polar orbit with an altitude h, of 1000km. A transmitter on the satellite has a frequency of 2.65GHz. Find
i) The velocity of satellite in the orbit.
ii) The component of velocity towards an observer at an earth station as the satellite appears over the horizon.
iii) The Doppler shift of the received signal at the earth station. Use mean earth radius r_e = 6378km.

3. a) Explain the operation of functional units in a communication subsystem.
b) With the help of bath tub curve, explain reliability or probability of device failure in satellite subsystem.

4. a) What is link budget?
b) A satellite at a distance of 40,000km from a point on the earth's surface radiates a power of 10W from an antenna with a gain of 17dB in the direction of the observer. Find the flux density at the receiving point and the power received by an antenna at this point with an effective area of $10m^2$.

5. a) Draw the block diagram of direct sequence spread spectrum and explain it briefly.
b) Explain TDMA principle and frame structure.

6. a) Draw the block diagram of earth station neatly and explain each block in detail.
b) Describe various noises disturbing the received signal from satellite at earth station.

7. a) Explain considerations in geostationary satellite system design.
b) What are the advantages and disadvantages of low earth orbit?

8. a) Explain the position location principle of GPS. Also draw the block diagram of GPS receiver and explain its working.
b) Write notes on GPS navigation message and GPS timing accuracy.

CODE No.:10BT80502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

HUMAN COMPUTER INTERACTION

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Define User Interface and explain the brief history of Screen design.

2. a) Compare the print page design and web page design.
b) How surveys help in better designing? Discuss in detail about the characteristics and principles of user interface.

3. Define usability. What are the common usability problems? Explain briefly.

4. a) Explain about the properties that provide a visually or aesthetically pleasing composition possessing.
b) Discuss how a poor screen design can distract the user and what a user expect in good screen design.

5. a) Explain about the way in which links aggravate the user. Discuss in detail Web Site Navigation problems.
b) Describe in detail about the selection of device based and screen based controls in detail.

6. a) Explain various common message types.
b) Explain how to Choosing Colors for Textual Graphic Screens.

7. Give a brief note on:
i) Software-Engineering tools.
ii) State charts with suitable examples.

8. a) Explain the working of the following devices:
i) Touch pad. ii) Lightpen.
b) Discuss the purpose of the function keys. What are the various function keys? What are their advantages?

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

CLOUD COMPUTING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is Cloud Computing? Explain its features.
b) Is Cloud model reliable? Explain its benefits and limitations.

2. a) Explain traditional approaches to SLO management and types of SLA with its key contractual components.
b) I want to run Windows on my Mac, I know I can either dual boot Windows with BootCamp or run Windows on my Desktop using VMware Fusion. Suggest me the best method by considering the factors Cost, Performance, Hard Drive Space and File access.

3. Compare the three Cloud Computing delivery models, SaaS, PaaS and IaaS from the point of view of the application developer and users.

4. a) Compare RPC, SOA, REST and Mashup with respect to Transport Protocol, Key Technology and Implementation.
b) Illustrate the deployment of Aneka Enterprise Cloud and explain Web Service Interface.

5. a) Security is one of the major issues associated with Cloud Computing. How security is provided in the current Cloud environment.
b) What are the security related problems associated with Cloud Computing.

6. What is Software Virtualization? Explain about Microsoft Hyper-V and Xen technologies.

7. Discuss about various disaster recovery techniques in the Cloud and their management.

8. a) Illustrate the evolution of Middleware Technologies with suitable examples and also relate those with cloud services.
b) Highlight the features of SaaS and how to use Google/Yahoo as a service with suitable source code.

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2017

INDUSTRIAL ELECTRONICS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of Darlington emitter follower as DC amplifier with help of circuit diagram.
b) What are the principal applications of DC amplifier? Explain them briefly.

2. a) What is the role of pre regulator in regulators?
b) Discuss the merits of monolithic voltage regulators.
c) Briefly explain the different protection techniques employed in regulators.

3. a) Explain Turn-on and Turn-off mechanisms of SCR in detail.
b) Define the Turn-on time and Turn-off time of SCR.
c) Explain, why always silicon and not germanium is used in the construction of SCR.

4. a) What are two main types of inverters? Distinguish between them explicitly.
b) Explain the operation of single-phase full bridge converters, give the waveforms of output voltage, thyristor voltage and output current for R_L load.

5. Draw the circuit and describe the principle of operation of
i) Two quadrant Type C chopper.
ii) Two quadrant Type D chopper.
iii) Four quadrant chopper.

6. a) Explain the process of interfacing CNC machines.
b) Write short notes on:
i) Hydraulic systems.
ii) Stepping motors.

7. a) Elaborate in detail about digital timer counting unit.
b) Draw the block diagram of electronic timer system and describe the function of each constituent.

8. a) Discuss the various sources of thermal losses in dielectric heating.
b) With the help of circuit diagram, describe the method of production of ultrasonic waves using piezo-electric effect.

CODE No.:10BT81202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular Examinations April - 2017

INFORMATION RETRIEVAL SYSTEMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various types of Information Retrieval Systems.
b) What is the difference between the concept of a "Digital Library" and an Information Retrieval System? What new areas of information retrieval research may be important to support a Digital Library?

2. a) Explain Information Retrieval System capabilities with examples.
b) Describe the rationale why use of proximity will improve precision versus use of just the Boolean functions. Discuss its effect on improvement of recall.

3. a) How does the process of information extraction differ from the process of document indexing?
b) Write brief notes on Automatic Indexing.

4. a) Explain inverted file structures.
b) Explain N-gram data structure.

5. a) What is meant by automatic indexing? Discus about statistical indexing and concept indexing.
b) "Ranking is one of the most important concepts in Information Retrieval Systems". What are the difficulties in applying ranking when Boolean queries are used?

6. a) What algorithmic basis is used for the GE-SCAN and Fast Data Finder hardware text search machines? Why was this approach used over others?
b) Define precision and TURR? And also describe the relationship between precision and TURR.

7. a) What problems does multimedia information retrieval introduce? What solutions would you recommend to resolve the problems?
b) Does high specificity always imply high exhaustivity? Justify your answer.

8. a) What elements in video can be used to index the content? And also explain video retrieval procedure.
b) Explain the role of Finite Automata in Test search algorithms.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

MANAGEMENT SCIENCE

[Civil Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the Functions of Management.
b) Write short notes on
i) SWOT analysis ii) Managerial Skills.

2. What are the different types of organizational structures encountered in Indian industries? Briefly discuss any two of them.

3. a) Define work study. Explain the steps involved in method study.
b) What is the significance of control chart? List the basic steps involved for drawing variable control charts.

4. a) Write short notes on
i) Market Mix ii) Channels of Distribution
b) Discuss the objectives Materials Management.

5. a) Outline the policies and principles of HRM.
b) Explain different merit rating methods.

6. A small project is composed of 7 activities whose time estimates are listed in the table below.

Activity	Predecessors	Estimated Duration (Weeks)		
		Optimistic	Most Likely	Pessimistic
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D, E	3	6	15
H	F, G	1	2	3

a) Draw the project network and determine the expected project completion time.
b) What duration will have 95 per cent confidence of project completion?

7. a) Woman Entrepreneurs are very less in India. What is your comment?
b) Differentiate between Entrepreneur and Manager.

8. a) What is Supply Chain Management? Explain.
b) Write notes on Intellectual Property Rights.

CODE No.:10BT50503 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

DATABASE MANAGEMENT SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following.
i) Data Model ii) Relational Model iii) Data independence
b) Describe the characteristics of database system.

2. a) What are the steps in designing a database?
b) Discuss in detail about various attributes used in E-R model with suitable examples.

3. What are integrity constraints? Explain about various constraints used in relation model with examples.

4. a) Explain different relational algebraic operations with example.
b) What is a group function? List and explain how to use group functions in SQL with examples.

5. a) What is Functional Dependency? Explain its concept.
b) State and explain 1NF, 2NF and 3NF with examples.

6. Explain in detail about Serializability and Recoverability used in scheduling of transactions.

7. a) What is 2-phase locking protocol? Explain about various 2PL protocols.
b) Discuss about different types of failures.

8. a) Write short notes on :
i) Phantom Record ii) Repeatable Read iii) Incorrect Summary
b) Describe Wait/Die and Wound/Wait deadlock protocols.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

VLSI DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various processes involved in CMOS fabrication? Illustrate the main steps in a typical n-Well process.
b) Draw the Capacitor structure in CMOS process and explain its design.

2. a) Derive the equation for I_{DS} of saturated region for NMOS transistor.
b) Explain BICMOS inverter with schematic and fabrication process.

3. a) Draw and explain the VLSI design flow.
b) Design a stick diagram for the CMOS logic shown below

$$Y = \overline{(A+B)\,(C+D)}$$

4. a) Discuss about area capacitances of MOS layers and give area capacitance calculations with suitable examples.
b) Explain in detail about formal estimation of CMOS inverter delay.

5. a) Draw and explain booth decode cell used for booth multiplier.
b) Design a ripple carry counter based on the edge triggered flip-flop.

6. a) Compare PROM, PAL and PLA.
b) What are full-custom and semi-custom designs? Explain full-custom design approach in detail.

7. a) Explain circuit synthesis and lay-out synthesis. What did you understand by the term LVS?
b) List the various design capture and design verification tools.

8. a) What is CMOS testing? Why testing is needed and mention its test principles.
b) What are the common categories of design for testability and briefly explain?

CODE No.:10BT71202 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

MOBILE COMPUTING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. What are the elements present in GSM? Explain the handover process in GSM.

2. a) Explain MAC for Near and Far terminals.
b) List the basic feature of CDMA system.

3. a) Mention the differences between Infra red and Radio Wave transmissions.
b) Explain networking and security in Bluetooth.

4. a) Describe how IP packet delivers from and to the mobile node is realized.
b) What are advantages and disadvantages of fast transmit/fast recovery schemes.

5. a) What is database hoarding? Describe various cache invalidation mechanisms. .
b) What is context aware computing? Explain.

6. a) Explain pull based data delivery mechanism in mobile computing.
b) What is selective tuning? Explain about directory method indexing in mobile computing.

7. a) Explain how Dynamic topology is realized in MANETs.
b) What is Least Interference Routing? Explain.

8. a) Describe the architecture of WAP.
b) Write short notes on J2ME.

CODE No.:10BT71301 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain briefly about the operation of a biological neural network.
b) List the various applications to artificial neural network.

2. a) Explain about back propagation network.
b) Describe about perceptron models.

3. a) Write short notes on full CPN.
b) Explain about Hopfield network algorithm.

4. What is an auto associative net? Differentiate between continuous and discrete BAM.

5. a) Compare fuzzy and crisp sets.
b) Describe the properties of fuzzy sets.

6. a) Define Fuzzification. Explain Defuzzification to crisp sets with examples.
b) Explain λ-cuts for fuzzy relations with examples.

7. a) Explain simple Fuzzy Logic Control design.
b) What are the assumptions in Fuzzy Control System design?

8. a) Explain how neural networks are useful in image processing.
b) Explain how Fuzzy Logic used for cruise control.

CODE No.:10BT80307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Describe various Supply Chain strategies.

2. a) Discuss the obstacles in achieving the strategic fit.
b) Explain supply chain decision making frame work.

3. a) What are the different methods to forecast future demand? A car dealer has a weekly demand of 60, 66, 54 and 52 units over the last four weeks. Forecast demand for period 5 using four period moving average. What is the forecast error if the demand in period 5 turns out to be 65 units?
b) Discuss different methods used to forecast the demand in supply chain management.

4. a) What are the future trends in terms of the way IT is going to influence supply chain management?
b) Discuss factors that affect the decision to outsource a supply chain function.

5. a) Discuss the impact of the internet and e-commerce on supply chain management.
b) What is the role of channels of distribution in the outbound logistics system?

6. a) How is managing a multi-plant international network different from managing a domestic multi-plant network?
b) Discuss the role of sourcing in a supply chain.

7. a) State the requirements of Global strategy implementation.
b) Briefly discuss dimensions of Customer Value.
c) Explain different measures of Customer Value.

8. a) State and explain goals of supply chain information technology.
b) Discuss the implementation of ERP and DSS.

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the uniqueness of mobile radio environment.
b) Describe the planning of a cellular system.

2. a) Explain the concept of Frequency Reuse Channels.
b) What is the need for Cell Splitting? Explain different types of Cell Splitting techniques.

3. a) Design an Omni-directional antenna system in worst case for C/I ratio with K=7.
b) How was Co-channel Interference measurement can be done? Describe the process.

4. a) Derive power received in free space propagation model.
b) Discuss the Foliage loss.

5. a) Which antenna is used for interference reduction? Explain how interference can be reduced at cell site.
b) Define channel assignment. Explain the channel sharing and borrowing concept in mobile communications.

6. a) Explain channel sharing and borrowing.
b) Describe underlay - overlay arrangement.

7. a) Explain about Forced Handoff's and Intersystem Handoff.
b) Discuss about Two-Handoff-level algorithm and its advantages.

8. Write short notes on:
i) 3G
ii) UMTS
iii) GSM architecture

CODE No.:10BT80402 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

WIRELESS COMMUNICATIONS AND NETWORKS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare DS-SS and FH-SS.
b) Discuss about CSMA protocols and reservation protocols.

2. a) Explain the difference between 1G and 2G Networks.
b) What is the significance of routing?

3. a) Briefly explain the Wireless Data Services.
b) Explain the Signaling Traffic in SS7.

4. a) Explain WAP architecture.
b) Write about wireless transaction protocol.

5. a) What is adaption protocol?
b) What are the draw backs of WLL?

6. a) Explain the use of logical channels to carry different types of payload traffic in Bluetooth.
b) Explain about the logical link protocol.

7. a) What is GPRS? Explain the configuration of GPRS.
b) Draw the GSM Architecture.

8. a) Explain the need of Wireless ATM and write its services.
b) Write about Wi-Fi and mention applications.

CODE No.:10BT80502 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

HUMAN COMPUTER INTERACTION

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the problems associated in designing the UI.
b) What are the benefits of Good Design?

2. What is meant by GUI? Discuss the advantages and disadvantages of GUI in detail.

3. a) Explain the important Human characteristics in Design.
b) Explain the importance of understanding business functions.

4. a) Explain about the design goals of Screen Designing.
b) Explain the guidelines for Presenting Information Simply and Meaningfully on Screens.

5. a) Explain different Default Menu items.
b) Explain the characteristics of Device Based Controls.

6. a) Explain various common message types.
b) Explain how to choosing colors for Textual Graphic Screens.

7. a) Define software tool. Explain the Transition and State chart diagrams with notations.
b) Write a short note on GUI Toolkit Layer.

8. Discuss briefly about audio tones, audiolization and music. What are their roles in interaction with computer?

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2017

INDUSTRIAL ELECTRONICS

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain the device that is used for reducing to zero the drift in D.C. amplifiers.
b) Explain Darlington emitter follower in detail.
c) What is the main limitation in D.C. amplifiers? Mention any one method to overcome it.

2. a) Draw the block diagram of a series voltage regulator and give the function of each constituent unit.
b) Classify drift techniques for protection and briefly explain them.

3. a) Give the basic construction and schematic structure of a thyristor.
b) Draw static V-I characteristics of a thyristor and describe the different modes of operation.

4. a) Draw the circuit of single phase half wave converter with R-L load. Discuss its operation with necessary waveforms.
b) Describe the operation of a single phase thyristor inverter with tapped D.C. supply and inductive load.

5. a) Define cycloconverter. What are the two basic types of cycloconverters? Differentiate them.
b) Explain three phase half wave cycloconverters in detail.

6. a) Classify numerical control systems. Discuss the need and advantages of numerical control.
b) Draw the general structure of a hydraulic system and describe the function of each constituent.

7. a) With neat circuit diagram and waveforms, explain the working of 555 IC timer as astable multivibrator.
b) Describe the principle of working of electric ARC welding with necessary diagrams.

8. a) Discuss the various sources of thermal losses in dielectric heating.
b) What are the merits and drawbacks of induction heating?

CODE No.:16MT10501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

ADVANCED COMPUTER NETWORKS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Sketch the IPV6 packet format.	6 Marks
	b)	Compare 5-Layer TCP/IP Model and 7-Layer OSI Model.	6 Marks
		(OR)	
2.	a)	Compare IPV4 and IPV6 protocols.	6 Marks
	b)	Explain ATM adaptation layer.	6 Marks

UNIT-II

3.	a)	Describe random access protocols with their merits and demerits.	6 Marks
	b)	Compare various Ethernet technologies.	6 Marks
		(OR)	
4.		Explain point-to-point protocol in detail.	12 Marks

UNIT-III

5.	a)	Although TCP provides a reliable service and UDP does not, many applications fit better in the communication system by using UDP. What are the reasons for UDP supporting for many applications?	6 Marks
	b)	Summarize TCP source-based congestion avoidance schemes.	6 Marks
		(OR)	
6.		Draw the TCP segment format and explain each field in detail.	12 Marks

UNIT-IV

7.		Explain about optical routers in detail.	12 Marks
		(OR)	
8.	a)	Compare distributed coordination function algorithm and point coordination function algorithm.	8 Marks
	b)	Summarize the features of IEEE 802.11 physical layer.	4 Marks

UNIT-V

9.	a)	Compare **intracluster** routing protocols and **intercluster** routing protocols.	6 Marks
	b)	Explain DEEP clustering protocol.	6 Marks
		(OR)	
10.	a)	Discuss LEACH clustering protocol.	6 Marks
	b)	Write short notes on communication energy model.	6 Marks

CODE No.:16MT10502 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

ADVANCED DATABASE MANAGEMENT SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Analyze various levels of schema with the help of an illustration.	6 Marks
	b)	Demonstrate the cardinalities applied in ER-Model with an example each.	6 Marks
		(OR)	
2.		Explain briefly about the Database System Environment.	12 Marks

UNIT-II

3.	a)	Demonstrate various forms of an SQL Query with example each.	6 Marks
	b)	Compare and contrast the Inner Join and Outer Join with examples.	6 Marks
		(OR)	
4.	a)	Define a View. Explain, how views can be created and updated in SQL.	6 Marks
	b)	Explain briefly about models used in Object-Relational Databases.	6 Marks

UNIT-III

5.	a)	Compare and contrast the Sequential and Heap file Organizations.	6 Marks
	b)	Write short notes on Bit-level data Stripping and Byte-level data Stripping.	6 Marks
		(OR)	
6.	a)	Define a Functional Dependency. Identify various Functional Dependencies used for Normalization.	6 Marks
	b)	Explain briefly about the properties of Decomposition.	6 Marks

UNIT-IV

7.		Explain about the Characteristics and Layers of Query Processing.	12 Marks
		(OR)	
8.	a)	Describe briefly about the INGRES Algorithm in Centralized Query Optimization.	8 Marks
	b)	Describe briefly about the SystemR algorithm with an example.	4 Marks

UNIT-V

9.		Sketch and explain Functional Schematic of an Integrated Distributed DBMS and Components of Distributed DBMS.	12 Marks
		(OR)	
10.	a)	List and explain the information requirements during allocation.	6 Marks
	b)	Illustrate the allocation model in detail.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

ADVANCED OPERATING SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	In a multiprogramming and time sharing environment several users share the system simultaneously. This situation can result in various security problems. Discuss these problems.	7 Marks
	b)	Write short notes on Special Purpose Systems.	5 Marks
		(OR)	
2.		Discuss the following CPU scheduling algorithms with examples. (i) FCFS (ii) Priority (iii) Multilevel-Queue	12 Marks

UNIT-II

3.	a)	Explain the procedure for eliminating Deadlocks using Resource Preemption.	5 Marks
	b)	Write Resource Allocation algorithm for Deadlock Detection.	7 Marks
		(OR)	
4.	a)	List and explain various Deadlock Prevention methods.	8 Marks
	b)	How to recover from Deadlock?	4 Marks

UNIT-III

5.		Analyze the following Page Replacement algorithms with examples. (i) FIFO (ii) LRU (iii) Counting	12 Marks
		(OR)	
6.	a)	Given five memory partitions of 100 KB, 500 KB, 200 KB, 300 KB and 600 KB (in order), how would each of the first-fit, best-fit and worst-fit algorithms place processes of 212 KB, 417KB, 112 KB and 426 KB (in order)? Which algorithm makes the most efficient use of memory?	7 Marks
	b)	Describe in detail about the principles of the working-set model.	5 Marks

UNIT-IV

7.	a)	How to transform I/O Requests to Hardware Operations?	6 Marks
	b)	Describe briefly the procedure of protecting files in the system.	6 Marks
		(OR)	
8.	a)	Illustrate Revocation of Access Rights.	6 Marks
	b)	Explain about various types of attacks.	6 Marks

UNIT-V

9.	a)	Differentiate Distributed Systems from Centralized Systems.	6 Marks
	b)	Write the Taxonomy of Distributed Systems.	6 Marks
		(OR)	
10.	a)	Illustrate the Process of Resource sharing in Distributed Systems with an example.	7 Marks
	b)	What are various Design issues in Distributed Systems?	5 Marks

CODE No.:16MT10504 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

DATA WAREHOUSING AND DATA MINING

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the differences between fact and dimension tables?	6 Marks
	b)	Explain about concept hierarchies.	6 Marks
		(OR)	
2.	a)	What is Data Warehouse? Compare and contrast the differences between Operational Database Systems and Data Warehouses.	8 Marks
	b)	Why to have a separate Data Warehouse? Explain.	4 Marks

UNIT-II

3.	a)	Describe mining multilevel association rules.	6 Marks
	b)	How to do mining multidimensional association rules from relational databases and data warehouses? Explain.	6 Marks
		(OR)	
4.	a)	Define constraint based association mining. What are the different types of constraint based mining?	6 Marks
	b)	Illustrate about mining frequent item sets using vertical data format.	6 Marks

UNIT-III

5.	a)	Illustrate tree pruning in decision tree induction.	6 Marks
	b)	Explain various methods for pruning decision tree.	6 Marks
		(OR)	
6.	a)	Write short notes on decision tree induction.	6 Marks
	b)	Illustrate decision tree induction algorithm with an example.	6 Marks

UNIT-IV

7.		State and illustrate the basic agglomerative hierarchical clustering algorithm.	12 Marks
		(OR)	
8.	a)	What do you understand by clustering? Explain.	6 Marks
	b)	Explain clustering for utility.	6 Marks

UNIT-V

9.	a)	What is spatial data mining? Explain.	6 Marks
	b)	Illustrate about spatial data cube construction and spatial OLAP.	6 Marks
		(OR)	
10.	a)	What is multimedia data? Explain.	4 Marks
	b)	Illustrate about multimedia data mining.	8 Marks

CODE No.:16MT10507 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

INTERNET OF THINGS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Describe about Big Data Analytics and Embedded Systems. 12 Marks

(OR)

2. Explain in detail about logical design of IoT. 12 Marks

UNIT-II

3. Explain the following: 12 Marks
   i) Smart Parking. ii) Smart Lighting.
   iii) Smart Roads. iv) Surveillance.

(OR)

4. a) What do you mean by Machine Diagnosis and Prognosis? 6 Marks
   b) Explain in detail about Indoor Air Quality Monitoring. 6 Marks

UNIT-III

5. Analyze the need of IoT Systems Management. 12 Marks

(OR)

6. What do you mean by Simple Network Management Protocol (SMTP) and explain the limitations of SMTP protocol? 12 Marks

UNIT-IV

7. Write a detailed note on Packages in python. 12 Marks

(OR)

8. Explain the various steps for Installing a Python. 12 Marks

UNIT-V

9. Develop a case study for illustrating IoT design in Home Automation. 12 Marks

(OR)

10. a) Define Exemplary Device. 4 Marks
    b) Explain in detail about Serial interface in Raspberry Pi. 8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

ADVANCED CONTROL SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Consider the system with $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 1 & 1 \end{bmatrix}$ — 12 Marks

Obtain equivalent system in controllable companion form.

(OR)

2. a) Explain the Kalman's principle of Duality. — 6 Marks
   b) Consider the system defined by $\dot{x} = Ax$ and Y=cx ; — 6 Marks

Where $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 3 & 1 \end{bmatrix}$; $C = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \end{bmatrix}$; Check for complete Observability of the system by Gilbert's and Kalman's method.

UNIT-II

3. Consider the second-order system described by the differential equation $\ddot{x} + \dot{x} + \sin x = 0$. Write down the phase-plane equation and determine the nature of the singular points. — 12 Marks

(OR)

4. Construct a phase trajectory by delta method for a nonlinear system represented by the differential equation, $\ddot{x} + 4|\dot{x}|\dot{x} + 4x = 0$. Choose initial conditions as $x(0) = 1.0$ *and* $\dot{x}(0) = 0$. — 12 Marks

UNIT-III

5. a) State and explain the Liapunov stability theorems. — 6 Marks
   b) Check the stability of the system described by the equations using variable gradient method. — 6 Marks

$$\dot{x}_1 = x_2$$

$$\dot{x}_2 = x_1 - b_1 x_2 - b_2 x_2^3 \quad ; b_1, b_2 > 0 .$$

(OR)

6. Consider the system $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -1 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$ — 12 Marks

Determine the stability of the equilibrium state at x = 0.

UNIT-IV

7. Explain the designing of reduced order observer with neat block diagram. 12 Marks

(OR)

8. a) Derive the Ackermann's formula for the determination of the state feedback matrix. 6 Marks

   b) Design a feedback controller with a state feedback so that closed loop poles are placed at -2, -1±j. for a linear system described by the transfer function $\frac{Y(S)}{U(S)} = \frac{10}{S(S+1)(S+2)}$. 6 Marks

UNIT-V

9. Find the external of function 12 Marks

   J(x)= $\int_0^{\pi/4} (x_1^2 + \dot{x}_2^2 + \dot{x}_1 \dot{x}_2)dt$ the boundary conditions are $x_1(0)=0$, $x_1(\frac{\pi}{4})=1$, $x_2(0)=0$, $x_2(\frac{\pi}{4})= -1$

(OR)

10. Obtain the control law which minimizes the performance index 12 Marks

    $J = \int_0^x (x_1^2 + u^2)dt.$

    For the system $\begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}\begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u.$

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

HIGH VOLTAGE ENGINEERING

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) What are the advantages of transmitting electrical power at high voltages? 6 Marks
   b) Explain in brief the need of generating high voltages. 6 Marks

(OR)

2. a) Explain Townsend's theory of breakdown of gases. Derive the current growth equation and mention its limitations. 6 Marks
   b) In an experiment in a certain gas it was found that the steady state current is 5.5×10^{-8} A at 8 kV at a distance of 0.4cm between the plane electrodes. Keeping the field constant and reducing the distance to 0.1 cm results in a current of 5.5×10^{-9} A. Calculate Townsend's primary ionisation coefficient α. 6 Marks

UNIT-II

3. a) Define front and tail time of an impulse voltage. Draw its wave form. What are its tolerances allowed as per specifications? 6 Marks
   b) A 12-stage impulse generator has 0.126 μF condensers. The wave front and wave tail resistances connected are 800 ohms and 5000 ohms respectively. If the load condenser is 1000pF, find the front and tail times of the impulse wave produced. 6 Marks

(OR)

4. a) Briefly explain the components of a multi stage impulse generator. 6 Marks
   b) Derive the expression for output voltage equation of a single stage impulse voltage generator. 6 Marks

UNIT-III

5. With a neat circuit diagram explain HV Schering bridge to determine capacitance and loss tangent of an insulation specimen. Derive the necessary equations. 12 Marks

(OR)

6. a) Explain the measurement of impulse current using magnetic link and also write a short note on tools for measurement of impulse current. 6 Marks
   b) Explain the operation of Schering bridge for three terminal measurements. 6 Marks

UNIT-IV

7. How do you locate and estimate the Partial Discharge? Explain in brief. 12 Marks

(OR)

8. Briefly explain how partial discharges in an insulation system or equipment can be detected and displayed. 12 Marks

UNIT-V

9. Explain in detail the testing of Polymeric insulators. 12 Marks

(OR)

10. Explain with neat diagram synthetic testing of circuit breaker. Why synthetic testing is more preferable over direct method for short circuit test? 12 Marks

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

POWER ELECTRONIC CONVERTERS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Sketch and discuss control characteristics of power switching devices.	6 Marks
	b)	Discuss practical characteristics and specifications of power switching devices.	6 Marks
		(OR)	
2.		With the help of a neat sketch, explain switching characteristics of a power MOSFET and IGBT.	12 Marks

UNIT-II

3.	a)	Discuss a suitable technique to achieve bidirectional power flow between two converter stations in a Medium Voltage DC transmission system.	8 Marks
	b)	Identify a converter that produces both three pulse and six pulse output voltage and explain its features.	4 Marks
		(OR)	
4.	a)	Justify how power factor of single phase full-converter can be improved by Extinction Angle Control.	6 Marks
	b)	Explain the steps involved in the design of a forced commutated two pulse converter feeding RL load to operate at Unity Power Factor.	6 Marks

UNIT-III

5.	a)	Obtain the equivalent circuit of a Current Source Converter.	6 Marks
	b)	Compare Voltage Source Converter with Current Source Converter.	6 Marks
		(OR)	
6.		Discuss basic principles of Voltage Source Converters.	12 Marks

UNIT-IV

7.		Identify the type and class of commutation technique employed for current commutated chopper and explain its operation with the help of neat circuit and relevant wave forms.	12 Marks
		(OR)	
8.		Illustrate the operation of Boost converter and derive the following: i) Average output voltage. ii) Peak-to-peak ripple voltage and current. iii) Switching frequency. iv) Condition for continuous inductor current and capacitor voltage.	12 Marks

UNIT-V

9.		Discuss the advanced PWM techniques for improving the performance of single phase inverters.	12 Marks
		(OR)	
10.	a)	Develop and explain the topology of multilevel converters for achieving reactive power compensation.	6 Marks

b) Explain Cascaded type Multilevel inverter. 6 Marks

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

POWER SYSTEM SECURITY AND STATE ESTIMATION

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Show that the diagonal and off-diagonal elements of the bus admittance can be mathematically represented as 3 Marks

$$Y_{pq} = \sum_{q}^{Y} {}_{pq} \quad and \quad Y_{pq} = -Y_{pq}$$

Where $\boldsymbol{Y_{pq}}$ is the sum of the admittance of all the lines connecting buses p and q.

b) Derive an expression for adding a link to a network with mutual inductance. 9 Marks

(OR)

2. a) Develop the step-by-step procedure for formation of bus impedance matrix for addition of a link. 4 Marks

b) Modify the impedance matrix for a network connecting impedances to include the addition of Z_b= 0.25 p.u. connected between buses 1 and 4 so that it couples through mutual impedance j0.15 p.u. to the branch impedance already connected between buses 1 and 2. Impedances of network are X_{10}=X_{30}=j1.25, X_{12}=j0.25, X_{23}=j0.4, X_{24}=j0.125, X_{43}=j0.2 where '0' is a reference node. All impedances are in p.u. Preserve all buses. 8 Marks

UNIT-II

3. Derive the expression for three phase symmetrical fault current (LLLG fault) on a balanced power system using matrix notation. Also, derive the expression for 12 Marks

i) Current in the faulted bus
ii) Current at any other bus
iii) Voltage at any bus excluding the faulted bus

(OR)

4. a) Show that for a rotating element, the phase admittance matrix of a component is not a diagonalised matrix using symmetrical component transformation. 6 Marks

b) Find the sequence impedance matrix of pq element whose phase component impedance matrix is: 6 Marks

$$\left[z_{pg}^{abc}\right] = \begin{bmatrix} j0.6 & j0.2 & j0.1 \\ j0.1 & j0.7 & j0.4 \\ j0.2 & j0.4 & j0.8 \end{bmatrix}$$

Derive the formulae used.

UNIT-III

5. a) Discriminate the various load flow methods used in power system studies. 6 Marks
   b) Derive the necessary expressions for Jacobian matrix elements for N-R method in Polar form. 6 Marks

(OR)

6. a) Explain the factors affecting the power system security. 6 Marks
   b) Describe security assessment and security enhancement in power system. 6 Marks

UNIT-IV

7. a) Explain the bounding technique applied in contingency selection. 6 Marks
   b) Explain contingency analysis with a flow chart. 6 Marks

(OR)

8. a) Using the flow chart, explain the AC power flow security analysis with contingency case selection. 6 Marks
   b) How will you obtain the value of PI under contingency state? 6 Marks

UNIT-V

9. a) Explain the state estimation using orthogonal decomposition algorithm. 6 Marks
   b) Obtain weighted least square estimation of the variables x_1 and x_2 by using the data for three dimensional Y vector. 6 Marks

Assume $W=\begin{bmatrix} 0.1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 0.1 \end{bmatrix}$. Assume 'H' matrix suitably.

(OR)

10. Compute the two value random variables X by weighted least square estimate method for a given measurement vector Z. 12 Marks

$Z=\begin{bmatrix} 0.5 \\ 0.35 \\ 0.49 \end{bmatrix}$ $H=\begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix}$ with weighting matrix $=\begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.5 & 0 \\ 0 & 0 & 0.1 \end{bmatrix}$

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is load compensation and mention three main objectives of load compensation?	6 Marks
	b)	Does pure reactive compensator maintain both constant voltage and unity power factor at the same time? Justify your answer.	6 Marks
		(OR)	
2.	a)	Discuss practical compensators with their characteristics.	6 Marks
	b)	Explain in detail about the role of an ideal load compensator in case of three phase unbalanced loads.	6 Marks

UNIT-II

3.		Explain in detail the transient state reactive power compensators in transmission system compensation using synchronous condensers.	12 Marks
		(OR)	
4.	a)	Show that the midpoint voltage is related to the reactive power requirement of the symmetrical line.	6 Marks
	b)	With the aid of a neat figure, explain the characteristics of time periods of voltage of a power system network for any disturbance.	6 Marks

UNIT-III

5.	a)	Define the term reactive power management and mention different categories of reactive power management.	6 Marks
	b)	Discuss the procedure for economic planning capacitor placement in reactive power management.	6 Marks
		(OR)	
6.	a)	Mention any four power quality issues and draw the corresponding voltage wave forms.	6 Marks
	b)	Define voltage distortion factor and write its importance.	6 Marks

UNIT-IV

7.	a)	Classify the customer categories in distribution networks.	6 Marks
	b)	Explain about the additional tariff features that are incorporated to aid demand side management.	6 Marks
		(OR)	
8.	a)	Classify the load pattern categories and basic methods of load shaping in distribution side management.	6 Marks
	b)	Write short notes on KVAR based tariffs.	6 Marks

UNIT-V

9.		Describe role of capacitors in wind mill generator and minimum capacitance required for excitation in detail.	12 Marks
		(OR)	
10.		Discuss the types of available capacitors with their characteristics. Also, list out their limitations in detail for user side reactive power management.	12 Marks

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POWER SYSTEM RELIABILITY

[Electrical Power Systems]

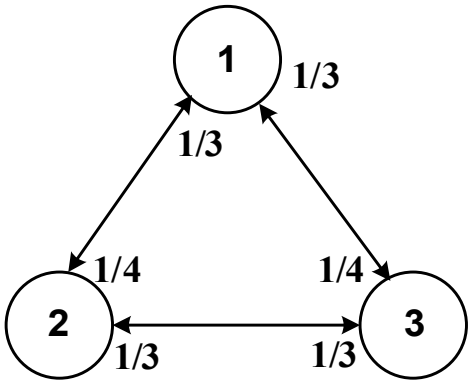
Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Derive the expressions for the time dependent probabilities of one component repairable model, whose probabilities are exponential distributed. 6 Marks

   b) For the following state-space diagram, the transitional rates are marked. Determine the Limiting State Probability of each state. 6 Marks



(OR)

2. a) What are the properties of Binomial Distribution? 6 Marks

   b) For the Probability density function $f(x) = ax(1-x)$, where, $0 \le x \le 1$, determine the constant '**a**', mean is ' **μ**' and standard deviation is ' **σ**'. 6 Marks

UNIT-II

3. a) Explain in detail about Loss of Load Expectation for a generation system. 4 Marks

   b) Consider there are 2 generating units of 25MW each and a one 50MW is a generating station and repair rate is 0.49/day. The load data is below table1.0 8 Marks

Table1.0: load demand

Peak load (MW)	57	52	46	41	34
No. of occurrences in a year	12	83	107	116	47

Compute Loss of Load Expectation (LOLE).

(OR)

4. a) A power system contains 4 generating units, where units one, two and three have a capacity of 20MW and unit four has a capacity of 40 MW. The failure rate and the repair rate of every unit is 0.4 per year and 9.6 per year respectively. Develop the combined capacity outage probability table. 9 Marks

   b) Discuss briefly about software based Reliability Evaluation Tool (REST) for computation of reliability indices. 3 Marks

UNIT-III

5.		Explain the evaluation of cumulative probability and cumulative frequency of encountering of merged states with suitable example.	12 Marks
		(OR)	
6.		Prepare capacity outage probability table with cumulative probabilities for a four 50MW unit system with failure rate and repair rate of 0.4 per year and 9.6 per year respectively. Obtain the state space diagram and mark the various transitional rates. Evaluate the transmission rates and also evaluate state and cumulative frequencies.	12 Marks

UNIT-IV

7.	a)	Develop the expressions for cumulative probability and cumulative frequency of two systems connected through a tie line with correlated loads and unlimited tie-line capacity.	9 Marks
	b)	Describe about skilled preventive maintenance on critical failures.	3 Marks
		(OR)	
8.		Discuss the inclusion of weather effects in the Transmission system reliability analysis.	12 Marks

UNIT-V

9.	a)	Discuss in detail about load point and energy indices in radial distribution systems.	9 Marks
	b)	Illustrate method of determining distribution system reliability indices graphically.	3 Marks
		(OR)	
10.		Distinguish between: i) Active and Passive failures. ii) Open circuit and Short circuit failures.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

CLOUD COMPUTING

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Provide the sequence of steps involved in "execution of virtualization".	6 Marks
	b)	How Distributed computing is distinguished with Cloud computing?	6 Marks
		(OR)	
2.		Compare and contrast the differences between Distributed computing and Virtualization.	12 Marks

UNIT-II

3.	a)	Describe the main characteristics of a Cloud Computing Stack and Virtual Appliances.	8 Marks
	b)	What is the innovative characteristic of Cloud Computing?	4 Marks
		(OR)	
4.	a)	Discuss the role of SLAs in the Cloud Computing.	6 Marks
	b)	Organize the Cloud Computing classification based on the latest services.	6 Marks

UNIT-III

5.	a)	Explain the Identity system codes of conduct.	6 Marks
	b)	Model the user authentication in **IDaaS**. Discuss with an example.	6 Marks
		(OR)	
6.	a)	Explain the working principle of **salesforce.com**.	6 Marks
	b)	Define **CaaS** and provide its area of usage with suitable example.	6 Marks

UNIT-IV

7.	a)	Enumerate the computing categories along with their implications on middleware.	6 Marks
	b)	Discuss the frameworks for Task computing.	6 Marks
		(OR)	
8.		Justify the responsibility of Data-Intensive computing in Cloud programming.	12 Marks

UNIT-V

9.	a)	What is SQL Azure? Illustrate the architecture of SQL Azure.	6 Marks
	b)	What is Data Store? What type of data can be stored in it?	6 Marks
		(OR)	
10.	a)	What is a role? What types of roles can be used?	4 Marks
	b)	Explain the Amazon Cloud Watch with neat sketch.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

DATA STRUCTURES AND ALGORITHMS

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	List the applications of stacks and queues.	6 Marks
	b)	Design a recursive algorithm for computing **2n** for any nonnegative integer **n** which is based on the formula 2n = 2n-1 + 2n-1.	6 Marks
		(OR)	
2.		Write an algorithm for inserting and deleting an element at the beginning of a circular linked list.	12 Marks

UNIT-II

3.	a)	Define binary tree. Explain its properties and types.	8 Marks
	b)	Write an algorithm for Fibonacci search.	4 Marks
		(OR)	
4.		Illustrate the operation of bucket sort on list of elements A = {.79, .13, .16, .64, .39, .20, .89, .53, .71, .42}. Write algorithm for bucket sort.	12 Marks

UNIT-III

5.		Define Heap. Explain heap properties and operations using suitable example.	12 Marks
		(OR)	
6.	a)	Draw the steps required to perform a single right rotation and double LR rotation in an AVL Tree.	8 Marks
	b)	Compute the minimum number of nodes in AVLTree of height 20.	4 Marks

UNIT-IV

7.		Write the Prim's Minimum Cost Spanning Tree algorithm. Explain with example.	12 Marks
		(OR)	
8.	a)	State the general method for Divide and Conquer approach.	6 Marks
	b)	Write a recursive algorithm for Binary Search.	6 Marks

UNIT-V

9.		Write a short notes on: i) Graph coloring ii) LC Search	12 Marks
		(OR)	
10.		Find the optimal solution to the knapsack instance n = 7, m = 15 (p1,p2,p3,…p7) = (10,5,15,7,6,`18,3) and (w1,w2,w3….w7) = (2,3,5,7,1,4,1) using LIFO branch and bound.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

SOFTWARE DEVELOPMENT METHODOLOGIES

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Outline how Agility principles will help in developing successful software products.	6 Marks
	b)	Demonstrate how human factors will influence Agility in software development.	6 Marks
		(OR)	
2.		Identify appropriate software process model for development of Commercial Off-The-Shelf (COTS) software components and explain its construction in detail.	12 Marks

UNIT-II

3.	a)	Describe the strategies in Requirements Modeling.	6 Marks
	b)	Describe Requirements Analysis in detail with a suitable example.	6 Marks
		(OR)	
4.	a)	Elaborate on Requirements Engineering through Usecase development.	7 Marks
	b)	How ground work can be established for Requirements gathering?	5 Marks

UNIT-III

5.		Describe Object Oriented Design concepts with suitable examples.	12 Marks
		(OR)	
6.	a)	Describe separation of concerns. Is there a case when a 'divide-and-conquer' strategy may not be appropriate? How such case might affect the arguments for modularity?	9 Marks
	b)	Discuss the importance of data abstraction in the software design process.	3 Marks

UNIT-IV

7.	a)	Justify, the reasons in restricting the size of subprograms between 5 to 25 executable statements.	6 Marks
	b)	Explain concurrency mechanisms with relevant examples.	6 Marks
		(OR)	
8.	a)	Distinguish among Type Checking.	7 Marks
	b)	Discuss the advantages and disadvantages of structural type equivalence.	5 Marks

UNIT-V

9.	a)	List the strategic issues in Testing.	6 Marks
	b)	Describe the Testing Strategies for Conventional Software.	6 Marks
		(OR)	
10.	a)	Explain in detail the economics of Reengineering.	6 Marks
	b)	Demonstrate how Reverse Engineering will help in understanding user interfaces.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

SOFTWARE MEASUREMENT AND METRICS

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Discuss in detail about the Representational theory of measurement.	12 Marks
		(OR)	
2.	a)	Explain in detail about the role of empirical relations in theory of measurement.	6 Marks
	b)	Apply Ordinary Scale and Absolute Scale for software measurement with suitable examples.	6 Marks

UNIT-II

3.		Sketch and explain Software Engineering Institute's levels of process maturity.	12 Marks
		(OR)	
4.		Analyze in detail about Goal -Question-Metric paradigm in Software measurement.	12 Marks

UNIT-III

5.	a)	Apply Sequencing and Nesting in Control-Flow Structure with an example.	7 Marks
	b)	Explain about Hierarchical measures.	5 Marks
		(OR)	
6.	a)	Describe the role of Big - O notation in measuring the complexity with example.	6 Marks
	b)	Write in detail about the traditional code measures.	6 Marks

UNIT-IV

7.		Write about Design and Complexity Metrics in detail.	12 Marks
		(OR)	
8.	a)	Sketch and explain the McCall software quality model.	6 Marks
	b)	Explain about “Define your own quality model” approach.	6 Marks

UNIT-V

9.		List Ishikawa's Seven Basic Tools and explain how they are applied for software measure.	12 Marks
		(OR)	
10.		Explain in detail about In-Process Quality Metrics.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

SOFTWARE REQUIREMENTS AND ESTIMATION

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	State requirements elicitation. Discuss any three elicitation techniques	12 Marks
	(OR)	
2.	Distinguish various elicitation techniques.	12 Marks

UNIT-II

3.	Define Analysis Models. Explain about Use case Modeling.	12 Marks
	(OR)	
4.	Analyze the change management process.	12 Marks

UNIT-III

5.	Explain Estimation methods in detail.	12 Marks
	(OR)	
6.	Explain Full function points technique with an example.	12 Marks

UNIT-IV

7.	Define productivity. Explain about Estimation factors.	12 Marks
	(OR)	
8.	List and explain various factors considered in cost estimation.	12 Marks

UNIT-V

9.	Distinguish Rational Requisite Pro and Caliber - RM.	12 Marks
	(OR)	
10.	How do you implement Requirement management automation? Explain in detail.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

USER INTERFACE DESIGN

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Write in detail about software testing process. 12 Marks

(OR)

2. Explain elaborately on obstacles and pitfalls in development path. 12 Marks

UNIT-II

3. Elaborate on the techniques used for requirement analysis. 12 Marks

(OR)

4. Explain the following with respect to screen design process 12 Marks
   i) Screen navigation and flow.
   ii) Grouping for visual pleasing composition.

UNIT-III

5. Discuss in detail about window presentation styles 12 Marks

(OR)

6. Describe the characteristics and components of windows 12 Marks

UNIT-IV

7. Discuss the issues of internationalization in user interface. 12 Marks

(OR)

8. Design web application using any one multimedia tool. 12 Marks

UNIT-V

9. Specify need of usability test with an example. Analyze and write various types of tests and explain any two in detail. 12 Marks

(OR)

10. Explain a note on usability test guide lines. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

COMPUTER NETWORKS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Discuss about OSI Reference model with a neat block diagram.	12 Marks
		(OR)	
2.		Compare the functionality of HDLC and Point-to-point portal in data link layer.	12 Marks

UNIT-II

3.	a)	Classify the frames used in frame relay network.	4 Marks
	b)	Draw the frame format of frame relay and explain each field in detail.	8 Marks
		(OR)	
4.		Classify the paths used in ATM and explain the functionality of each path in architecture.	12 Marks

UNIT-III

5.		Draw the header format of TCP and explain each field in detail.	12 Marks
		(OR)	
6.		Draw HTTP request response message formats. Give the details of various fields of both the formats.	12 Marks

UNIT-IV

7.	a)	Explain the functions of firewall in network security	8 Marks
	b)	List the goals of Firewalls.	4 Marks
		(OR)	
8.		Discuss about Public Key Cryptographic algorithm with an example.	12 Marks

UNIT-V

9.		Apply Dynamic Source Routing Protocol for Ad-Hock networks and explain with an example.	12 Marks
		(OR)	
10.		Discuss about Destination-Sequenced Distance-Vector Protocol with an example.	12 Marks

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DIGITAL COMMUNICATION TECHNIQUES

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Determine the autocorrelation function of the stochastic process. 12 Marks
$s(t) = A \sin(2\pi f_c t + \theta)$ where f_c is a constant and θ is a uniformly distributed phase i.e

$$p(\theta) = \frac{1}{2\pi}, \text{ for } 0 \le \theta \le 2\pi$$

(OR)

2. If $x(t)$ is a stationary random process with autocorrelation function 12 Marks
$\phi_{xx}(\tau) = E[x(t)\, x(t+\tau)]$ and spectral density $\phi_{xx}(f)$, then show that
$\phi\phi_{x\hat{x}}(\tau) = -\hat{\phi}_{xx}(\tau)$ and $\phi\phi_{\hat{x}\hat{x}}(f) = -\hat{\phi}_{xx}(f)$

UNIT-II

3. a) Draw the output waveforms of ASK and FSK when the input data stream is11010. 4 Marks
   b) Derive the probability of error and power spectra for MSK. 8 Marks

(OR)

4. Suppose that binary PSK is used for transmitting information over an AWGN with a power spectral density of $\frac{N_0}{2} = 10^{-10} W/Hz$. The transmitted signal energy is $\varepsilon_b = \frac{1}{2} A^2 T$, where T is the bit interval and A is the signal amplitude. Determine the signal amplitude required to achieve an error probability of 10^{-6} when the data rate is : 12 Marks
   i) 10 kbits/s ii) 100 kbits/s iii) 1 Mbits/s

UNIT-III

5. Derive the probability of error of Mary orthogonal signaling. 12 Marks

(OR)

6. Derive the correlation detector transfer function and its impulse response. 12 Marks

UNIT-IV

7. a) How is bandwidth allied during transmission and reception of spread spectrum system? 7 Marks
   b) List the properties of PN sequence. 5 Marks

(OR)

8. a) Draw the block diagram of frequency hopped spread spectrum system. 4 Marks
   b) What are the advantages of the spread spectrum system? 5 Marks
   c) What is meant by CDMA? Mention its uses. 3 Marks

UNIT-V

9. a) Define Rayleigh channel and Rician channel. 5 Marks

b) Design a OFDM system for the following parameters. 7 Marks

i) Total delay spread = 200 ns

ii) Bit rate = 400 Mbps

iii) Bandwidth ≤ 16 MHZ

(OR)

10. Asses the cost of cyclic prefix (used in multi carrier communication to avoid ISI) in terms of : 12 Marks

i) Extra bandwidth ii) Extra signal energy

What is your logical opinion about the use of cyclic prefix in 5G communication? (5G is considered the millimeter wave communication and should be of spectrally efficient)

CODE No.:16MT13803 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

DIGITAL SYSTEM DESIGN AND TESTING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) How state equivalence is useful in developing a VLSI circuit and explain with an example? 5 Marks

   b) Explain various objects of an ASM chart and draw an ASM chart for a function $f = \sum(1,4,5,6,7)$. 7 Marks

(OR)

2. a) Write about the design of sequential circuits using FPGAs with an example. Also explain how FPGAs are useful in DSP. 6 Marks

   b) Design a 4-bit full adder using Iterative circuit. 6 Marks

UNIT-II

3. a) What are the different faults found in combinational circuits? How can they be categorized? 6 Marks

   b) Draw the circuit which realizes the function $f(x) = x_1x_2 + x_3x_4$ using AND-OR gates. Using Boolean difference method, obtain the test set to detect S-A-0 fault on input line x_1 of the circuit. 6 Marks

(OR)

4. a) What is the significance of kohavi algorithm? Explain how it detects multiple faults in a two-level network. 6 Marks

   b) Explain path sensitization method. Estimate path sensitization in AND-OR-AND three level combinational circuits. 6 Marks

UNIT-III

5. a) What is meant by transition check approach in fault diagnosis of sequential circuits? 7 Marks

   b) Distinguish top down process and bottom up process in fault diagnosis. 5 Marks

(OR)

6. Apply the synchronizing sequence for the below machine M1 12 Marks

P.S	N.S, Z	
	X=0	X=1
A	D,1	B,0
B	D,1	C,0
C	A,0	D,0
D	B,0	A,0

UNIT-IV

7.	a)	Describe the advantages of PLA minimization and folding.	4 Marks
	b)	Design a 3 bit BCD to grey code converter and realize the circuit using PLA and then show that how folding will reduce the number of cross points given on the PLA.	8 Marks

(OR)

8.		Discuss various test generation algorithms for PLAs.	12 Marks

UNIT-V

9.	a)	Write about fundamental-mode model.	6 Marks
	b)	Distinguish different types of hazards.	6 Marks

(OR)

10.	a)	Explain closed covering condition in asynchronous circuits. Use the suitable implication table to find compatible states for this condition.	6 Marks
	b)	Explain, how pulse clocked asynchronous sequential circuit is free from all types of hazards.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

IMAGE & VIDEO PROCESSING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		What is meant by WALSH transform and explain with an example.	12 Marks
		(OR)	
2.		Give an overview about all the 2D image transforms.	12 Marks

UNIT-II

3.	a)	Check how image smoothing process can be used in image processing and explain with an example.	6 Marks
	b)	Explain about ideal high pass filter in frequency domain for biomedical images.	6 Marks
		(OR)	
4.	a)	What is histogram of a digital image? Explain histogram specification process and apply the process to a 8 - bit image of size 5×5 and get the output image that has the specified histogram.	8 Marks
	b)	Briefly explain about image averaging process.	4 Marks

UNIT-III

5.	a)	Explain Run length coding with a suitable example.	6 Marks
	b)	Discuss about Image fidelity criterion.	6 Marks
		(OR)	
6.	a)	Discuss the functioning of the channel encoder and decoder in a image compression model.	8 Marks
	b)	Explain about Arithmetic coding with an example.	4 Marks

UNIT-IV

7.		Classify Geometric Image Formation Models and explain in detail.	12 Marks
		(OR)	
8.		Discuss 3D Motion Models used in image formation.	12 Marks

UNIT-V

9.		Classify and explain the filters used to remove noise in video signals.	12 Marks
		(OR)	
10.		Describe the procedure to remove noise in video using kernels.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

MODERN DIGITAL SIGNAL PROCESSING

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. What is Filter bank? Discuss about Two channel quadrature mirror filter banks. 12 Marks

(OR)

2. Describe the basic building blocks of Two Channel QMF bank and derive necessary conditions for eliminating the aliasing effect and perfect reconstruction. 12 Marks

UNIT-II

3. What is Periodogram? Why it is an inconsistent in estimation of power spectral density. 12 Marks

(OR)

4. Explain the design considerations of auto correlation and the model parameters of ARMA, AR and MA models. 12 Marks

UNIT-III

5. State the problem of Linear Optimum filtering and derive necessary and sufficient conditions for optimal operation of the filter using principle of orthogonality. 12 Marks

(OR)

6. Appraise the concept of Minimum Mean Square Error in its performance surface. 12 Marks

UNIT-IV

7. Explain different types of gradient search algorithms. Discuss about Newton's Method in detail. 12 Marks

(OR)

8. Explain, how Noise Cancellation and Adaptive Beam forming can be used in Signal processing applications. 12 Marks

UNIT-V

9. Discuss in detail about the Recursive Mean Square Estimation of Random variables. 12 Marks

(OR)

10. Derive the minimum mean square estimation of state from the innovation process. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

ASIC DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is full custom ASIC design flow? Explain advantages and disadvantages of full custom ASIC design flow.	6 Marks
	b)	Appraise the tradeoff between general purpose processor for specific application and full custom design ASIC chip for specific application.	6 Marks
		(OR)	
2.	a)	Summarize standard cells and cell based ASICs.	6 Marks
	b)	Illustrate the design approach for standard cells and cell based ASIC design.	6 Marks

UNIT-II

3.	a)	Write short notes on Library-Cell design.	5 Marks
	b)	With neat cell library statistics, explain in detail about the Library Architecture.	7 Marks
		(OR)	
4.	a)	Develop standard cell layout and list its important features.	6 Marks
	b)	Develop schematic and layout for a Datapath D flip-flop cell.	6 Marks

UNIT-III

5.	a)	Explain the various logic synthesis tools available for ASIC and FPGA based design.	6 Marks
	b)	Illustrate and explain, how does logic synthesis generate smaller and faster circuits than handed design.	6 Marks
		(OR)	
6.	a)	State the different ways to synthesize a Finite-State Machine (FSM).	6 Marks
	b)	Discuss in detail about the FSM synthesis in Verilog.	6 Marks

UNIT-IV

7.	a)	Identify and explain in detail about the types of simulations that are performed during chip design process.	6 Marks
	b)	Analyze the timing analysis of the comparator/MUX structural model.	6 Marks
		(OR)	
8.		Illustrate the difference between functional simulation, timing analysis and gate-level simulation by simulating the comparator/MUX critical path.	12 Marks

UNIT-V

9.	a)	State goals and objectives of Routing.	6 Marks
	b)	Formulate a method to estimate interconnect delay.	6 Marks
		(OR)	
10.		Define circuit parasitic extraction. And explain how logic effort will be maintained during the chip design.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

ANALOG IC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Derive the low frequency model parameters for an n-channel transistor that has doping concentration of $N_D = 10^{22}$, $\mu_n C_{ox} = 90\mu A/V^2$, W/L =15μm/5μm, V_{gs} =1.2V, V_{tn} =0.8V and $V_{DS} = V_{eff}$. Assume $\gamma = 0.5V^{1/2}$ and $V_{SB} = 0.5V$. What is the new value of r_{ds} if the drain source voltage ΔV_{DS} is increased by 0.8V. 12 Marks

(OR)

2. Analyze common source amplifier with current mirror active load. 12 Marks

UNIT-II

3. Describe the effect of noise in single stage Amplifier. 12 Marks

(OR)

4. Derive expression for Z_{in} of high frequency model of source follower. 12 Marks

UNIT-III

5. Derive the expression for Power Supply Rejection Ratio (PSRR) of differential pair with active current mirror. 12 Marks

(OR)

6. Draw the block diagram of a One-stage CMOS op-amp. Develop the necessary expressions for op-amp gain. 12 Marks

UNIT-IV

7. Explain in detail about: 12 Marks
   i) PTAT Current generation ii) Constant Gm biasing.

(OR)

8. Write Short notes on: 12 Marks
   i) Supply-Independent Biasing ii) Phase Margin.

UNIT-V

9. Draw the circuit diagram of Ring Oscillator and explain. 12 Marks

(OR)

10. Classify Switched-Capacitor Amplifiers and explain Unity-Gain Sampler/Buffer. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

COMPUTATIONAL METHODS IN MICROELECTRONICS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Find $\int_{1.8}^{3.4} f(x)\,dx$ using Trapezoidal rule, Simpson's 1/3rd rule and Simpson's 3/8 th rule where — 12 Marks

x	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4
F(x)	6.050	7.389	9.025	11.023	13.464	16.445	20.086	24.533	29.964

(OR)

2. a) List the various techniques used for curve fitting of discrete or continuous data. — 2 Marks
   b) Assess $y = \sin 2x$ by using Chebyshev polynomial fit and least square polynomial fit — 10 Marks

UNIT-II

3. Explain in detail about Structural Finite Element Analysis. — 12 Marks

(OR)

4. Solve $y' = \frac{-0.9}{1+2x}y$ by using Euler Forward Integration Method and Modified Euler Method. Also list their advantages, disadvantages and applications. — 12 Marks

UNIT-III

5. Apply dynamic analysis to model a spherical cavity. — 12 Marks

(OR)

6. List and explain the various categories of partial differential equations. — 12 Marks

UNIT-IV

7. a) Identify and illustrate the data structures used for triangulation. — 6 Marks
   b) List and summarize the error estimates used for mesh selection. — 6 Marks

(OR)

8. Develop optimization algorithm for Mesh Redistribution. Derive the solution adaptivity for error and shape optimization. — 12 Marks

UNIT-V

9. a) Develop and Illustrate KL Algorithm for partitioning. — 8 Marks
   b) Develop Simulated Annealing for Placement of blocks. — 4 Marks

(OR)

10. a) Distinguish VLSI Design Cycle and Physical Design Cycle. — 6 Marks
    b) Identify types of Routing and formulate an algorithm to find a path between any two vertices on a planar rectangular grid. — 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

DEVICE MODELING

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Generalize the Three terminal MOS device in contacting the inversion region. 6 Marks
   b) Derive the expressions in terms of pinch off voltage of a MOS device. 6 Marks

(OR)

2. a) Examine the general relations and regions of inversions in strong, medium and weak with necessary equations. 6 Marks
   b) Distinguish two terminals and three terminal MOS device. 6 Marks

UNIT-II

3. Contrast the regions of inversion in terms of terminal voltage with its equations. 12 Marks

(OR)

4. Explain:
   i) Effective mobility. 4 Marks
   ii) Break down in MOS. 4 Marks
   iii) Temperature effects. 4 Marks

UNIT-III

5. Draw the structure of LOCUS isolated MOSFET and explain. 12 Marks

(OR)

6. Draw the structure of Shallow trench isolated MOSFET and explain. 12 Marks

UNIT-IV

7. Identify the limitations of Quasi-static Model. 12 Marks

(OR)

8. Identify the Evaluation of Charges in Quasi-static operation. 12 Marks

UNIT-V

9. Discuss a small signal model for the drain to substrate path of a MOS transistor. 12 Marks

(OR)

10. Elucidate the medium frequency small signal model for the intrinsic part of MOS Device. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

DIGITAL IC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Define and calculate CMOS inverter delay. 4 Marks
   b) Analyze possible ways of reducing static and dynamic dissipation in CMOS design. 8 Marks

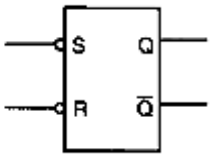
(OR)

2. a) Give an intuitive perspective of the static CMOS inverter with relevant diagrams. 5 Marks
   b) Discuss the dynamic behavior of CMOS inverter by computing the capacitances and propagation delay. 7 Marks

UNIT-II

3. Design a circuit to implement the truth table shown in figure below. A gate-level design is sufficient. 12 Marks

S	R	Q	$\bar{Q}$
0	1	1	0
1	0	0	1
1	1	Q	$\bar{Q}$



(OR)

4. a) Design a circuit to generate clock signal at 5MHz to use in local oscillator. 6 Marks
   b) Develop a circuit to synchronize clock signal between two circuits. 6 Marks

UNIT-III

5. a) Illustrate the various design approaches and design considerations of low CMOS design. 4 Marks
   b) Give the design considerations of a 4-bit SRAM and also draw its CMOS logic diagram. 8 Marks

(OR)

6. List various types of memory classifications and explain them in brief. 12 Marks

UNIT-IV

7. a) Design and explain 4 bit shifter with neat sketch. 6 Marks
   b) Explain general arrangement of 4 bit arithmetic processor 6 Marks

(OR)

8. a) Explain the operation of a Dynamic RAM cells. 8 Marks
   b) Implement a Full subtractor using Complementary static CMOS. 4 Marks

UNIT-V

9. Explain VLSI design flow. 12 Marks

(OR)

10. What are the design methods to implement a CMOS System? 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

IC FABRICATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Suggest a process for silicon shaping. 12 Marks

(OR)

2. Assess the aspects of silicon vapor epitaxy process chemistry and reaction kinetics? Explain in detail. 12 Marks

UNIT-II

3. Apply optical Lithography technique for IC fabrication. 12 Marks

(OR)

4. Appraise the development in optical lithography and the new trends in the design. List the corresponding merits and demerits. 12 Marks

UNIT-III

5. Describe the basic requirement for an ion implantation system. Explain in detail. 12 Marks

(OR)

6. Discuss doping, oxidation and properties of polysilicon. 12 Marks

UNIT-IV

7. a) Discuss the problems associated with Al-Cu interconnect. 6 Marks
   b) Write a brief note on RC delay in metallization systems. 6 Marks

(OR)

8. Calculate the RC time constant for a 1cm long doped polysilicon interconnection runner on 1μm thick SiO_2. The polysilicon has a resistance of 5000Ω and a resistivity ρ of 1000μΩcm. 12 Marks

UNIT-V

9. Elaborate beam specimen interactions that the analytical beams with materials. 12 Marks

(OR)

10. Infer the details of the following.
    i) VLSI assembly technology. 6 Marks
    ii) Package fabrication technology. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

ADVANCED DIGITAL SIGNAL PROCESSING

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Develop Multistage Implementation of sampling rate conversion.	5 Marks
	b)	Construct a Two-Channel Quadrature-Mirror Filter Bank.	7 Marks
		(OR)	
2.	a)	Describe the process of up-sampling by an integer factor say 'I' with suitable example.	5 Marks
	b)	Draw and explain the structure of Direct-form realization of FIR filter in sampling rate conversion by factor I/D.	7 Marks

UNIT-II

3.		Relate auto correlation and model parameters in ARMA process.	12 Marks
		(OR)	
4.	a)	Explain the performance characteristics of Nonparametric Power Spectrum Estimators	6 Marks
	b)	Explain the method of estimation of spectra from finite duration observation of signals.	6 Marks

UNIT-III

5.		Use the generalized Levinson-Durbin algorithm to solve the normal equations recursively for the m-step forward and backward predictors.	12 Marks
		(OR)	
6.		Predict the value of a stationary random process either forward in time or backward in time linearly using lattice filter structures.	12 Marks

UNIT-IV

7.	a)	Give the procedure to perform split radix FFT with suitable example.	6 Marks
	b)	How chirp-z transform is used to compute the DFT of signals. Derive the necessary equations.	6 Marks
		(OR)	
8.	a)	Develop the flow-graph for the computation of an N-point DFT based on index mapping.	6 Marks
	b)	How DFT is computed using Sliding DFT? Explain with necessary equations.	6 Marks

UNIT-V

9.	a)	How multirate filtering avoids the problems with analogue filters in compact disc player	7 Marks
	b)	Draw the block diagram of multirate data acquisition system.	5 Marks
		(OR)	
10.	a)	How high quality audio signal is reproduced in compact disc system, explain with a neat diagram.	6 Marks
	b)	Specify the important uses of DSP in digital audio.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

RF CIRCUIT DESIGN

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the properties for Resistors and Inductors at high radio frequencies. 12 Marks

(OR)

2. Explain briefly the importance of radio frequency design with the block diagram of a generic RF system. 12 Marks

UNIT-II

3. a) With the help of suitable derivation, explain power considerations for a transmission line. 5 Marks
   b) Explain various terminations used in Microstrip transmission line. 7 Marks

(OR)

4. a) Draw the lumped element circuit model for a transmission line. Derive the expression for voltage and current traveling waves. 4 Marks
   b) Discuss all the properties of traveling waves. 4 Marks
   c) Define the following terms for a transmission line. 4 Marks
      i) Standing Wave Ratio ii) Return loss
      iii) Power in dBs iv) Characteristic impedance

UNIT-III

5. a) Derive the input impedance equation of a transmission line of length 'l'. 6 Marks
   b) Explain the equivalent circuit of a transmission line. 6 Marks

(OR)

6. Define and derive AC parameters for BJT and FET. 12 Marks

UNIT-IV

7. a) Explain the different classes of operation of amplifiers and derive the efficiency. 6 Marks
   b) Describe the equations for unilateral and bilateral design in maximum gain amplifier. 6 Marks

(OR)

8. Show that $F = F_1 = \frac{F_2 - 1}{GA_1}$ for cascade two stage networks. 12 Marks

UNIT-V

9. Describe the following: 12 Marks
   i) Image rejection. ii) Harmonic mixers.
   iii) Frequency domain considerations of mixers.

(OR)

10. a) Explain down converter mixer, up converter mixer and harmonic mixer. 6 Marks
    b) What is Voltage Controlled Oscillator? 6 Marks

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CODE No.:16MT16102 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech I Semester (SVEC16) Regular Examinations January - 2017

DIGITAL SATELLITE COMMUNICATIONS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Define the following terms: 6 Marks
   i) Prograde and Retrograde orbits ii) Apogee and Perigee
   iii) Eccentric and Mean anomaly iv) Satellite Look angles
   b) A satellite is in an elliptical orbit with a perigee of 1000km and an apogee of 4000km. If the earth radius is taken as 6,378km, determine the period of the orbit of the satellite. 6 Marks

(OR)

2. State and derive Kepler's three laws of Planetary motion. 12 Marks

UNIT-II

3. What are the possible factors that influence the design of any satellite system? 12 Marks

(OR)

4. Discuss the system considerations aspects of Incremental Growth and Interim Operations in satellite communications for enabling development of new applications. 12 Marks

UNIT-III

5. Derive and analyze the output in message transmission by FDMA in the M/G/1 queue. 12 Marks

(OR)

6. List the features, merits and demerits of Centralized control DAMA and Distributed control DAMA. 12 Marks

UNIT-IV

7. With the aid of block diagram, describe frequency hopped spread spectrum system and list the merits. 12 Marks

(OR)

8. Compare and analyze Sequence Synchronous DS-CDMA and Sequence Asynchronous DS-CDMA. 12 Marks

UNIT-V

9. Describe MSAT network concept and the various configurations employed in MSAT network. 12 Marks

(OR)

10. Derive an expression for [C/No] for downlink. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

INFORMATION SECURITY

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the model for Internet security.	5 Marks
	b)	Construct a Caeser cipher and convert the word "**thenetworksecurity**" into cipher text with k=3.	7 Marks

(OR)

2.	a)	Describe in detail about Encryption and Decryption in AES algorithm.	5 Marks
	b)	Analyze the substitution bytes transformation and add round key transformation of AES cipher with an example.	7 Marks

UNIT-II

3.	a)	Write the algorithm for Diffie-Hellman Key Exchange.	6 Marks
	b)	Consider a Diffie-Hellman Scheme with a common prime q=11 and a primitive root α=2 i) If user A has public key Y_A=9, What is A's private key X_A? ii)If user B has public key Y_B=3, What is the shared secret key K shared with A?	6 Marks

(OR)

4.	a)	List the design objectives of HMAC.	5 Marks
	b)	Describe HMAC algorithm in detail.	7 Marks

UNIT-III

5.	a)	Sketch the **X.509** Certificate formats and explain the fields.	5 Marks
	b)	Explain various authentication procedures supported in **X.509**.	7 Marks

(OR)

6.	a)	Explain the principal services provided by PGP.	7 Marks
	b)	Illustrate Radix-64 Conversion with an example.	5 Marks

UNIT-IV

7.	a)	Draw the frame format for Encapsulating Security Payload (ESP).	8 Marks
	b)	Explain the functionality of ESP in Tunnel mode and Transport mode.	4 Marks

(OR)

8.	a)	Illustrate in detail about the phases in SSL handshake Protocol.	6 Marks
	b)	Elaborate the operation of SSL record Protocol.	6 Marks

UNIT-V

9.	a)	Differentiate between Statistical anomaly detection and Rule based detection.	6 Marks
	b)	Analyze the working of Behavior-Blocking software operation in IDS.	6 Marks

(OR)

10.		What is a Phishing attack and illustrate different types of Phishing attacks with real world applications.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

MOBILE COMPUTING

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	How security is provided in GSM for the subscribers?	6 Marks
	b)	How are Walsh codes of the order of 4x4, 8x8 and 64x64 generated from a 2x2 Hadamard matrix?	6 Marks
		(OR)	
2.		Explain the term interference in the space, time, frequency and code domain. What are the counter measures in SDMA, TDMA, FDMA and CDMA systems?	12 Marks

UNIT-II

3.	a)	Compare care-of address and co-located care-co address.	5 Marks
	b)	Name the inefficiencies of mobile IP regarding data forwarding from a correspondent node to a mobile node. What are optimizations and what additional problems do they cause?	7 Marks
		(OR)	
4.		Elaborate in detail about traditional TCP mechanisms.	12 Marks

UNIT-III

5.	a)	Illustrate by diagram, how responses to the device request interleave along with pushed data.	6 Marks
	b)	Write the situations in which pull-based and push-based mechanism are preferred.	6 Marks
		(OR)	
6.	a)	What are advantages of hoarding data at the mobile device?	4 Marks
	b)	Describe the data caching architecture. Explain data cache maintenance in a mobile environment.	8 Marks

UNIT-IV

7.	a)	Explain the need for domain-dependent specific rules.	6 Marks
	b)	What are the differences between PIM server and personal area synchronizer? Give an example of each.	6 Marks
		(OR)	
8.	a)	Explain the requirements of a mobile file system over the conventional one.	6 Marks
	b)	Describe security problems in mobile computing systems and networks.	6 Marks

UNIT-V

9.	a)	Compare DOM and SAX models of the documents.	6 Marks
	b)	How are DOM and SAX documents parsed? Explain with examples.	6 Marks
		(OR)	
10.	a)	Explain Symbian OS architecture.	6 Marks
	b)	Write a snippet code for downloads an HTTP file from sever to SD card in a mobile device.	6 Marks

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CODE No.:16MT22504 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

SOFTWARE TESTING TECHNIQUES

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Which skills are expected in a good tester? Explain. 12 Marks

(OR)

2. Explain the evolution of software testing from debugging to prevention based testing. 12 Marks

UNIT-II

3. Why software organizations buy COTS software? Explain COTS testing process and challenges in COTS testing. 12 Marks

(OR)

4. Describe process of client / server testing. 12 Marks

UNIT-III

5. Explain state transition way of defining test data. 12 Marks

(OR)

6. Define the characteristics of a good test case. 12 Marks

UNIT-IV

7. Explain defect fixing efficiency. What are the factors that affect the defect fixing efficiency? 12 Marks

(OR)

8. Explain defect density metrics and defect leakage ratio metrics. 12 Marks

UNIT-V

9. Differentiate between Manual testing and Automation. Places where automation can be applied. 12 Marks

(OR)

10. Explain the inspection procedure for the test plan execution. 12 Marks

CODE No.:16MT22505 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

WEB TECHNOLOGIES

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Design a web page to load videos and to play the selected video. 12 Marks

(OR)

2. a) Design a web page to maintain list of items using local storage concepts. 6 Marks
   b) Design a web page to drag and drop an object on a web browser using a mouse. 6 Marks

UNIT-II

3. a) Explain jQuery selectors with suitable example. 5 Marks
   b) Design a web page to Fade HTML elements in and out of visibility using a jQuery. 7 Marks

(OR)

4. a) Discuss the jQuery methods used to create animation effects. 6 Marks
   b) Design a web page to enable the user to add or remove square boxes using jQuery manipulators. 6 Marks

UNIT-III

5. Develop a PHP code that implements Interfaces and Abstract classes. 12 Marks

(OR)

6. Design a PHP page to convert Indian Rupees to Foreign Currency. 12 Marks

UNIT-IV

7. Write a PHP code to perform the following: 12 Marks
   i) To Fetch employee records.
   ii) To Update employee salary by 10% whose experience greater than 15 years.

(OR)

8. Write a PHP code to authenticate users by reading user id and password from the Login form. Compare user id and password values with user id's and passwords stored at database. If he/she is a valid user (i.e., user id and password match) then welcome him/her by name (first name + last name), otherwise display a message stating that an unauthorized user. 12 Marks

UNIT-V

9. Design a web page to load a list box dynamically using *XMLHttpRequest* Object. 12 Marks

(OR)

10. a) Write an AJAX application to display current system date and time. 6 Marks
    b) Explain the creation of *XMLHttpRequest* object with a suitable example. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

INFORMATION THEORY AND CODING TECHNIQUES

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Compute the efficiency of Huffman coder having the messages with probabilities are 0.36, 0.14, 0.13, 0.15, 0.10, 0.09, 0.04 and 0.02. 6 Marks

   b) Consider the set of all densities with fixed pair wise marginals $\mathbf{f_{X1,X2}(x_1,x_2)}$, $\mathbf{f_{X2,X3}(x_2,x_3)}$,…….$\mathbf{f_{Xn-1,Xn}(x_{n-1},x_n)}$. Show that maximum entropy process with these marginals is the first order Markov process with these marginals. 6 Marks

(OR)

2. Consider that the two sources S_1 and S_2 emit messages x_1, x_2,x_3 and y_1,y_2,y_3 with the joint probability P(X,Y) as shown in the matrix. Calculate H(X), H(Y), H(Y/X), H(X/Y) and H(XY). 12 Marks

$$P(X,Y)=\begin{bmatrix} 3/40 & 1/40 & 1/40 \\ 1/20 & 3/20 & 1/20 \\ 1/8 & 1/8 & 1/8 \end{bmatrix}$$

UNIT-II

3. a) Derive the information capacity for band limited Gaussian channel. 6 Marks

   b) Evaluate the relation between mutual information and joint entropy. 6 Marks

(OR)

4. a) Derive the channel capacity of parallel Gaussian channel. 6 Marks

   b) Mention the properties of channel capacity. 6 Marks

UNIT-III

5. The parity check bits of a (8, 4) block code are generated by $c_5=d_1+d_2+d_4$, $c_6=d_1+d_2+d_3$, $c_7=d_1+d_3+d_4$, $c_8=d_2+d_3+d_4$, where d_1,d_2,d_3,d_4 are message bits . Develop the generator matrix and parity check matrix for this code 12 Marks
   (i) Identify the minimum weight of this code.
   (ii) Compute the error detecting capabilities of this code.

(OR)

6. Consider a (7,4) code whose generator matrix is 12 Marks

$$G=\left[\begin{array}{cccc:cccc} 1 & 1 & 0 & \vdots & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & \vdots & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & \vdots & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & \vdots & 0 & 0 & 0 & 1 \end{array}\right]$$

   i) Compute all code words of code.
   ii) Develop parity matrix check matrix of the code.
   iii) Compute the syndrome for the received vector 1101101.
   iv) Construct error detecting circuit.

UNIT-IV

7.	a)	Design a feedback shift register encoder for an (8, 5) cyclic code with a generator in systematic form.	6 Marks
	b)	Write about Viterbi algorithm and its applications.	6 Marks

(OR)

8.	a)	Discuss some of practical applications of Convolution codes.	6 Marks
	b)	The generator polynomial of a (7, 4) cyclic code is $g(x) = 1+x+x^3$. Obtain all the code vectors for the code in non-systematic and systematic form.	6 Marks

UNIT-V

9.		Design a (7, 3) RS decoder for a receiving vector R=100001101111010110111.	12 Marks

(OR)

10.		What is Interleaving? Discuss about Block Interleave in communication.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January- 2017

OPTICAL COMMUNICATIONS AND NETWORKS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	With neat sketches, explain fiber-drawing apparatus and how fibers are made.	6 Marks
	b)	Write the roles of coating and jacketing.	6 Marks
		(OR)	
2.	a)	List the advantages of optical fiber system over conventional copper systems.	4 Marks
	b)	Calculate the numerical aperture of a plastic step-index fiber having a core refractive index of n_1=1.6 and a cladding index n_2=1.49.	4 Marks
	c)	Draw the structure of step-index fiber and explain how optical ray can propagate in it.	4 Marks

UNIT-II

3.	a)	Differentiate between splices and connectors.	5 Marks
	b)	What are the alignment techniques used while connecting two different optical fibers? Explain.	7 Marks
		(OR)	
4.	a)	Draw the schematic and explain elastic-tube splicing technique of fibers.	6 Marks
	b)	Mention principle requirements of a good connector design for optical fibers.	6 Marks

UNIT-III

5.		What is Lambertian pattern? Draw the hetero structure surface LED structure and explain the working principle.	12 Marks
		(OR)	
6.	a)	With neat sketches, explain the principle of operation of Mach-Zehnder Interferometer.	8 Marks
	b)	Compare stimulated emission and spontaneous emission.	4 Marks

UNIT-IV

7.		With neat sketch, explain Optical Coherent Receiver. List out the merits and demerits of a Coherent Detection Receiver.	12 Marks
		(OR)	
8.		Write short notes on different types of signal formats used in modulation.	12 Marks

UNIT-V

9.		Explain the concept of Synchronization. In a PPS network, how two pulse streams are aligned with Tunable Delays and Optical Phase Lock Loop? Explain in detail.	12 Marks
		(OR)	
10.		Explain in detail about fault Management in Optical Networks.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2017

REAL TIME SYSTEMS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Describe characterization of Real Time system Reference model. 12 Marks

(OR)

2. Contrast a good Real Time system Reference model to a bad model with examples. 12 Marks

UNIT-II

3. Outline the anomalous behavior of priority driven system using the following Task Model 12 Marks

	Ri	Di	[ei-,ei+]
J1	0	10	5
J2	0	10	[2,6]
J3	4	15	8
J4	0	20	10

Note: i) Jobs are scheduled on two identical processors.
ii) Jobs are pre-emptable but not migratable.
iii) Priority falls in the order of the jobs is **J1, J2, J3, J4**.

(OR)

4. Demonstrate EDF and LRT scheduling strategies with suitable examples. 12 Marks

UNIT-III

5. Explain hardware redundancy in detail. 12 Marks

(OR)

6. Describe distributed real time systems and their clock distribution. 12 Marks

UNIT-IV

7. State specification composition for processor reservation sent to resource kernel. 12 Marks

(OR)

8. Identify various Inter task communication mechanisms possible in Commercial RTOS. 12 Marks

UNIT-V

9. Draw and explain micro kernel architecture of QNX. 12 Marks

(OR)

10. Discuss Windows NT *vs.* UNIX for their portability in Real Time system design. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations August - 2017

LINEAR ALGEBRA

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Show that the set of vectors $S = \{(1, 2, 0), (0, 3, 1), (-1, 0, 1)\}$ in R^3 is linearly independent and express a vector $(x, y, z) \in R^3$ as a linear combination of the vectors in **S**. 6 Marks

b) Show that the equations $x + 2y - z = 3,\ 3x - y + 2z = 1,\ 2x - 2y + 3z = 2,\ x - y + z = -1$ are consistent and solve them. 6 Marks

(OR)

2 a) Show that the vector $\alpha = (2, -5, 3)$ in R^3 cannot be expressed as a linear combination of the vectors $e_1 = (1, -3, 2),\ e_2 = (2, -4, -1)$ and $e_3 = (1, -5, 7)$. Is the set $\{e_1, e_2, e_3\}$ linearly independent? Justify. 6 Marks

b) Solve the system of equations $3x - 7y + 2z = -7,\ -3x + 5y + z = 5,\ 6x - 4y = 2$ by LU factorization method. 6 Marks

UNIT-II

3 a) Let V be the vector space generated by the polynomials 6 Marks
$\alpha = x^3 + 2x^2 - 2x + 1,\ \beta = x^3 + 3x^2 - x + 4,\ \gamma = 2x^3 + x^2 - 7x - 7.$
Find a basis of V and its dimension.

b) In the vector space R^3 let $\alpha = (1, 2, 1),\ \beta = (3, 1, 5),\ \gamma = (3, -4, 5)$. 6 Marks
Show that the subspace spanned by $S = \{\alpha, \beta\}$ and $T = \{\alpha, \beta, \gamma\}$ are the same.

(OR)

4 a) The mapping $T : R^3 \to R^2$ is defined by $T(x, y, z) = (x - y, x - z)$. 6 Marks
Show that T is a linear transformation and find the null space of T.

b) Let $T : R^3 \to R^3$ be the linear transformation defined by 6 Marks
$T(x, y, z) = (x + 2y - z, y + z, x + y - 2z)$.
Find the basis for each of the range space of T. Also obtain the rank of T.

UNIT-III

5 a) Use the inner product on p2 defined by $\langle p, q \rangle = \int_0^1 p(x)\, q(x)\, dx$. 6 Marks

If $p(x) = x^2 - x + 1,\ q(x) = 3x - 1$ then find $\langle p, q \rangle, \langle p, p \rangle$ *and* $\langle q, q \rangle$.

b) Determine the given set of vectors $v_1 = \begin{bmatrix} -1 \\ 4 \\ -3 \end{bmatrix},\ v_2 = \begin{bmatrix} 5 \\ 2 \\ 1 \end{bmatrix},\ v_3 = \begin{bmatrix} 3 \\ -4 \\ -7 \end{bmatrix}$ are 6 Marks
orthogonal.

(OR)

6 a) Find the orthogonal projection of y onto u, where $y = \begin{bmatrix} 7 \\ 6 \end{bmatrix}$ *and* $v = \begin{bmatrix} 4 \\ 2 \end{bmatrix}$. 6 Marks

b) Apply Gram-Schmidt Process to basis B to find an orthonormal basis for $\mathbf{R}^4$, where $B = \{v_1, v_2, v_3\} = \left\{ \begin{bmatrix} -1 \\ 1 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} -1 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 0 \\ 1 \end{bmatrix} \right\}$. 6 Marks

UNIT-IV

7 a) Find the eigen value of A and a basis for each eigen space of the matrix $A = \begin{bmatrix} 5 & 0 \\ 2 & 1 \end{bmatrix}$. 6 Marks

b) Find a formula for $\mathbf{A^k}$, given that $A = PDP^{-1}$, *where* $A = \begin{bmatrix} 7 & 2 \\ -4 & 1 \end{bmatrix}$, $P = \begin{bmatrix} 1 & 1 \\ -1 & -2 \end{bmatrix}$, $D = \begin{bmatrix} 5 & 0 \\ 0 & 3 \end{bmatrix}$. *Also find* A^2. 6 Marks

(OR)

8 a) Find the nature of the quadratic form $x^2 + 2y^2 + z^2 + 4xy + 4yz$. 6 Marks

b) Find a singular value decomposition (SVD) of $A = \begin{bmatrix} 4 & 11 & 14 \\ 8 & 7 & -2 \end{bmatrix}$. 6 Marks

UNIT-V

9 a) Examine whether the signals 1^k, 2^k, $(-2)^k$ form a basis for the solution space of the difference equation $y_{k+3} - y_{k+2} - 4y_{k+1} + 4y_k = 0$. 6 Marks

b) Find the third-order Fourier approximation to the square wave function, $f(t) = 1$ for $0 \le t < \pi$ and $f(t) = -1$ for $\pi \le t < 2\pi$ on the interval $[0, 2\pi]$. 6 Marks

(OR)

10 The electric circuit described by the equation $\begin{bmatrix} i_L' \\ v_C' \end{bmatrix} = \begin{bmatrix} 0 & 1/L \\ -1/C & -1/RC \end{bmatrix} \begin{bmatrix} i_L \\ v_C' \end{bmatrix}$, where i_L is the current through the inductor L and v_C is the voltage drop across the capacitor C. Find formulas for i_L and v_C where R=0.5 ohms, C = 2.5 farads, L = 0.5 Henry the initial current is 0 amp and the initial voltage is 12 volts. 12 Marks

CODE No.:14MT16302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations August - 2017

WIRELESS NETWORKS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the key factors that contribute security problems in wireless networks?	8 Marks
	b)	Define LEACH protocol.	4 Marks
		(OR)	
2	a)	Write a short note on Dependent Probability.	6 Marks
	b)	What is Basic Queuing System?	6 Marks

UNIT-II

3	Write the short notes on:	
	i) Propagation Mechanisms.	4 Marks
	ii) Coherence Bandwidth.	4 Marks
	iii) Coherence Interference.	4 Marks
	(OR)	
4	Describe ARQ techniques in detail.	12 Marks

UNIT-III

5	What are the guidelines for providing a Contention Based Protocol (CBP) and explain operational description?	12 Marks
	(OR)	
6	What is analog modulation and state various techniques?	12 Marks

UNIT-IV

7	Explain in detail source initiated routing protocols for Ad-hoc networks.	12 Marks
	(OR)	
8	Explain the MAC layer challenges in wireless sensor network and find out the remedies to the challenges.	12 Marks

UNIT-V

9	a)	Compare the usefulness and limitations of WMANs, WLANs and WPANs.	6 Marks
	b)	How do you ensure that two adjacent piconets do not use the same frequency hopping sequence? Explain.	6 Marks
		(OR)	
10	a)	Do Bluetooth devices and household microwave ovens interfere? Explain.	6 Marks
	b)	Can you apply different ad-hoc network routing protocols to a scatternet? Explain clearly with suitable examples.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations January - 2017

POWER SYSTEM SECURITY AND STATE ESTIMATION

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Prove that when there is no mutual coupling, the diagonal and off diagonal elements of the Y_{BUS} matrix can be computed from $Y_{ii} = \sum_j Y_{ij}$ and $Y_{ii} = -Y_{ij}$ where Y_{ij} is the sum of the admittance of all the lines connecting buses i and j. 6 Marks

b) Impedances connected between various buses are as follows 6 Marks
$X_{10} = j2.5, X_{30} = j1.25, X_{12} = j0.5, X_{23} = j0.3, X_{31} = j1.25,$
where '0' is reference node. All the impedances are in pu. Determine bus impedance matrix for the network connecting above impedances.

(OR)

2 a) Write the step by step algorithm for formation of Z_{BUS}, containing mutual elements for adding a branch. 6 Marks

b) Compute the bus impedance matrix for the system shown in fig.1 by adding element by element take bus 2 as reference. 6 Marks

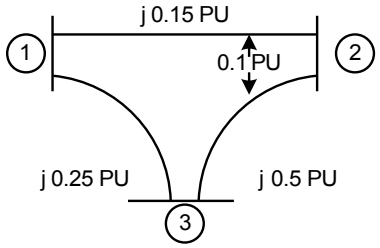

Fig.1

UNIT-II

3 a) Define the bus in power system and explain the types of buses and their significance. 6 Marks

b) Derive the static load flow equations in load flow studies. 6 Marks

(OR)

4 a) Compare and contrast various load flow methods used in power system studies. 6 Marks

b) Explain the Gauss- Siedel method of load flow solution. 6 Marks

UNIT-III

5 a) Explain the primitive network three phase representation of a component in impedance form and admittance form. 6 Marks

b) A synchronous generator of 50MVA, 13.8KV has sub transient reactance, negative sequence reactance and zero sequence reactance equal to j0.1, j0.1 and j0.08 respectively. If an LLG fault occurs at the terminals of the generator then find the fault current. 6 Marks

(OR)

6 a) Show that for a stationary element, the phase impedance matrix of a component is diagonalised using symmetrical component transformation. 6 Marks

b) A station with two generators shown in fig.2 feeds through transformers a transmission system operating at 132 KV. The far end of the transmission system consisting of 200 km long double circuit line is connected to load from bus B. If a 3-phase fault occurs at bus B, determine the total fault current and fault current supplied by each generator. Select 75 MVA and I1 KV on LV side and 132 KV on h.v. side as base values. 6 Marks

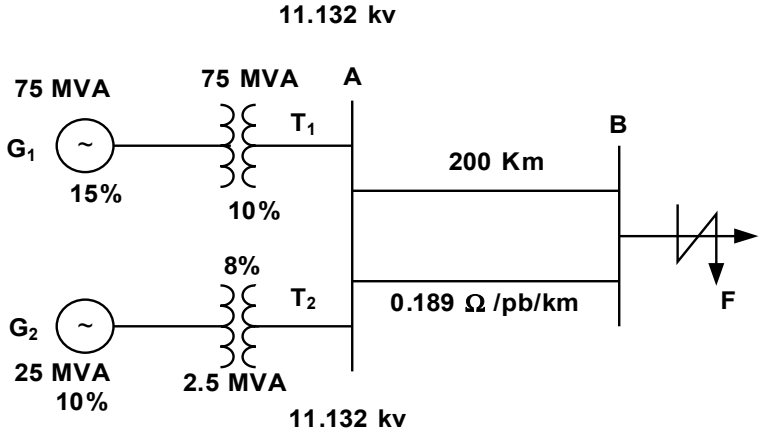

Fig.2

UNIT-IV

7 a) What is SCADA? 6 Marks

b) Explain the network sensitivity method of calculating line outage distribution factor. 6 Marks

(OR)

8 a) Discus in detail the factors effecting the power system security. 6 Marks

b) Explain the bounding algorithm in the contingency analysis with suitable examples. 6 Marks

UNIT-V

9 a) What is meant by state estimation? 6 Marks

b) Explain the method of least square in state estimation problem with a suitable example. 6 Marks

(OR)

10 a) What is the orthogonal decomposition algorithm? 6 Marks

b) What is the importance of bad measurement and describe how they detected? 6 Marks

CODE No.:14MT10702 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations January - 2017

STATIC AND DIGITAL PROTECTION OF POWER SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write down the advantages and disadvantages of numerical relays.	6 Marks
	b)	Discuss briefly about Mixing Circuits.	6 Marks
		(OR)	
2	a)	Draw and explain the block diagram of typical numerical relay.	6 Marks
	b)	Explain in detail the Level detectors.	6 Marks

UNIT-II

3		Describe the various types of coincidence type phase comparator with neat diagrams and wave forms.	12 Marks
		(OR)	
4		Briefly discuss the various types of static amplitude comparators.	12 Marks

UNIT-III

5	a)	Explain instantaneous over current relays with neat block diagram.	6 Marks
	b)	Write short notes on Static relay schemes.	6 Marks
		(OR)	
6	a)	Mention the significance of static differential relays and also analyze it briefly.	6 Marks
	b)	Explain the operation of time over current relays with neat block diagram.	6 Marks

UNIT-IV

7	a)	What is a Reactance relay? Realize the reactance relay using sampling comparator.	6 Marks
	b)	Explain the effect of Power swings and the performance of distance relays.	6 Marks
		(OR)	
8	a)	What is a Mho relay? Realize the Mho relay using sampling comparator.	6 Marks
	b)	Write short notes on Power swing analysis.	6 Marks

UNIT-V

9		Derive the generalized mathematical expression for distance relays for protection.	12 Marks
		(OR)	
10		Describe the realization of offset Mho characteristics using Microprocessor.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations January - 2017

ADVANCED POWER SYSTEM STABILITY ANALYSIS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out the major components of power system and explain the each one with help of neat diagram.	6 Marks
	b)	Discuss the factors that affect 'steady state stability' and 'transient stability' of the system.	6 Marks
		(OR)	
2		List out the types of system security states and explain the system operating states with help of block diagram.	12 Marks

UNIT-II

3	a)	Derive the state space model of a flux linkage system.	6 Marks
	b)	Explain the concept of dynamic stability and prove the power is invariant in the dynamic stability.	6 Marks
		(OR)	
4	a)	Derive equation of inductances for synchronous machine through for Parks transformation.	6 Marks
	b)	Explain the effect of excitation on dynamic stability.	6 Marks

UNIT-III

5	a)	With help of block diagram representation, derive the state equations from transfer functions.	6 Marks
	b)	Explain the voltage regulators with respect to excitation system.	6 Marks
		(OR)	
6		Discuss and obtain the state space representation and draw the block diagram for Type - 4 system.	12 Marks

UNIT-IV

7		Explain the effects of excitation on: i) Generator power limits ii) Transient stability	12 Marks
		(OR)	
8		Explain the model of Lag-Lead filter Type excitation system with neat block diagram and give its applications.	12 Marks

UNIT-V

9	a)	Explain the dynamics of Load restoration.	6 Marks
	b)	Briefly explain about the Integrated analysis of voltage and angle stability.	6 Marks
		(OR)	
10	a)	Explain the importance of Lyapunov function for single machine connected to infinite bus.	6 Marks
	b)	Explain the voltage stability using Zubov's method.	6 Marks

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CODE No.:14MT10704 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations January - 2017

POWER ELECTRONIC CONVERTERS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain reverse recovery characteristics of power diodes.	6 Marks
	b)	Explain briefly the different types of power diodes.	6 Marks
		(OR)	
2	a)	Draw and explain the steady state characteristics of n-p-n power BJT.	6 Marks
	b)	Draw and explain the switching characteristics of IGBT.	6 Marks

UNIT-II

3	a)	Realize 12-pulse converters using two 3-Φ full bridge rectifiers when connected in (i) series configuration; (ii) parallel configuration.	6 Marks
	b)	Explain about symmetric angle control of forced commutation circuit technique for power factor improvement.	6 Marks
		(OR)	
4	a)	What is the range of firing angle for a 3-Φ semi converter to operate as six-pulse converter? Explain its operation with highly inductive load.	8 Marks
	b)	A 3-Φ semi converter is operated from a 3-Φ, Y-connected, 208 V, 60 Hz supply and load resistance R = 10 Ω. If it is required to obtain an average output voltage of 50% of the maximum possible output voltage, calculate (i) the delay angle (ii) the input power factor.	4 Marks

UNIT-III

5	a)	Explain the operation of 1-Φ bidirectional AC voltage controller feeding R-L load.	6 Marks
	b)	A 1-Φ full wave AC voltage controller has a resistive load of 10 Ω and the input voltage is 120 V (rms), 60 Hz., the delay angles of thyristors T_1 and T_2 are equal $\alpha_1 = \alpha_2 = \alpha = 90°$. Determine (i) RMS output voltage (ii) the input PF.	6 Marks
		(OR)	
6	a)	Explain the operation of Δ-connected 3-Φ full wave AC voltage controller feeding resistive load.	8 Marks
	b)	Draw the power circuit of 3-Φ to 3-Φ cyclo converter and explain its basic operation.	4 Marks

UNIT-IV

7	a)	Derive the expressions for ripple current and ripple voltage for a buck converter in CCM. Also draw the power circuit and necessary waveforms.	8 Marks
	b)	The buck regulator has an input voltage of 12 V. The required average output voltage is 5 V at R = 500 Ω and the peak to peak output ripple voltage is 20 mV. The switching frequency is 25 KHz. If the peak to peak ripple current of inductor is limited to 0.8 A, determine the values of critical value of inductor.	4 Marks
		(OR)	

8	a)	Draw the various switching configurations of ZCS resonant converters. Also explain the operation of L - type ZCS resonant converter.	8 Marks
	b)	The boost regulator has an input voltage of 5 V. The average output voltage is 16 V and the average load current is 0.5 A. The switching frequency is 25 KHz. If L=160 μH, C = 220 μF, determine (i) the ripple current of inductor (ii) the ripple voltage of capacitor.	4 Marks

UNIT-V

9	a)	Explain the Multiple Pulse Width Modulation method of voltage control in 1-Φ inverters in detail.	6 Marks
	b)	Explain the third harmonic PWM method of voltage control in 3-Φ inverters.	6 Marks

(OR)

10	a)	Explain the modified sinusoidal PWM method of voltage control in 1-Φ inverters.	6 Marks
	b)	How a back to back inter-tie system can be formed using two diode clamped Multilevel inverters? Explain.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations January - 2017

DIGITAL COMMUNICATION TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Represent a narrow band pass signal with its low pass equivalent. Give the necessary expressions and give one example.	4 Marks
	b)	What is the difference between orthogonal signals and ortho-normal signals? Give one example of each.	4 Marks
	c)	Draw the Signal space diagram for M-ary PAM signal in general and show the effect of additive Gaussian noise in the diagram.	4 Marks

(OR)

2		By applying Gram-Schmidt procedure determine the ortho-normal basis functions for four signals given below: $S_i(t) = \sqrt{\frac{2E_s}{T_s}}\cos[2\pi f_c t + 0.5(i-1)\pi],\ 0 \le t \le T_s$ for $i = 1, 2, 3, 4$	12 Marks

UNIT-II

3	a)	Draw the constellation diagram for $\pi/4$ QPSK system.	6 Marks
	b)	Discuss the generation and detection techniques of DPSK system.	6 Marks

(OR)

4	a)	Represent the MSK signal in terms of Inphase component and Quadrature component. Compare these waveforms with offset QPSK.	6 Marks
	b)	Explain the power spectral characteristics of digital signals.	6 Marks

UNIT-III

5	a)	Derive the expression for the probability of error P_e in respect of QPSK modulation scheme.	6 Marks
	b)	Binary data are transmitted over a microwave link at the rate of 10^6 bits/s and the power spectral density of noise at the receiver input is 10^{-10} W/Hz. Find the average carrier power required to maintain an average probability of error $P_e \le 10^{-4}$ for (i) coherent PSK and (ii) DPSK.	6 Marks

(OR)

6	a)	Deduce the expression for optimum SNR at the output of a matched filter under AWGN conditions. Also prove that a correlator output will be same as that of matched filter if the input signal is a rectangular pulse.	6 Marks
	b)	The values of E_b / N_0 required to realize an average probability of error $P_e \le 10^{-4}$ using coherent BPSK and coherent BFSK systems are equal to 7.2 and 13.5 respectively. Using the approximation $erfc(u) \approx \frac{1}{u\sqrt{\pi}}\exp(-u^2)$ determine the separation in the values of E_b / N_0 for $P_e \le 10^{-4}$, using coherent BFSK and non coherent BFSK.	6 Marks

UNIT-IV

7	a)	Discuss about the slow and fast frequency hopping spread spectrum systems with suitable examples.	6 Marks
	b)	A PN sequence is generated by using a feedback shift register of length m = 4. The chip rate is 10^7 chips/sec. Find the following parameters: i) The PN sequence length. ii) Chip duration of the PN sequence. iii) PN sequence period.	6 Marks

(OR)

8	a)	Prove that the Auto Correlation Function (ACF) of maximal sequence is a two valued function. Justify your answer with a suitable example.	6 Marks
	b)	What are the different types of spread spectrum signals? Explain each of them with an example.	6 Marks

UNIT-V

9	a)	Discuss acquisition of signals by cell-by-cell searching.	6 Marks
	b)	Explain FH-CDMA acquisition and tracking with diagrams.	6 Marks

(OR)

10	a)	How matched filters can be used for receiving PN sequences?	6 Marks
	b)	Write brief note on delay-lock loop analysis.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations January - 2017

LINEAR ALGEBRA

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find all the solutions of the system of equations 6 Marks
$x_1 + 2x_2 - x_3 = 1,\ 3x_1 - 2x_2 + 2x_3 = 2,\ 7x_1 - 2x_2 + 3x_3$

b) Express **b** as a linear combination of $\mathbf{a}_1$ and $\mathbf{a}_2$, where 6 Marks

$$a_1 = \begin{bmatrix} 3 \\ 1 \\ -5 \end{bmatrix},\ a_2 = \begin{bmatrix} -2 \\ 0 \\ 4 \end{bmatrix} \text{ and } b = \begin{bmatrix} 8 \\ -6 \\ 3 \end{bmatrix}.$$

(OR)

2 a) Solve the following equations by using LU decomposition method 6 Marks
2x + y + 6z = 9, 8x + 3y + 2z = 13, x + 5y + z = 7.

b) 6 Marks
Are the set of vectors $\begin{bmatrix} 1 \\ 0 \\ -2 \end{bmatrix}, \begin{bmatrix} 3 \\ 2 \\ -4 \end{bmatrix}, \begin{bmatrix} -3 \\ -5 \\ 1 \end{bmatrix}$ are linearly dependent? If so, find the relation.

UNIT-II

3 a) Let W_1 and W_2 be two subspaces of R^4 given by $W_1 = \{(a, b, c, d): b - 2c + d = 0\}$, $W_2 = \{(a, b, c, d)/ a = d, b = 2c\}$. Find the basis and dimension of (i) W_1 (ii) W_2 (iii) $W_1 \cap W_2$. 6 Marks

b) Find the coordinates of $\alpha = (2, 1, 3)$ with respect to the ordered basis set $\{x, y, z\}$ of R^3 where $x = (1, 1, 1)$, $y = (-1, 1, 0)$, $z = (1, 0, -1)$. 6 Marks

(OR)

4 a) Find $T(x, y, z)$ where $T: R^3 \to R$ is defined by $T(1, 1, 1) = 3,\ T(0, 1, -2) = 1,\ T(0, 0, 1) = -2$. 6 Marks

b) Let $T: R^3 \to R^3$ be the linear transformation defined by $T(x, y, z) = (x + 2y - z, y + z, x + y - 2z)$. Find the basis for each of the range and null space of T. Also obtain the rank and nullity of T. 6 Marks

UNIT-III

5 a) Use the inner product on p^2 defined by $< p, q >= \int_0^1 p(x)\, q(x)\, dx$. 6 Marks
If $p(x) = x^2 - x + 1,\ q(x) = 3x - 1$ then find $< p, q >, < p, p >$ *and* $< q, q >$.

b) 6 Marks
Determine the given set of vectors $v_1 = \begin{bmatrix} -1 \\ 4 \\ -3 \end{bmatrix}, v_2 = \begin{bmatrix} 5 \\ 2 \\ 1 \end{bmatrix}, v_3 = \begin{bmatrix} 3 \\ -4 \\ -7 \end{bmatrix}$ are orthogonal.

(OR)

6 a) Find the orthogonal projection of **y** onto ***v***, where $y = \begin{bmatrix} 7 \\ 6 \end{bmatrix}$ *and* $v = \begin{bmatrix} 4 \\ 2 \end{bmatrix}$. 6 Marks

b) Apply Gram-Schmidt process to basis B to find an orthonormal basis for R^4, where 6 Marks

$$B = \{v_1, v_2, v_3\} = \left\{ \begin{bmatrix} -1 \\ 1 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} -1 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 0 \\ 1 \end{bmatrix} \right\}.$$

UNIT-IV

7 a) Given that the Eigen values of the matrix $A = \begin{bmatrix} 4 & 0 & 1 \\ -2 & 1 & 0 \\ -2 & 0 & 1 \end{bmatrix}$ are 1, 2, 3. Find a basis for the Eigen space corresponding to each Eigen value of A. 6 Marks

b) Let $T : R^3 \to V$ be a linear transformation defined by $T(x_1, x_2, x_3) = (x_3 - x_1)b_1 - (x_1 + x_3)b_2 + (x_1 - x_2)b_3$. Let $B_1 = \{e_1, e_2, e_3\}$ be the standard basis for R^3, $B_2 = \{b_1, b_2, b_3\}$ be a basis for a vector space V. Find the matrix for T relative to B_1 and B_2. 6 Marks

(OR)

8 a) Define a real quadratic form in three variables x_1, x_2, x_3 and express it in matrix form. Also find the nature of the quadratic form $4x_1x_2 + 6x_1x_3 - 8x_2x_3$. 6 Marks

b) Find a Singular Value Decomposition (SVD) of the matrix $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \\ -1 & 1 \end{bmatrix}$. 6 Marks

UNIT-V

9 a) Find a basis for the solution space of the difference equation $y_{k+2} - 7y_{k+1} + 12y_k = 0$. 6 Marks

b) Find the third-order Fourier approximation to $f(t) = t - 1$ on the interval $[0, 2\pi]$. 6 Marks

(OR)

10 The electric circuit described by the differential equation 12 Marks

$$\begin{bmatrix} v_1'(t) \\ v_2'(t) \end{bmatrix} = \begin{bmatrix} -(1/R_1 + 1/R_2)/C_1 & 1/(R_2C_1) \\ 1/(R_2C_2) & -1/(R_2C_2) \end{bmatrix} \begin{bmatrix} v_1(t) \\ v_2(t) \end{bmatrix},$$

where v_1(t) and v_2(t) are the voltages across the two capacitors at time t. Find formulas for the voltages v_1 and v_2 (as functions of time t), assuming that
$R_1 = 1/5$ *ohm*, $R_2 = 1/3$ *ohm*, $C_1 = 4$ *farads*, $C_2 = 3$ *farads*,
and the initial charge on each capacitor is 4 *volts*.

CODE No.:14MT16302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC14) Supplementary Examinations January - 2017

WIRELESS NETWORKS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the pros and cons of having different-size cells for wireless networking?	6 Marks
	b)	Explain about Cellular System Infrastructure.	6 Marks
		(OR)	
2		Given that the number of arrivals of data packet in the receiver follows a Poisson distribution on which arrival rate is 10 arrivals/sec. What is the probability that the number of arrivals is more than 8 but less than 11 during a time of interval of 2 seconds?	12 Marks

UNIT-II

3	a)	A BS has a 900MHz transmitter and a vehicle is moving at the speed of 50mph. Compute the received carrier frequency if the vehicle is moving (i) Directly toward the BS. (ii) Directly away from the BS. (iii) In a direction	6 Marks
	b)	What is Inter Symbol Interference? Does it affect the transmission rate of a digital channel? Explain clearly.	6 Marks
		(OR)	
4	a)	Why do you need both error correction capability and ARQ in a cellular system? Explain clearly.	6 Marks
	b)	What is an RSC code? Why these codes are called systematic?	6 Marks

UNIT-III

5	a)	What are relative advantages and disadvantages of persistent and non-persistent CSMA protocols? What makes you select one over the other? Explain.	6 Marks
	b)	Find the Walsh functions for 16-bit code.	6 Marks
		(OR)	
6	a)	A TDMA system uses a 270.833 kbps data rate to support eight users per frame. (i) What is the raw data rate provided for each user? (ii) If guard time and synchronization occupy 10.1 kbps, determine the traffic efficiency. (iii) If (7, 4) code is used for error handling, what is the overall efficiency?	6 Marks
	b)	Both I-TCP and M-TCP are split TCP approaches to improving the performance of wire line TCP over wireless networks. What is the difference between these two approaches?	6 Marks

UNIT-IV

7	a)	Explain the characteristics of MANET.	6 Marks
	b)	What are the design issues in sensor networks?	6 Marks
		(OR)	
8		What is the physical layer differences identified between the wireless PANS and MANS?	12 Marks

UNIT-V

9	Explain the MAC Mechanism of IEEE 802.11 WPAN.	12 Marks
	(OR)	
10	Write the short notes on the following:	
	i) WMAN.	4 Marks
	ii) WPAN.	4 Marks
	iii) Cognitive Radio.	4 Marks

CODE No.:16MT10702 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2017

HIGH VOLTAGE ENGINEERING

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain Streamer's theory of breakdown in air at atmospheric pressure in non-uniform fields — 12 Marks

(OR)

2. What is electro convection? Explain liquid breakdown based on electro convection. — 12 Marks

UNIT-II

3. Why is Cockroft- Wolton circuit is preferred for voltage multiplier circuit? Explain its working principle with schematic diagram. — 12 Marks

(OR)

4. a) Write a short note on Trigatron gap and oscillograph time sweep circuits. — 6 Marks
   b) Write a short note on generation of high impulse currents. — 6 Marks

UNIT-III

5. a) Explain the various effects that affect the spark over voltage of a sphere gap. — 6 Marks
   b) Explain the working principle of Chubb and Fortescue method for HVAC measurement. — 6 Marks

(OR)

6. Explain the construction and working principle of series resistance micro ammeter for HVDC measurement. — 12 Marks

UNIT-IV

7. Briefly explain the Dielectric loss and loss angle measurements using schering bridge. — 12 Marks

(OR)

8. Explain the various factors affecting the discharge detection. — 12 Marks

UNIT-V

9. What is the need of testing of electrical equipment? Explain in detail the testing of circuit breakers — 12 Marks

(OR)

10. Explain in detail the testing of ceramic insulators. — 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2017

POWER SYSTEM RELIABILITY

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Draw and explain the importance of Bath tub curve. Derive the relation between reliability and failure rate. 6 Marks

   b) The probability density function of a system is defined by: 6 Marks
   $f(t) = 3t^2/10^9$, where, $0 \le t \le 1000$ hr.
   i) Compute MTTF. ii) Find the design life for a reliability of 0.99.

(OR)

2. a) Define continuous distribution. What are the properties of continuous distribution? 6 Marks

   b) A coin is tossed 5 times, evaluate the probability of each possible outcome and draw the probability density function and probability distribution function. 6 Marks

UNIT-II

3. a) Define: i) Loss of load Expectation. ii) Loss of Energy Expectation. 6 Marks

   b) Prepare capacity outage probability table with cumulative probabilities for a four **50MW** units system with failure rate and repair rate of **0.4 r/yr** and **9.6 f/yr** respectively. Draw the state-space diagram. 6 Marks

(OR)

4. State and explain the recursive algorithm for identical capacity model for unit addition and removal with an example. 12 Marks

UNIT-III

5. a) Explain briefly frequency and mean duration of a single component repairable system. 6 Marks

   b) Develop the state-space model of a two component repairable system with identical components. 6 Marks

(OR)

6. a) Evaluate of cumulative probability and cumulative frequency of non-identical generating units. 8 Marks

   b) Describe the four components cumulative probability and cumulative frequency of a non-identical capacities and non-identical transition states. 4 Marks

UNIT-IV

7. Discuss the inclusion of weather effects in the transmission system reliability analysis. 12 Marks

(OR)

8. Explain how reliability is evaluated due to circuit breakers failures to operate and false breaker operations in radial distribution network using state space model. 12 Marks

UNIT-V

9. Explain the effects of open and short circuit failures in substations and switching stations 12 Marks

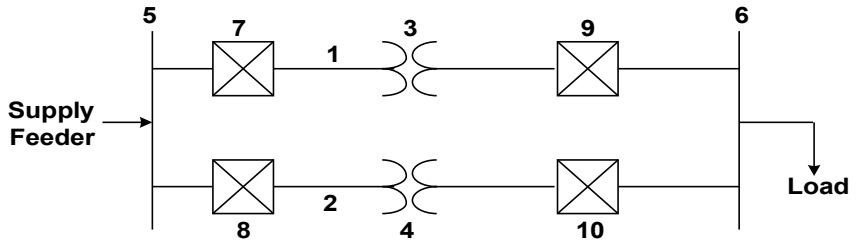
(OR)

10. A dual transformer single feeder network shown in figure in which elements 1, 2 are transmission lines; 3, 4 are transformers; 5, 6 are bus bars;7, 8, 9, 10 are circuit breakers. The reliability data for the system components are given in the table. Compute basic reliability indices of the system with: 12 Marks

i) No bus bar and circuit breaker failures

ii) Bus bar failures and no circuit breaker failures.

Using network reduction technique and FMEA.



Component	(f/yr)	r
1	0.5	10
2	0.5	10
3	0.01	100
4	0.01	100
5	0.01	5
6	0.02	2

CODE No.:16MT22504 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2017

SOFTWARE TESTING TECHNIQUES

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Illustrate the challenges faced by testers.	12 Marks
		(OR)	
2.		Why independent testing is required? Explain in detail.	12 Marks

UNIT-II

3.		Describe top-down approach for integration.	12 Marks
		(OR)	
4.	a)	Differentiate between integration testing and interface testing.	6 Marks
	b)	Describe bottom up approach for integration.	6 Marks

UNIT-III

5.		What are the roles and responsibilities of tester and test manager?	12 Marks
		(OR)	
6.		Describe the common mistakes, one should avoid while writing test case.	12 Marks

UNIT-IV

7.		Differentiate between process metrics and product metrics.	12 Marks
		(OR)	
8.		Explain bench marking concept. Why it is required and write the steps in benchmarking?	12 Marks

UNIT-V

9.		Explain the inspection procedure for the test plan execution.	12 Marks
		(OR)	
10.	a)	Describe the activities or tasks and responsibilities for developer tester in support of multilevel testing.	6 Marks
	b)	List the tasks that must be performed by the developer or tester during the preparation for unit testing.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2017

INFORMATION THEORY AND CODING TECHNIQUES

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

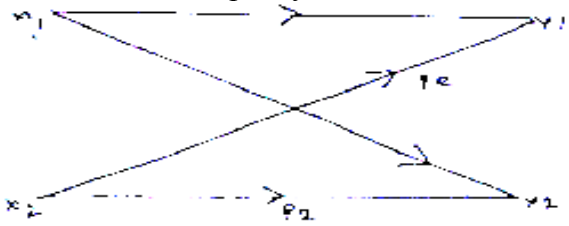
1. a) Define the terms: 6 Marks
   i) Entropy. ii) Average information. iii) Mutual information.
   b) Design a binary Huffman code for a discrete source of six independent symbols a, b, c, d, e, f with probabilities 0.4, 0.2, 0.1, 0.1, 0.1, 0.1 respectively. Determine average code length and efficiency of the code. 6 Marks

(OR)

2. A discrete memoryless source X has five symbols x_1, x_2, x_3, x_4 and x_5 with $p(x_1) = 0.4, p(x_2) = 0.19, p(x_3) = 0.16, p(x_4) = 0.15$ and $p(x_5) = 0.1$. 12 Marks
   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.

UNIT-II

3. a) Describe shannon's channel coding theorem for memory less channels. 6 Marks
   b) Compute the channel capacity of the BSC shown in figure. 6 Marks



(OR)

4. a) Derive the channel capacity of binary symmetric channel with a symbol transmission error probability 'p'. 6 Marks
   b) Explain about Noise free channel, noisy channel with non over lapping output, noisy channel with over lapping output. 6 Marks

UNIT-III

5. Design the decoder circuit diagram for (n, k) linear block code. 12 Marks

(OR)

6. The parity check matrix of a particular (6,3) block code is given as 12 Marks

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

i) Calculate all code words.
ii) Find the minimum distance between the code word
iii) How many errors can be detected and corrected
iv) Draw encoder diagram

UNIT-IV

7. Draw the Trellis diagram for a (2, 1) encoder with constraint length **k = 3**. Assume connection vectors g_1=111, g_2= 101. 12 Marks

(OR)

8. A rate 2/3 convolution code is described by g_1=[1011], g_2=[1101], g_3=[1010]. Construct the encoder, code tree, code trellis and state diagram corresponding to this code. 12 Marks

UNIT-V

9. Design a (7, 3) RS decoder for a receiving vector R=100001101111010110111. 12 Marks

(OR)

10. Discuss about MAP decoding algorithm. 12 Marks

CODE No.:16MT12501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

CLOUD COMPUTING

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Provide the sequence of steps involved in "execution of virtualization".	6 Marks
	b)	How Distributed Computing is distinguished with Cloud Computing?	6 Marks
		(OR)	
2.		Explain the Virtualization process in XEN architecture.	12 Marks

UNIT-II

3.		Give an account of communication protocols and relying applications.	12 Marks
		(OR)	
4.	a)	Briefly summarize the Cloud Computing Reference Model.	8 Marks
	b)	Give innovative characteristic of Cloud Computing and justify.	4 Marks

UNIT-III

5.	a)	Explain the Identity system Codes of Conduct.	6 Marks
	b)	Model the user authentication in IDaaS. Discuss with an example.	6 Marks
		(OR)	
6.	a)	Identify the role of interoperability feature in IDaaS.	6 Marks
	b)	Discuss how CRM functions as SaaS.	6 Marks

UNIT-IV

7.		Justify the responsibility of Data-Intensive Computing in Cloud programming.	12 Marks
		(OR)	
8.		What is workflow? What are the additional properties of application model with respect to an embarrassingly parallel application?	12 Marks

UNIT-V

9.	a)	What is Windows Azure? Describe the architecture of Windows Azure.	6 Marks
	b)	Discuss the Compute services offered by AppEngine.	6 Marks
		(OR)	
10.	a)	What is AppFabric and which services does it provide?	7 Marks
	b)	Interpret the storage services role in Windows Azure and choose the best service for web applications with a justification.	5 Marks

CODE No.:16MT13804 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

IMAGE AND VIDEO PROCESSING

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Discuss in detail the KLT transform with an example. 12 Marks

(OR)

2. Derive the Walsh transform kernel for N=8. 12 Marks

UNIT-II

3. a) Explain spatial filtering in image enhancement. 4 Marks
   b) Explain image enhancement in the frequency domain. 8 Marks

(OR)

4. a) What are the two approaches for blind image restoration? Explain in detail. 6 Marks
   b) Discuss about constrained least square restoration for a digital image in detail. 6 Marks

UNIT-III

5. Explain the segmentation techniques that are based on finding the regions directly. 12 Marks

(OR)

6. a) What is data redundancy? Explain three basic data redundancy. 6 Marks
   b) What is image compression? Explain any four variable length coding compression schemes. 6 Marks

UNIT-IV

7. Explain the process of scanning for analog video signal using a block diagram. 12 Marks

(OR)

8. Discuss time varying image formation model for analog video. 12 Marks

UNIT-V

9. Discuss motion compensated filtering used for video compression and explain in detail. 12 Marks

(OR)

10. Compare the features of filters used to remove noise in video signals. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

ADVANCED COMPUTER ARCHITECTURE

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss about trends in Power and Energy in Integrated Circuits.	8 Marks
	b)	Calculate the impact on Dynamic Energy and Dynamic Power if 15 % reduction in voltage results to 15% reduction in frequency.	4 Marks
		(OR)	
2.	a)	Explain briefly about the various Classes of Computers.	6 Marks
	b)	Write about Classes of Parallelism and Parallel Architectures.	6 Marks

UNIT-II

3.	a)	Write briefly about the Multi Vector and SIMD track architectures.	6 Marks
	b)	Illustrate the technology trends in Multistage Interconnection Networks with a neat sketch.	6 Marks
		(OR)	
4.	a)	Explain Demand-Driven mechanisms and give a comparison of Flow mechanisms.	6 Marks
	b)	Define the following Network properties: i) Node degree and Network diameter. ii) Data Routing functions. iii) Bisection width. iv) Permutations.	6 Marks

UNIT-III

5.	a)	Describe the application models of Parallel Computers.	6 Marks
	b)	Explain about **iso** efficiency and derive the expression for **iso** efficiency function.	6 Marks
		(OR)	
6.	a)	Derive expressions for system efficiency, redundancy and utilization.	4 Marks
	b)	What are the grand challenges for Massive Parallelism and explain how Massive Parallelism can be exploited?	8 Marks

UNIT-IV

7.	a)	Write briefly about multifunction arithmetic pipelines with suitable diagrams.	4 Marks
	b)	What are the Network characteristics for Multiprocessors? Describe the levels of Hierarchical bus system.	8 Marks
		(OR)	
8.	a)	Compare Synchronous and Asynchronous pipeline models.	6 Marks
	b)	Define Speedup, Efficiency and Throughput of a k-stage pipeline. Derive the relations for them.	6 Marks

UNIT-V

9.	a)	Describe the Computer Architecture of Warehouse Scale Computers.	6 Marks
	b)	Compute the average memory latency assuming that 90% of accesses are local to the server, 9% are outside the server but within the rack and 1% is outside the rack but within the array.	6 Marks

(OR)

10.	a)	Explain C/S- Access Memory Organization.	8 Marks
	b)	How long does it take to transfer 1000 MB between disks within the server, between servers in the rack and between servers in different racks in the array? How much faster is it to transfer 1000 MB between in the three cases?	4 Marks

CODE No.:16MT20502 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

BIG DATA ANALYTICS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Summarize the process of outlier detection and treatment. 12 Marks

(OR)

2. Discuss in detail about the types of Data elements. 12 Marks

UNIT-II

3. Why can't we use databases with lots of disks to do large-scale batch analysis? 12 Marks

(OR)

4. Describe Apache Hadoop and the Hadoop ecosystem. 12 Marks

UNIT-III

5. Sketch the Mapreduce data flow with a single reduce task and multiple reduce task. 12 Marks

(OR)

6. Explain in detail about analyzing the Data with Hadoop. 12 Marks

UNIT-IV

7. Discuss the process of Credit Risk Modeling. 12 Marks

(OR)

8. Write the importance of Web Analytics in the real world. 12 Marks

UNIT-V

9. Discuss how Support Vector Machines are work in real time applications. 12 Marks

(OR)

10. Explain in detail about Ensembling methods. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Enumerate the steps to model relationships with simple dependencies, single inheritance and structural relationships.	12 Marks
		(OR)	
2.	a)	What are the principles of modeling? Explain them in detail.	6 Marks
	b)	Explain the role of object oriented modeling in design.	6 Marks

UNIT-II

3.	a)	Enumerate the steps to model an operation.	6 Marks
	b)	Compare and contrast Action States and Activity States with suitable diagrams.	6 Marks
		(OR)	
4.	a)	Discuss in detail about Activity diagrams.	6 Marks
	b)	With the help of a suitable diagram, explain the modeling of flow of control by organization.	6 Marks

UNIT-III

5.	a)	How do you represent events and signals?	6 Marks
	b)	Illustrate state chart diagram with an example.	6 Marks
		(OR)	
6.	a)	Enumerate the steps to model an API.	6 Marks
	b)	Enumerate the steps to model the Processors and Devices.	6 Marks

UNIT-IV

7.		What is the need of iterative incremental development and explain?	12 Marks
		(OR)	
8.	a)	"Iterative approach is risk driven". Justify your statement.	6 Marks
	b)	Explain the process of capturing the use cases.	6 Marks

UNIT-V

9.		Explain in detail about the inception phase.	12 Marks
		(OR)	
10.	a)	Explain about iteration work flow execution.	6 Marks
	b)	Explain early phase in transition.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

MOBILE COMPUTING

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Summarize the functions of a Subscriber Identity Module (SIM).	6 Marks
	b)	Describe transparent and non-transparent data transmission. How does the FEC help in reducing the BER?	6 Marks
		(OR)	
2.	a)	Describe the services provided by a GSM system.	6 Marks
	b)	Explain how a mobile station connects to and talk with another mobile station.	6 Marks

UNIT-II

3.	a)	Why is the presumption that congestion is the major factor limiting the data flow not valid for mobile and wireless networks?	6 Marks
	b)	Write the differences in data flow control in mobile and fixed- line networks.	6 Marks
		(OR)	
4.		List and explain the types of tunneling and encapsulation in mobile IP.	12 Marks

UNIT-III

5.	a)	What are the advantages of hoarding data at the mobile device?	6 Marks
	b)	Describe the data caching architecture. Explain data cache maintenance in a mobile environment.	6 Marks
		(OR)	
6.	a)	Illustrate by diagram, how responses to the device request interleave along with pushed data.	6 Marks
	b)	Write the situations in which pull-based and push-based mechanism are preferred.	6 Marks

UNIT-IV

7.	a)	Compare the features of HotSync, ActiveSync and IntelliSync.	6 Marks
	b)	List the synchronization protocols and their data synchronization features.	6 Marks
		(OR)	
8.	a)	Explain the need for domain-dependent specific rules.	6 Marks
	b)	What are the differences between PIM server and personal area synchronizer? Give an example of each.	6 Marks

UNIT-V

9.	a)	Give an example of XML document which can be used as contacts in a mobile smart phone.	6 Marks
	b)	Write a snippet code for parses an XML file, get its contents in hash table and prints them.	6 Marks
		(OR)	
10.	a)	Write a client program to send an XML file to client.	6 Marks
	b)	Write a server program to receive an XML file from client.	6 Marks

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CODE No.:16MT20701 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

FLEXIBLE AC TRANSMISSION SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Derive the expression for real and reactive power flow between two nodes of a power system network.	12 Marks
		(OR)	
2.	a)	Discuss the need of reactive power control in electrical transmission.	7 Marks
	b)	Explain the transformer tap changer control in transmission networks.	5 Marks

UNIT-II

3.	a)	What are the objectives of shunt compensation? Explain how shunt compensation can improve dynamic performance of power system.	6 Marks
	b)	Draw the control scheme for STATCOM and explain.	6 Marks
		(OR)	
4.		Explain with neat circuit diagram about fixed capacitor-Thyristor Controlled Reactor (TCR).	12 Marks

UNIT-III

5.	a)	Describe the steps involved in modeling of TCSC.	6 Marks
	b)	Compare various types of static series compensators.	6 Marks
		(OR)	
6.		Describe the modes of operation of TCSC. Also explain how the TCSC can damp the power oscillations.	12 Marks

UNIT-IV

7.		Write the objectives of Voltage and Phase Angle Regulators. Explain the power flow control by Phase Angle Regulators.	12 Marks
		(OR)	
8.	a)	Explain the basic operating principle of UPFC.	8 Marks
	b)	Write the power flow control characteristics of UPFC compared to series compensators.	4 Marks

UNIT-V

9.		Using linear control techniques, explain the co-ordination of multiple controllers.	12 Marks
		(OR)	
10.		Describe in detail the power flow control co-ordination of FACTS.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

INTELLIGENT SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		What are self organizing maps? Explain the architecture and the training algorithm used for Kohonen's SOMs.	12 Marks
		(OR)	
2.		Develop Back propagation architecture and training algorithm in detail.	12 Marks

UNIT-II

3.	a)	What is fuzzy decision making? Mention the steps involved.	6 Marks
	b)	Explain different fuzzy membership functions with diagrams.	6 Marks
		(OR)	
4.		Develop the procedure for design of fuzzy control system with an example.	12 Marks

UNIT-III

5.		Discuss the following in detail: i) Roulette wheel selection. ii) Rank selection. iii) Boltzmann selection.	12 Marks
		(OR)	
6.		Explain various traditional optimization and search techniques in genetic algorithms.	12 Marks

UNIT-IV

7.		Give the difference between fuzzy systems and neuro-fuzzy systems.	12 Marks
		(OR)	
8.	a)	What is a hybrid system? Give its classification.	6 Marks
	b)	Discuss importance of fitness function in genetic algorithm.	6 Marks

UNIT-V

9.	a)	List out the similarities and differences between the biological ant colony system and the artificial ant colony system.	8 Marks
	b)	What are the different ways of pheromone trial updating?	4 Marks
		(OR)	
10.		Discuss the application of ant colony optimization technique in unit commitment problem.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

POWER SYSTEM STABILITY AND CONTROL

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Describe the effect of voltage regulator with one time lag with the help of neat block diagram. Derive the characteristic equation. 9 Marks
   b) Test the stability of voltage regulator with one time lag system using Routh Hurwitz criterion. 3 Marks

(OR)

2. a) Analyze the modes of oscillations of a three machine system. 8 Marks
   b) A synchronous machine having inertia constant H=4.0 MJ/MVA is initially operated in steady state against an infinite bus with angular displacement of 30 elec. deg and delivering 1.0 p.u. power. Find the natural frequency of oscillation for this machine, assuming small perturbations from the operation point. 4 Marks

UNIT-II

3. a) State the assumption made in stability studies. Explain briefly about Clarkes's and Park's Transformation in power system stability. 6 Marks
   b) A generator is supplying power to a load centre through a transmission line. The power output of the generator is increased slowly while maintaining the magnitudes of voltages V_1 and V_2 constants at 1.0 p.u. by manual control. Find the steady state stability limit of power that can be transmitted. Assume X_t=0.1, X_l=0.4, Z_T=j0.1, X_g=0.3. 6 Marks

(OR)

4. a) Using the Parks transformation, derive the transformation of inductances of synchronous machine. 6 Marks
   b) Explain the concept of dynamic stability and prove that the power is invariant in the dynamic stability. 6 Marks

UNIT-III

5. a) Describe the procedure to tune the best values for T_F and K_F to minimize the rise time and settling time with minimum overshoot. 6 Marks
   b) Explain the simplified view of excitation control with control configurations. 6 Marks

(OR)

6. With the help of a neat diagram, describe a non-continuous regulated system and derive a block diagram of control mode. 12 Marks

UNIT-IV

7. a) With neat block diagram, explain about Power System Stabilizer. 6 Marks
   b) Draw the simulated voltage response for Type-I excitation control system. 6 Marks

(OR)

8. a) With neat block diagram, discuss about linear system model for 9 Marks

synchronous machine with an exciter and power system stabilizers.

b) Describe the methods to design power system stabilizer parameters for power system stability enhancement. 3 Marks

UNIT-V

9. Review briefly Lyapunov's stability theorems of non-linear systems using energy concept. 12 Marks

(OR)

10. Construct Lyapunov function for single machine connected to infinite bus for stability studies. Comment on the stability of the system. 12 Marks

CODE No.:16MT20704 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

RESTRUCTURED POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Give the comparison of two different market structures with respect to ISO and also explain any one market structure in detail. 12 Marks

(OR)

2. What is market power? Explain the significance of market power on the operation of power market. 12 Marks

UNIT-II

3. What do the contractual arrangements mean in a restructured power system. Enlist some of the contractual arrangements. 12 Marks

(OR)

4. Explain forward market structure and elaborate how the market transactions are settled in day ahead forward market. 12 Marks

UNIT-III

5. Explain the various issues involved in evaluating the transfer capabilities of the transmission system and explain the steps involved in TRM and CBM calculations. 12 Marks

(OR)

6. Explain ATC and TTC. Also establish the relation between ATC and TTC. 12 Marks

UNIT-IV

7. Explain about forecasting errors and explain the different methods of analyzing forecasting errors. 12 Marks

(OR)

8. What are the various issues and challenges in pricing of electricity and explain in detail? 12 Marks

UNIT-V

9. What are the various generation balancing ancillary services required to maintain the security of a restructured power system? 12 Marks

(OR)

10. Explain, how SVCs and STATCOM implemented in providing the voltage control and reactive power ancillary service. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

STATIC AND DIGITAL PROTECTION OF POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Derive the generalized mathematical expression for two input amplitude comparator and also deduce the reactance, impedance and mho relay characteristics. 12 Marks

(OR)

2. a) Write the significance of mixing circuits in static relays. 6 Marks
   b) Discuss the following elements in the block diagram of a static relay. 6 Marks
   i) Converter element. ii) Measuring element. iii) Output element.

UNIT-II

3. a) Explain the importance of conic section characteristics. 3 Marks
   b) Design the three input amplitude comparator to obtain ellipse characteristics. 7 Marks
   c) Write the applications of multi input comparators. 2 Marks

(OR)

4. Discuss the principle of operation of integrating type phase comparator and also write applications. 12 Marks

UNIT-III

5. a) Distinguish the different types of over current relays and also discuss its applications. 6 Marks
   b) Explain definite time over current relay with neat block diagram. 6 Marks

(OR)

6. Develop the block diagram and detailed circuit of an inverse time over current relay and also discuss its applications. 12 Marks

UNIT-IV

7. a) What is an offset mho relay characteristic? Discuss how such a characteristic is realized. Discuss its field of applications. 6 Marks
   b) Discuss how an elliptical characteristic is realized using static comparators. 6 Marks

(OR)

8. a) Explain the realization of static mho relay characteristics using phase comparator. 8 Marks
   b) What is quadrilateral characteristic? In what way is it superior to other characteristics? 4 Marks

UNIT-V

9. How can numerical distance relaying algorithm be implemented on 8086 microprocessor? Explain with block diagram. 12 Marks

(OR)

10. a) Develop the suitable microprocessor based over current relay for protection against earth faults. 9 Marks
    b) What are the recent advances in microprocessor based numerical relays. 3 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

POWER QUALITY

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write the various IEEE and IEC power quality standards.	6 Marks
	b)	Discuss the importance of CBEMA and ITIC curves.	6 Marks
		(OR)	
2.	a)	What are the causes and types of impulsive transients?	6 Marks
	b)	Discuss in detail about sags, swells and interruptions.	6 Marks

UNIT-II

3.	a)	What is the need of locating harmonic sources?	6 Marks
	b)	How will you find the harmonic sources from point of common coupling? Give the identification procedure on the basis of voltage indices.	6 Marks
		(OR)	
4.	a)	What are the two indices used in power system? Explain briefly.	6 Marks
	b)	Give the power definitions under non sinusoidal conditions. Explain briefly about it.	6 Marks

UNIT-III

5.		What are the conventional methods for voltage regulation and explain about them in detail.	12 Marks
		(OR)	
6.		Enumerate various conventional voltage regulation devices and explain briefly.	12 Marks

UNIT-IV

7.		What are the various instruments used for power quality measurements? State the factors to be considered while selecting the instruments for power quality measurement.	12 Marks
		(OR)	
8.	a)	Briefly explain the spectrum analyser and harmonic analyser.	5 Marks
	b)	With neat sketch, explain the operation of Flicker meters.	7 Marks

UNIT-V

9.		Explain the operation of a DVR with a neat circuit diagram.	12 Marks
		(OR)	
10.	a)	List the power quality issuess affected by distributed generation.	6 Marks
	b)	Briefly explain voltage sag mitigation techniques with necessary circuit diagrams.	6 Marks

CODE No.:16MT22501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

BIG DATA TECHNOLOGIES

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Describe Hadoop Distributed File System concepts. 12 Marks

(OR)

2. How big data analysis helps businesses increase their revenue? Give example. 12 Marks

UNIT-II

3. Explain Hadoop I/O Concepts. 12 Marks

(OR)

4. Why Hadoop I/O is important? Justify your answer. 12 Marks

UNIT-III

5. Sketch in detail Hadoop Cluster configuration, installation and setup. 12 Marks

(OR)

6. List and explain MapReduce Library Classes. 12 Marks

UNIT-IV

7. Discuss in detail about features of Zookeeper tool. 12 Marks

(OR)

8. Explain about the different catalog tables in HBase. 12 Marks

UNIT-V

9. Discriminate Pig *vs.* Java Languages. 12 Marks

(OR)

10. List and explain the features of Hadoop Ecosystem. 12 Marks

CODE No.:16MT22502 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

SERVICE ORIENTED ARCHITECTURE

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Discuss the baseline technology architecture of SOA that is supported by major vendor platforms. 12 Marks

(OR)

2. a) Draw the basic structure of UDDI business entity record and discuss the elements in it. 6 Marks
   b) Categorize the SOA registry and discuss how the advertisement and discovery is possible with service descriptions. 6 Marks

UNIT-II

3. List out the Message Exchange Patterns (MEP) in SOA and describe briefly. 12 Marks

(OR)

4. Describe the business activities and Choreography in contemporary SOA with the suitable case study. 12 Marks

UNIT-III

5. Discuss the anatomy of service-oriented architecture. 12 Marks

(OR)

6. Draw and describe the basic phases of the SOA delivery life cycle. 12 Marks

UNIT-IV

7. Transit Line Systems (TLS) outsources a number of its employees on a contract basis to perform various types of specialized maintenance jobs. When these employees fill out their weekly time sheets, they are required to identify what portions of their time were spent at customer sites. Currently, the amount of time for which a customer is billed is determined by an A/R clerk manually entering hours from an appointment schedule. Decompose the above business process and develop with the help of entity centric services. 12 Marks

(OR)

8. Draw the block diagram of Service Oriented Enterprise model and discuss the individual blocks. 12 Marks

UNIT-V

9. Draw and discuss the step-by-step process of entity centric business service design. 12 Marks

(OR)

10. Draw and describe the step-by-step process of service oriented business process. 12 Marks

CODE No.:16MT22503 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Define pattern systems. Classify the pattern and its problem categories with the help of classification schema. 12 Marks

(OR)

2. Describe the detail procedure for selecting a specific pattern. 12 Marks

UNIT-II

3. a) What are the uses of architecture documentation? 4 Marks
   b) Explain seven parts of a document view. 8 Marks

(OR)

4. Attribute Driven Design (ADD) provides one method for "chunking" requirements. What other chunking methods are there for decomposition design strategy? Why can't all requirements be satisfied with a single decomposition? 12 Marks

UNIT-III

5. a) Explain responsibilities and characteristics of participants of ATAM. 8 Marks
   b) What are the outputs of ATAM? 4 Marks

(OR)

6. List and explain the issues that make the software product line difficult. 12 Marks

UNIT-IV

7. Write in detail about the catalog of design patterns. Briefly discuss about the builder. 12 Marks

(OR)

8. Write the following for the builder pattern. 12 Marks
   i) Intent. ii) Motivation.
   iii) Consequences. iv) Sample Code.

UNIT-V

9. a) Implement a Java Program for adapter design pattern. 5 Marks
   b) Explain intent, motivation, applicability and structure iterator pattern. 7 Marks

(OR)

10. Write a short note on decorator pattern. When can we use decorator pattern? Explain with example. 12 Marks

CODE No.:16MT22504 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

SOFTWARE TESTING TECHNIQUES

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the evolution of software testing from debugging to prevention based testing. 12 Marks

(OR)

2. Which skills are expected in a good tester? 12 Marks

UNIT-II

3. Analyze the factors affecting criticality of the system from acceptance point of view. 12 Marks

(OR)

4. Describe process of client server testing. 12 Marks

UNIT-III

5. Why test processes need improvement and elaborate on problems related to testing process? 12 Marks

(OR)

6. What are the roles and responsibilities of tester and test manager? 12 Marks

UNIT-IV

7. Write elaborately on defect removal efficiency and review efficiency. 12 Marks

(OR)

8. Explain test case efficiency and team efficiency concept with an example. 12 Marks

UNIT-V

9. Write about the process model for automation and challenges in automation. 12 Marks

(OR)

10. Explain design and challenges in automation testing. 12 Marks

CODE No.:16MT22505 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

WEB TECHNOLOGIES

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) List the various CSS selectors with neat syntax. 6 Marks
   b) List the advantages of external styles. Create an external CSS file with a set of styles including fonts, colors, backgrounds and element positioning. 6 Marks

(OR)

2. Explain the following HTML tags with suitable example. 12 Marks
   i) **<font>** ii) **<meta>** iii) **<p>** iv) **<video>**

UNIT-II

3. a) Write a ***Javascript*** that reads six integers and displays the largest and smallest integers from the given integers. 6 Marks
   b) Explain the pre-defined objects of ***Javascript***. 6 Marks

(OR)

4. a) Write a ***Javascript*** code to move an image left and right directions by clicking the left and right buttons respectively. 6 Marks
   b) Write a ***JQuery*** code that allows user-defined selector for selecting HTML elements. 6 Marks

UNIT-III

5. Design a PHP page to convert Indian Rupees to Foreign Currency. 12 Marks

(OR)

6. Write a PHP application to display vehicle properties by considering the following scenario: Bike would be a superclass and MountainBike and Tricycle would be subclasses of the superclass. Both subclasses inherit the methods and properties of the superclass (for example, wheels). Each subclass also has its own properties and methods that extend the superclass (For example, the MountainBike subclass would have gears, knobby tires, etc.). Use appropriate method to display vehicle properties. 12 Marks

UNIT-IV

7. Design a PHP page that reads user details from the registration form and store user information into a MySQL database. 12 Marks

(OR)

8. Design a PHP page that reads user details like name, id, gender, date of birth, address, phone no. and email id. and then store the same into a database. 12 Marks

UNIT-V

9. a) List the various XMLHttpRequest object properties with neat syntax. 6 Marks
   b) List the various XMLHttpRequest object methods with neat syntax. 6 Marks

(OR)

10. Explain with a code to read a file asynchronously using AJAX. 12 Marks

CODE No.:16MT22506 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

SOFTWARE PROCESS AND PROJECT MANAGEMENT

[Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Write the features of a project plan with an example. 12 Marks

(OR)

2. Contrast between defined and optimized levels with suitable examples. 12 Marks

UNIT-II

3. Explain the activities in defect prevention stage. 12 Marks

(OR)

4. How to automate the process? Explain. 12 Marks

UNIT-III

5. List the activities of waterfall process model with demerits. 12 Marks

(OR)

6. Explain the activities in engineering and production stages. 12 Marks

UNIT-IV

7. Contrast between software architecture team and development team activities. 12 Marks

(OR)

8. How to optimize the software process? Explain. 12 Marks

UNIT-V

9. List the activities of modern project profiles. 12 Marks

(OR)

10. Estimate the project management issues in modern project profiles. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

DETECTION AND ESTIMATION OF SIGNALS

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain Bayes decision rule. Determine the Bayes decision rule associated with the following conditional probabilities: 12 Marks

$\mathbf{p\{z/m_1\}= \frac{1}{2}\, e^{-|z|}}$

$\mathbf{p\{z/m_2\}= e^{-2|z|}}$

The costs are given by $\mathbf{C_{11}= C_{22}=0,\ C_{12}=1,\ C_{11}=2}$ and $\mathbf{P\{m_2\}=0.75}$

(OR)

2. Write in detail about Neymen-Pearson criterion for Radar detection of variable amplitude signals. 12 Marks

UNIT-II

3. a) If a signal set is $S_1(t) = \sqrt{E}\,\Pi_1(t)$ and $S_2(t) = \sqrt{E_2}\,\Pi_2(t)$. Design a matched filter. Find the probability of error as a function of $P\{m_1\}$. 6 Marks

b) State the properties of Matched filters. 6 Marks

(OR)

4. A simple binary decision problem has a two-dimensional signal space and a two-dimensional observation space. The signal vectors are $S_1=\begin{bmatrix}1\\0\end{bmatrix}$ $S_2=\begin{bmatrix}0\\1\end{bmatrix}$ 12 Marks

The observation vector is just the sum of signal vector and noise vector **z=s+n.** The noise vector is Gaussian with $\mathbf{E\{n_1\}= E\{n_2\}=0}$, $\mathbf{var\{n_1\}= var\{n_2\}=1}$. Sketch the signal space representation of the signals.

UNIT-III

5. Derive the expression for Linear minimum variance estimation depends on the first and second order moments. 12 Marks

(OR)

6. a) Consider a signal 'S' received in Gaussian noise. The signal is uniformly distributed between $-\mathbf{S_m}$ and $\mathbf{S_m}$. Estimate S, using one sample $\mathbf{x_1=s+n_1}$. 5 Marks

b) Consider that a message has probability density $P(\theta)=\begin{cases}1.....0 \le \theta \le 1\\ 0.....elsewhere\end{cases}$ and 7 Marks

the observation $Z= \ln\frac{1}{\theta} + n$, where the noise n has the probability density

$$p(n)= \begin{cases} e^{-n}.....n \ge 0\\ 0.....n \le 0\end{cases}$$

Find the Conditional mean estimate.

UNIT-IV

7. Define and explain the following terms with respect to estimators. 12 Marks
   i) Bias ii) Bound iii) Sensitivity

(OR)

8. Formulate Cramer-Rao bound and derive the necessary relation for bound. 12 Marks

UNIT-V

9. Consider the message and observation models for the system $\mathbf{x(t)= -x(t)+w(t),}$ $\mathbf{z(t) = A\ cos[w_0t+0.5x(t)] + v(t)}$. The input **w(t)** is zero mean, white with unity variance and **v(t)** is observation noise. Obtain Kalman filter algorithm. 12 Marks

(OR)

10. a) Distinguish the terms prediction, filtering and smoothing with reference to estimator. 6 Marks

    b) Obtain the maximum likelihood estimation for exponential families. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

EMBEDDED SYSTEM DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Contrast microprocessors, microcontrollers to digital signal processors with examples. 12 Marks

(OR)

2. a) List out embedded computing system design challenges. 6 Marks
   b) Discuss the features of a typical embedded system. 6 Marks

UNIT-II

3. Define memory map and discuss memory choice for embedded systems. 12 Marks

(OR)

4. Distinguish round robin with function queue scheduling software architectures. 12 Marks

UNIT-III

5. Demonstrate object oriented programming for embedded systems with an example. 12 Marks

(OR)

6. Discuss following constructs: 12 Marks
   i) Statements ii) Loops and Pointers.

UNIT-IV

7. Contrast preemptive to non-preemptive scheduling strategies with pros and cons of each technique. 12 Marks

(OR)

8. Contrast various scheduling policies with examples. 12 Marks

UNIT-V

9. Describe the role of host computer in programming target. Discuss various methods available to download software on to target. 12 Marks

(OR)

10. Discuss embedded architectural design in detail. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

INFORMATION THEORY AND CODING TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Compute the efficiency of Huffman coder having the messages with probabilities are 0.36, 0.14, 0.13, 0.15, 0.10, 0.09, 0.04 and 0.02. 6 Marks

   b) Consider the set of all densities with fixed pair wise marginals $f_{X1,\ X2}(x_1,\ x_2)$, $f_{X2,\ X3}(x_2,\ x_3)$,……$f_{Xn-1,Xn}(x_{n-1},x_n)$. Show that maximum entropy process with these marginals is the first order Markov process with these marginals. 6 Marks

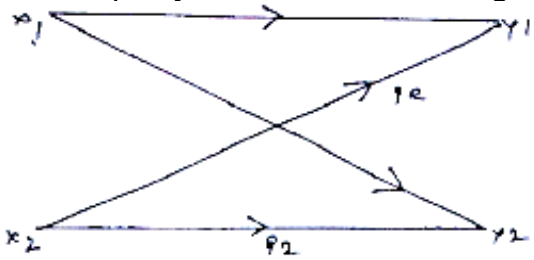
(OR)

2. Write a short notes on: 12 Marks
   i) Kraft's inequality. ii) Markov sources. iii) Optimal codes.

UNIT-II

3. a) Describe Shannon's channel coding theorem for memory less channels. 6 Marks

   b) Compute the channel capacity of the BSC shown in figure 6 Marks



(OR)

4. Derive Shannon's second theorem. 12 Marks

UNIT-III

5. The parity check matrix of a particular (6,3) block code is given as 12 Marks

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

   i) Calculate all code words.
   ii) Find the minimum distance between the code word.
   iii) How many errors can be detected and corrected?
   iv) Draw encoder diagram.
   vi) Suppose that the received code word is 110110, decode this code word.

(OR)

6. Consider a (7,4) code whose generator matrix is 12 Marks

$$G = \left[\begin{array}{cccccccc} 1 & 1 & 0 & : & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & : & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & : & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & : & 0 & 0 & 0 & 1 \end{array}\right]$$

i) Compute all code words of code.
ii) Develop parity matrix check matrix of the code.
iii) Compute the syndrome for the received vector 1101101.
iv) Construct error detecting circuit.

UNIT-IV

7. a) Explain the Viterbi algorithm with an example. 8 Marks
   b) Describe clearly the characteristics of BCH code. 4 Marks

(OR)

8. a) Explain the convolution encodes with constraint length K and rate K/n. 6 Marks
   b) Explain the sequential decoding algorithm with an example. 6 Marks

UNIT-V

9. Design a (7, 3) RS decoder for a receiving vector 12 Marks
R=100001101111010110111.

(OR)

10. What is Interleaving? Discuss about Block Interleave in communication. 12 Marks

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

LOW POWER CMOS VLSI DESIGN

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. For the assessment of short-circuit current in CMOS circuit with usual notations, derive an expression for short circuit power dissipation in a CMOS inverter. Discuss the techniques to minimize the power dissipation. 12 Marks

(OR)

2. Derive an expression for short circuit dissipation and dynamic dissipation of a CMOS inverter. 12 Marks

UNIT-II

3. Briefly discuss in detail about the following terms : 12 Marks
   i) SPICE Basics. ii) Spice Power analysis.

(OR)

4. Explain about the modeling and analysis of a transistor using SPICE. 12 Marks

UNIT-III

5. Write a short note on pre computation logic and explain in detail about latch based pre computation architecture. 12 Marks

(OR)

6. a) Discuss logic encoding. 6 Marks
   b) Discuss the switching activity reduction techniques in CMOS digital systems. 6 Marks

UNIT-IV

7. What is delay balancing? Explain in detail about delay balancing with an example. 12 Marks

(OR)

8. Define charge recycling bus and draw the driver circuit implementation of charge recycling bus and explain. 12 Marks

UNIT-V

9. Explain "guarded evaluation" technique to reduce the switching activities and "multiplexing" to reduce hardware resources. 12 Marks

(OR)

10. Draw the block diagram of adaptive performance management by voltage control and explain. 12 Marks

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

WIRELESS COMMUNICATIONS

[Digital Electronics and Communication Systems, Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Interpret the Doppler shift.	6 Marks
	b)	Give examples for wireless communication systems and describe any two of them.	6 Marks

(OR)

2.	a)	Explain how a cellular telephone call is made in cellular systems.	6 Marks
	b)	A hexagonal cell within a four-cell system has a radius of 1.387km. A total of 60 channels are used within the entire system. If the load per user is 0.029 Erlangs and lamda=1cal/hr, compute the number of users per square kilometer that the system supports for an Erlang C system that has 5% probability of a delayed call.	6 Marks

UNIT-II

3.	a)	Derive the impulse response model of a multipath channel.	6 Marks
	b)	Determine the proper spatial sampling interval required to make small-scale propagation in measurements which assume that consecutive samples are highly correlated in time. How many samples will be required over 10m travel distance if f_c**=1900MHz** and v**=50m/s**? How long would it take to make these measurements, assuming they could be made in real time from a moving vehicle? What is the Doppler spread BD for the channel?	6 Marks

(OR)

4.		Determine the time domain fading waveform using Clarke's.	12 Marks

UNIT-III

5.		Briefly explain algorithms for adaptive equalization.	12 Marks

(OR)

6.		Give a short note on: i) Decision feedback equalization. ii) Maximum likelihood symbol detection. iii) Maximum likelihood sequence estimation.	12 Marks

UNIT-IV

7.		Define capacity of cellular systems. Find the capacity of Cellular TDMA, CDMA and SDMA. What are the features and nonlinear effects available in FDMA system.	12 Marks

(OR)

8.	a)	Give a detailed analysis of design of SDMA.	6 Marks
	b)	Compare Narrowband systems with Wideband systems.	4 Marks
	c)	If Bt is 12.5 MHz, Bguard is 10 kHz and Bc is 30 kHz, find the number of channels available in an FDMA system.	2 Marks

UNIT-V

9.	Design and explain the operation of a Multicarrier transmitter and receiver.	12 Marks

(OR)

10.	With a neat block diagram, show the process of orthogonal frequency division multiplexing.	12 Marks

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

OPTICAL COMMUNICATIONS AND NETWORKS

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Draw the schematic of a fiber-drawing apparatus and explain how fibers are made.	6 Marks
	b)	Define the following terms with respect to optical fiber cable: i) allowable axial load. ii) fiber brittleness. iii) jacket.	6 Marks
		(OR)	
2.	a)	What is dispersion? Distinguish between linear and nonlinear dispersions.	6 Marks
	b)	Discuss in detail about stimulated Brillouin and Raman scattering techniques.	6 Marks

UNIT-II

3.		Mention various design objectives of fibers. Also list the design directions to be considered.	12 Marks
		(OR)	
4.	a)	Explain the different splices with neat sketches.	6 Marks
	b)	Write a short note on measurement of splicing effects.	6 Marks

UNIT-III

5.		Differentiate between various photodiodes with respect to their internal and external quantum efficiencies.	12 Marks
		(OR)	
6.		Describe briefly the functioning and applications of the following optical components in fiber optic links and networks. i) Optical Isolators. ii) Optical switches. iii) Optical circulators.	12 Marks

UNIT-IV

7.	a)	Distinguish between direct detection and coherent detection processes. Describe the features of a typical coherent receiver.	6 Marks
	b)	List out and differentiate between the different types of modulation schemes used for optical fiber transmission and comment on the scrambling format.	6 Marks
		(OR)	
8.		With neat sketch, explain Optical Coherent Receiver. List out the merits and demerits of a Coherent Detection Receiver.	12 Marks

UNIT-V

9.		Discuss the role of Information model and Management Protocols in Optical Networks.	12 Marks
		(OR)	
10.		With a neat sketch, explain OTDM Multiplexing.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

LOW POWER VLSI DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain how CMOS and ECL technologies can be integrated using Bi-CMOS technology. 12 Marks

(OR)

2. Summarize the limitations of various parameters and constraints with respect to low-power low-voltage design of circuits pertaining to VLSI. 12 Marks

UNIT-II

3. Derive the procedure to get low capacitance in Bipolar / Bi-CMOS process. Explain with diagrams. 12 Marks

(OR)

4. Differentiate between CMOS and Bi-CMOS process. 12 Marks

UNIT-III

5. Illustrate and decipher Bootstrapped-Type Bi-CMOS digital circuits. 12 Marks

(OR)

6. Explain the different types of power dissipation in CMOS logic. 12 Marks

UNIT-IV

7. Conclude: 12 Marks
   i) Optimization theme. ii) Performance theme.
   iii) Pipeline theme. iv) High performance and low power theme.

(OR)

8. Discuss in detail about the quality measures for latches. 12 Marks

UNIT-V

9. Illustrate Low Power Bus. 12 Marks

(OR)

10. Write short notes on Power Reduction in Clock Networks. 12 Marks

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

MIXED SIGNAL DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain the operation and analysis of first order active RC filter.	12 Marks
		(OR)	
2.	a)	Discuss about mixed signal issues in CMOS technology.	7 Marks
	b)	What is KT/C noise? Estimate the appropriate techniques to reduce this noise.	5 Marks

UNIT-II

3.		Briefly describe about the operation of Phase/Frequency detector.	12 Marks
		(OR)	
4.		Define charge pump. Explain in detail about the operations of basic charge pump PLL.	12 Marks

UNIT-III

5.	a)	Define the terms as referred to data converters: i) Offset and gain error ii) INL error iii) DNL error	7 Marks
	b)	Compare the performance of different types of D/A converters.	5 Marks
		(OR)	
6.	a)	List the Nyquist rate D/A converters.	4 Marks
	b)	Explain about decoder based converters.	8 Marks

UNIT-IV

7.		Explain about a four channel time interleaved A/D converter.	12 Marks
		(OR)	
8.	a)	Briefly explain about clocked CMOS comparator.	3 Marks
	b)	Discuss about bubble error removal in flash converters.	9 Marks

UNIT-V

9.		Give a brief description on delta sigma modulators with multi bit quantizer.	12 Marks
		(OR)	
10.		Explain in detail the noise shaped delta sigma modulator.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

NANOELECTRONICS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Derive Schrödinger wave equation for particle in one dimensional box. 12 Marks

(OR)

2. a) Construct your opinion on the characteristics of classical waves. 6 Marks
   b) Draw out the three types of solutions of the Schrödinger equation for a one-dimensional well of arbitrary form. 6 Marks

UNIT-II

3. a) Find out the indices of the direction joining following points in a cubic lattice: (i) 1,1,1 with 1,1,2 (ii) -1,1,1 with -3, 2, 1 (iii) 1,1,2 with 3,2,-1. 4 Marks
   b) Find out from handbook the melting points of metals in the 4^{th} row of the periodic table (K-Zn). Which has the highest melting point? Explain this in terms of their electronic configurations. 8 Marks

(OR)

4. a) Draw the planes with the Miller indices (112), (110) and (121). What are the intersection points with the x, y and z axes? 4 Marks
   b) Determine the maximum radius of a sphere which can be placed into a body-centered cubic structure without affecting the positions of the other spheres. 8 Marks

UNIT-III

5. a) Explain the Czochralski method of growth of bulk semiconductors. 6 Marks
   b) Differentiate the various types in nanostructures characterization. 6 Marks

(OR)

6. a) Sum up briefly other means for fabrication of nanostructures. 6 Marks
   b) What is Nano imprint lithography? Discuss the process with its significant steps. 6 Marks

UNIT-IV

7. a) Summarize the characteristics of dimensional quantization and low-dimensional structures. 10 Marks
   b) Define effective-mass approximation. 2 Marks

(OR)

8. a) Draw the mathematical expression for lowest energy value in the second sub band of quantum well. 6 Marks
   b) For an electron in the ground state in a quantum well with infinite barriers, find the probabilities of finding the electron in the central region with coordinates $\boldsymbol{Lx/4 \le x \le 3Lx/4}$ and in the peripheral regions with coordinates $\boldsymbol{0 \le x \le Lx/4}$ and $\boldsymbol{3Lx/4 \le x \le Lx}$, if the width of the quantum well is equal to $\boldsymbol{Lx}$. The central and peripheral regions are of the same width, which is equal to $\boldsymbol{Lx/2}$. 6 Marks

UNIT-V

9. a) Extend the idea of Coulomb blockade based devices from SET to next level of devices. 6 Marks

   b) Clarify the difference in operating principle of the quantum cascade laser. 6 Marks

(OR)

10. a) Explain the structure and electronic band diagram of metallic and semiconducting carbon Nanotubes. 8 Marks

    b) Explain in brief about the applications of SET in the fields of sensor technology, digital electronic circuits and mass storage. 4 Marks

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

PHYSICAL DESIGN AUTOMATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Develop an algorithm for Dijkstra's shortest-path in directed graph model and explain with an example.	12 Marks
		(OR)	
2.	a)	Formulate and illustrate an algorithm for an exhaustive search by means of back tracking.	7 Marks
	b)	List out the three ways of verification methods before fabrication process.	5 Marks

UNIT-II

3.	a)	Explain the concept of shape functions and floor plan sizing of an IC.	8 Marks
	b)	Illustrate the local and global routing with an example.	4 Marks
		(OR)	
4.	a)	Explain about the Liao-Wong algorithm.	7 Marks
	b)	Evaluate the Wire-Length estimation for placement.	5 Marks

UNIT-III

5.	a)	Verify a pseudo-code for switch level simulation algorithm.	7 Marks
	b)	Explain about ROBDD manipulation with an example.	5 Marks
		(OR)	
6.		Identify the appropriate data structures that suits to describe a switch-level simulation algorithm.	12 Marks

UNIT-IV

7.	a)	List the aspects of the assignment problems.	7 Marks
	b)	Write a short note on graph theoretical problem formulation.	5 Marks
		(OR)	
8.	a)	Write about the hardware models for High-level synthesis.	7 Marks
	b)	Summarize the Force-directed scheduling.	5 Marks

UNIT-V

9.		Assess chip array and full custom placement types related to MCMs.	12 Marks
		(OR)	
10.		Outline the process of MCM partitioning using a system graph.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

TESTING AND TESTABILITY

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. List the various methods for delay fault testing. Elaborate any one of them with suitable example. 12 Marks

(OR)

2. Illustrate the modeling of digital circuits at logic level. 12 Marks

UNIT-II

3. Illustrate various fault models found in digital circuits. 12 Marks

(OR)

4. Using appropriate examples, survey Multiple stuck at faults. 12 Marks

UNIT-III

5. Define simulation. Assess detective fault simulation. 12 Marks

(OR)

6. Sketch and explain the parallel pattern single fault propagation. 12 Marks

UNIT-IV

7. Assess the concept of ATG in combinational circuit using fan-out. 12 Marks

(OR)

8. Explain the functional testing with specific fault models. 12 Marks

UNIT-V

9. Assess Syndrome Testing and Signature Analysis. 12 Marks

(OR)

10. Formulate steps to perform generic boundary scan. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

SYSTEM-ON-CHIP DESIGN AND VERIFICATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain the process of steps required to design an SoC.	12 Marks
		(OR)	
2.		What are the different methods used for system design flow.	12 Marks

UNIT-II

3.	a)	Appraise the macro design process.	6 Marks
	b)	Discuss about model development for Hard Macros.	6 Marks
		(OR)	
4.		Develop the development plan regarding how different specifications can be produced.	12 Marks

UNIT-III

5.	a)	Categorize and compare verification technology options.	6 Marks
	b)	Justify the use of lint checking for block level verification and develop an arbiter block RTL code for lint checking.	6 Marks
		(OR)	
6.		Sketch and relate SoC based system design flow process. Explain every block in detail.	12 Marks

UNIT-IV

7.	a)	Devise a methodology for creating a Soft Prototype. Also list the limitations of Soft Prototype.	6 Marks
	b)	Asses Static Timing Verification to verify whether the design has met timing requirements or not?	6 Marks
		(OR)	
8.	a)	List a few areas where H/S Co-Verification in used.	6 Marks
	b)	Discuss the process of Emulation.	6 Marks

UNIT-V

9.		Illustrate Communication Architecture Tuners with an appropriate block diagram.	12 Marks
		(OR)	
10.		Model a design methodology for CAT based system.	12 Marks

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

ADAPTIVE SIGNAL PROCESSING

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Discuss the following: 12 Marks
   i) Linear optimum filters ii) Adaptive filters

(OR)

2. a) What is Eigen filter? Explain with suitable block diagram. 6 Marks
   b) Describe any three properties of a correlation matrix of a discrete stochastic process in detail. 6 Marks

UNIT-II

3. Consider a Wiener filtering problem characterized as follows: 12 Marks
   The correlation matrix **R** of the tap-input vector **U(n)** is $R = \begin{bmatrix} 1 & 0.5 \\ 0.5 & 1 \end{bmatrix}$.
   The correlation vector between the tap-input vector and the desired response is **p=[0.5 0.25]^T**. Suggest a suitable value for the step-size parameter **μ** that would ensure convergence of the method of steepest-descent, based on the given value for matrix **R**.

(OR)

4. How does mean square error explain the performance of Adaptive system? 12 Marks

UNIT-III

5. Consider the use of white noise sequence of zero mean and variance σ^2 as the input to the LMS algorithm. Evaluate: 12 Marks
   i) The condition for convergence of the algorithm in the mean square.
   ii) The excess mean-square error.

(OR)

6. The LMS algorithm is used to implement a dual input, single weight adaptive noise canceller. Setup the equations that define the operation of this algorithm. 12 Marks

UNIT-IV

7. The Gram-Schmidt orthogonlization procedure enables the set of observation vectors **y(1), y(2),… y(n)** to be transformed into the set of innovation processes **α(1), α(2),….., α(n)** without loss of information, and vice versa. Illustrate this procedure for **n = 2** and comment on the procedure for **n > 2**. 12 Marks

(OR)

8. a) Derive and explain the Buss gang algorithm for blind equalization of base band channel. 6 Marks
   b) With the help block diagram explain the Kalman filtering. 6 Marks

UNIT-V

9.	Design desired response estimator using a sequence of **m** backward prediction errors.	12 Marks

(OR)

10.	The convergence behavior of the GAL algorithm is faster than LMS algorithm. Justify?	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

SMART ANTENNAS

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. With neat sketches, explain the smart antenna system. 12 Marks

(OR)

2. Illustrate Space Division Multiple Access. 12 Marks

UNIT-II

3. Outline the uniqueness of DOA estimates. 12 Marks

(OR)

4. Estimate the antenna signal to noise ratio using array response vector. 12 Marks

UNIT-III

5. Appraise the method of Classical Beam forming. 12 Marks

(OR)

6. Discuss in detail about the Linearly Constrained Minimum Variance (LCMV). 12 Marks

UNIT-IV

7. Assess the effect of mutual coupling on the design of a smart antenna. 12 Marks

(OR)

8. Develop a procedure to antenna with adaptive mutual coupling. 12 Marks

UNIT-V

9. Estimate the significance of space time processing. 12 Marks

(OR)

10. Analyze the capacity and data rates in MIMO systems. 12 Marks

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

RADAR SIGNAL PROCESSING

[Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Derive expressions for radar to detect range of target in presence of noise jamming.	6 Marks
	b)	Discuss about Bi-static radars.	6 Marks
		(OR)	
2.	a)	What is the basic principle of pulse radar? List out the various frequency bands along with frequency ranges that are used for radar applications.	6 Marks
	b)	Derive the frequency response characteristic of matched filter receiver.	6 Marks

UNIT-II

3.	a)	Discuss about Inverse Probability Receiver and Sequential Observer.	6 Marks
	b)	Illustrate how raw data of radar can be processed by using automatic detector.	6 Marks
		(OR)	
4.	a)	Compare envelop detector and logarithmic detector.	8 Marks
	b)	List the limitations of cell-averaging CFAR.	4 Marks

UNIT-III

5.		Discuss the properties of ambiguity diagram and draw the ambiguity diagram for periodic pulse train.	12 Marks
		(OR)	
6.	a)	Discuss in detail about Land clutter.	6 Marks
	b)	How to handle different waveform design requirements?	6 Marks

UNIT-IV

7.		What is the significance of pulse compression in radar signals and explain in detail about its types?	12 Marks
		(OR)	
8.		Describe the decoding of FM waveform with block schematic and also explain the characteristics of passive system.	12 Marks

UNIT-V

9.	a)	Discuss about Huffman codes and complementary codes briefly.	6 Marks
	b)	Explain how side lobes can be reduced by using Barker codes.	6 Marks
		(OR)	
10.	a)	Explain how the side lobes are reduced in phase coded PC signals.	6 Marks
	b)	Explain about Frank codes.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular Examinations August - 2017

INTRUSION DETECTION SYSTEMS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		List and explain NSM tools with the usage and applicability with example.	12 Marks
		(OR)	
2.	a)	Explain the standards of Defensible network controlling.	6 Marks
	b)	State the process of minimizing the threats in Defensible network architecture with neat diagram.	6 Marks

UNIT-II

3.		State the process of Inspecting individual services through i) Secure shell. ii) WhoIs. iii) LDAP.	12 Marks
		(OR)	
4.	a)	Compare and contrast internal network and external networks with neat diagrams.	6 Marks
	b)	State the process of internal intrusion containment for external network.	6 Marks

UNIT-III

5.	a)	Define Intruder Profiles and explain the process of preparing the Intruder Profiles.	6 Marks
	b)	List and explain Incident Detection methods of incident response.	6 Marks
		(OR)	
6.	a)	Define CSIRT and the importance in IDS.	6 Marks
	b)	List and explain steps of secure CSIRT communication with examples.	6 Marks

UNIT-IV

7.		Write a short notes on: i) Server and control channels. ii) Exploitation. iii) Bot administration.	12 Marks
		(OR)	
8.		Analyze the evaluation of Computer Security threats with example.	12 Marks

UNIT-V

9.		Analyze the limitations of Host intrusion prevention with example.	12 Marks
		(OR)	
10.		Define the process of responding to network traffic in NIPS.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

NETWORK PROGRAMMING

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Write a prototype and discuss the return type and parameters for the following functions. 12 Marks
   i) connect( ) ii) bind( ) iii) listen( ) iv) accept( ) v) close( ).

(OR)

2. Explain the Handshaking method. Also explain various primitive for connection oriented service. 12 Marks

UNIT-II

3. a) Discuss in detail about determining outgoing interface with UDP. 6 Marks
   b) Select and write appropriate system calls in POSIX signal handling. 6 Marks

(OR)

4. Compare UDP socket, TCP socket and raw socket. 12 Marks

UNIT-III

5. Enumerate and explain the socket options in IP, ICMP and TCP. 12 Marks

(OR)

6. Bring out the basic differences in the five I/O models available in UNIX. 12 Marks

UNIT-IV

7. Analyze and explain DNS in detail. 12 Marks

(OR)

8. a) Explain the signal function with syntax. 6 Marks
   b) Write a SIGCHLD signal handler that calls wait( ) and explain. 6 Marks

UNIT-V

9. Explain the techniques involved in RPC model. 12 Marks

(OR)

10. What is a semaphore? How to synchronize processes using semaphores. Explain about the semget( ), semctl( ) and semop( ) function. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

WIRELESS NETWORKS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain **M/G/1/∞** queuing system in detail. 12 Marks

(OR)

2. In an airplane, what happens if you use;
   i) walkie-talkie? 4 Marks
   ii) satellite phone? 4 Marks
   iii) cell phone? 4 Marks

UNIT-II

3. Discuss in detail about cyclic codes with an example. 12 Marks

(OR)

4. a) What is an RSC code? Why these codes are called systematic? 6 Marks
   b) Describe briefly syndrome decoding and incomplete decoding. 6 Marks

UNIT-III

5. What is meant by a collision in data transfer and why is it not possible to decipher information from collided data? Explain clearly. 12 Marks

(OR)

6. Describe the advantages and disadvantages of 1-persistent CSMA and p-persistent CSMA. 12 Marks

UNIT-IV

7. Describe in detail the ways of deploying sensors in sensor networks. 12 Marks

(OR)

8. a) Differentiate cellular and ad hoc networks. 6 Marks
   b) "It is not possible to use circuit switching in ad hoc networks". Justify. 6 Marks

UNIT-V

9. Explain the characteristics of ZigBee technology. 12 Marks

(OR)

10. a) What happens if you use two household cordless phones at the same time? Explain with appropriate reasons. 6 Marks
    b) Compare the usefulness and limitations of WMANs, WLANs and WPANs. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2017

COMPUTER FORENSICS

[Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		List the users of computer forensics evidence and write the problems of computer forensics evidence.	12 Marks
		(OR)	
2.		Discuss the types of law enforcement computer forensic technology.	12 Marks

UNIT-II

3.	a)	Describe the general procedure followed while collecting and analyzing the evidence.	6 Marks
	b)	Explain the two basic forms of collection.	6 Marks
		(OR)	
4.		List the steps followed while collecting evidence.	12 Marks

UNIT-III

5.	a)	Write the importance of recording time/date stamps as one of the first steps in the live response.	6 Marks
	b)	Give a reason to perform a live response on a Unix system rather than just shut down the system and perform hard drive duplication.	6 Marks
		(OR)	
6.	a)	In what cases are **lsof** and **netstat** similar? Why are these tools so important during initial response?	6 Marks
	b)	Give the four steps when retrieving information from a live system.	6 Marks

UNIT-IV

7.		Write the steps to process law enforcement crime scenes.	12 Marks
		(OR)	
8.		List the steps involved in repairing for a computer search in computing investigations.	12 Marks

UNIT-V

9.		List various technologies used by 4G networks.	12 Marks
		(OR)	
10.		List the steps to investigate router.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Supplementary Examinations August - 2017

INFORMATION THEORY AND CODING TECHNIQUES

[Digital Electronics and Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain source coding theorem in detail.	6 Marks
	b)	In a binary PCM if **'0'** occurs with probability **1/4** and **'1'** occur with probability equal to **3/4** then calculate the amount of information carried by each bit.	6 Marks
		(OR)	
2	a)	A Discrete Memory Less System (DMS) **'X'** has five symbols x_1, x_2, x_3, x_4 and x_5 with respective probabilities **0.2, 0.15, 0.05, 0.1** and **0.5**. i) Construct a Shannon fano code for X and calculate the code efficiency ii) Repeat (i) for the Huffman code.	8 Marks
	b)	Discuss the properties of entropy.	4 Marks

UNIT-II

3	a)	Explain channel coding theorem in detail.	6 Marks
	b)	Explain and discuss mutual information and its properties.	6 Marks
		(OR)	
4	a)	Write notes on capacity of channels with colored Gaussian noise.	6 Marks
	b)	Explain Huffman encoding algorithm.	6 Marks

UNIT-III

5		Design an **(n, k) = (7, 4)** linear block code. i) Choose the code words to be in systematic form and choose them with the goal of maximizing the minimum distance. ii) Find the generator matrix for the code word set. iii) Calculate the parity check matrix. iv) Make a syndrome table for the correctable error patterns.	12 Marks
		(OR)	
6	a)	Explain block codes. Discuss error detecting correction capabilities of block code.	6 Marks
	b)	Explain in detail about encoder implementation of linear block codes.	6 Marks

UNIT-IV

7	a)	Explain error deviation with an **(n-k)** stage shift register.	6 Marks
	b)	Draw the encoder for a **(7, 4)** cyclic hamming code.	6 Marks
		(OR)	
8		Explain the Vitrebi algorithm and sequential decoding of convolution codes.	12 Marks

UNIT-V

9	a)	Explain in detail about Map decoding algorithm.	6 Marks
	b)	Write short notes on block and convolutional interleaving.	6 Marks
		(OR)	
10	a)	Write short notes on coding and interleaving applied to the compact disc digital audio system.	6 Marks
	b)	Explain the Turbo code concept.	6 Marks

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CODE No.:14MT20503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Supplementary Examinations January - 2017

DATA WAREHOUSING AND DATA MINING

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a data warehouse? Briefly discuss about multidimensional data models.	6 Marks
	b)	Briefly discuss about data mining task primitives.	6 Marks
		(OR)	
2	a)	Differentiate operational database systems and data warehousing.	6 Marks
	b)	What is data mining? On what kind of data, data mining can be performed.	6 Marks

UNIT-II

3	a)	Discuss issues to consider during data integration.	6 Marks
	b)	Can we design a method that mines the complete setoff frequent item sets without candidate generation? If yes, explain.	6 Marks
		(OR)	
4	a)	Explain about data reduction techniques.	6 Marks
	b)	How can we mine multilevel association rules efficiently using concept hierarchies? Explain.	6 Marks

UNIT-III

5	a)	List and explain the major steps involved in decision tree induction algorithm.	6 Marks
	b)	Discuss about evaluating the accuracy of a classifier.	6 Marks
		(OR)	
6	a)	What is Bayes theorem? Explain about naïve Bayesian classification.	6 Marks
	b)	Write a short note on case-based reasoning, rough set approach and regression.	6 Marks

UNIT-IV

7	a)	State and explain the classical partitioning methods.	6 Marks
	b)	Briefly outline how to compute the dissimilarity between objects described by asymmetric binary variables.	6 Marks
		(OR)	
8	a)	Explain in detail DBSCAN algorithm.	6 Marks
	b)	Why is outlier mining important? Explain deviation based outlier detection method.	6 Marks

UNIT-V

9	a)	What is spatial data mining? Illustrate with an example.	6 Marks
	b)	Bring out the various techniques used to mine knowledge from time series data.	6 Marks
		(OR)	
10	a)	What kind of association can be mined in multimedia data? Explain.	6 Marks
	b)	Briefly discuss about Text mining approaches.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC14) Supplementary Examinations January - 2017

INFORMATION THEORY AND CODING TECHNIQUES

[Digital Electronics and Communication Systems , Communication Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain Source Coding theorem in detail. 6 Marks

b) In a binary PCM if '0' occurs with probability 1/4 and '1' occur with probability equal to 3/4 then calculate the amount of information carried by each bit. 6 Marks

(OR)

2 a) A Discrete Memory Less System (DMS) 'X' has five symbols x_1, x_2, x_3, x_4 and x_5 with respective probabilities 0.2, 0.15, 0.05, 0.1 and 0.5. 8 Marks

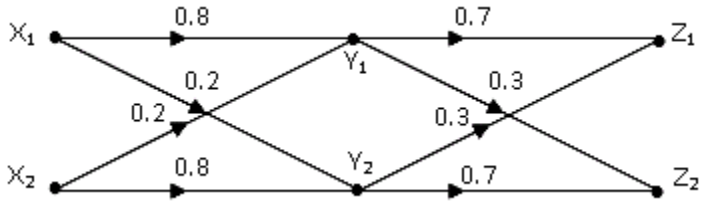
i) Construct a Shannon fano code for X and calculate the code efficiency

ii) Repeat (i) for the Huffman code.

b) Discuss the properties of entropy. 4 Marks

UNIT-II

3 Two Binary Symmetric Channel (BSC)s are connected in cascade as shown in below figure 12 Marks



(i) Find the channel matrix of the resultant channel.

(ii) Find $P(z_1)$ and $P(z_2)$ if $P(x_1)=0.6$ and $P(x_2)=0.4$.

(OR)

4 a) Prove that the maximum channel capacity $C_\infty = 1.44S / N_o$. 6 Marks

b) Verify the expression H(X,Y)=H(X/Y)+H(Y). 6 Marks

UNIT-III

5 a) Explain about Block Codes and write its applications. 6 Marks

b) The generator matrix for a (6, 3) block code is shown below. 6 Marks

$$G = \begin{bmatrix} 100:011 \\ 010:101 \\ 001:110 \end{bmatrix}$$

Obtain all code words of this code.

(OR)

6 a) An error control code has the following parity check matrix. 6 Marks

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

i) Determine the generator matrix G.

ii) Find the code word that begins with 101....

b) For a code vector X=(0 1 1 1 0 0 0) and the parity check matrix H given below. 6 Marks

Prove that $XH^T = (0, 0.....0)$ $H = \begin{bmatrix} 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$

UNIT-IV

7 a) Explain the decoding processes of convolutional code including Viterbi algorithm. 6 Marks

b) Explain cyclic codes and its basic properties. 6 Marks

(OR)

8 A rate 2/3 convolution code is described by $g_1 = [0011]$, $g_2 = [1110]$, $g_3 = [1011]$. Construct the encoder, code trellis and state diagram corresponding to this code. 12 Marks

UNIT-V

9 a) Explain in detail about Map Decoding algorithm. 6 Marks

b) Write short notes on block and convolutional interleaving. 6 Marks

(OR)

10 a) Write short notes on coding and interleaving applied to the compact disc digital audio system. 6 Marks

b) Explain the Turbo code concept. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular Examinations January - 2017

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Using indirect method of proof, derive $\mathbf{P \rightarrow \neg S}$ from $\mathbf{P \rightarrow Q \vee R}$, $\mathbf{Q \rightarrow \neg P}$, $\mathbf{S \rightarrow \neg R}$, $\mathbf{P}$. 6 Marks

   b) Find principal disjunctive normal form of $\mathbf{P \rightarrow ((P \rightarrow Q) \wedge \neg(\neg Q \vee \neg P))}$. 6 Marks

(OR)

2. a) Obtain disjunctive normal form for $\mathbf{(P \wedge (P \rightarrow Q)}$. 6 Marks

   b) Show that $R \rightarrow S$ can be derived from the premises: $\mathbf{P \rightarrow (Q \rightarrow S)}$, $\mathbf{\neg R \vee P}$ and $\mathbf{Q}$. 6 Marks

UNIT-II

3. What is equivalence relation? If A = {1,2,3,4}, give an example of relation on A that is : 12 Marks
   i) reflexive and symmetric, but not transitive
   ii) reflexive and transitive, but not symmetric
   iii) symmetric and transitive, but not reflexive

(OR)

4. a) If A = {1, 2, 3, 5, 30} and **R** is the divisibility relation, prove that (A, R) is a lattice but not a distributive lattice. 6 Marks

   b) Define Inverse function. Consider the function **f:** R→ R defined by $f(x) = 2x + 5$. Let a function **g:** R→ R be defined by $g(x) = \frac{1}{2}(x - 5)$. Prove that **g** is an inverse of **f**. 6 Marks

UNIT-III

5. a) Define Pigeonhole principle. How many persons must be chosen in order that at least five of them will have birth days in the same calendar month? 6 Marks

   b) Prove that the set G = {0, 1, 2, 3, 4, 5} is a finite abelian group of order 6 with respective to S addition modulo. 6 Marks

(OR)

6. a) State and prove Principle of Inclusion-Exclusion. 6 Marks

   b) A survey of a 500 television viewers of a sports channel produced the following information: 6 Marks

   285 watch cricket, 195 watch hockey, 115 watch football, 45 watch cricket and football, 70 watch cricket and hockey, 50 watch hockey and football and 50 do not watch any of the three kinds of games.
   i) How many viewers in the survey watch all three kinds of games?
   ii) How many viewers watch exactly one of the sports?

UNIT-IV

7. Find a generating function for the recurrence relation : 12 Marks
$a_{n+2} - 3a_{n+1} + 2a_n = 0, n \geq 0$ and $a_o = 1, a_1 = 6$. Hence solve it.

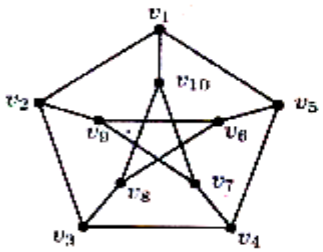
(OR)

8. Solve the recurrence relation $a_n = 6a_{n-1} - 12a_{n-2} + 8a_{n-3}$, given that $a_o = 1, a_1 = 4,$ $a_2 = 28$. 12 Marks

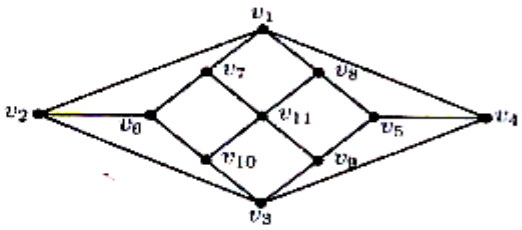
UNIT-V

9. a) What is an Euler circuit? Explain the process of finding an Euler circuit in a given graph. 6 Marks

b) Find the chromatic numbers of the following graphs: 6 Marks



(a)



(b)

(OR)

10. a) Distinguish between Euler circuits and Hamiltonian circuits. 6 Marks

b) Explain Breadth first search and Depth first search algorithm for a spanning tree. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular Examinations January - 2017

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. "Accounting equation is simply a basis for learning the double entry system and nothing more" - Explain. 12 Marks

(OR)

2. Give journal entries for the following Transactions. 12 Marks

2014. April.1. Ramesh commenced business with Rs. 50,000.
3. Purchased goods form chandu for Rs. 25,000
7. Sold goods to Pushpa kumar for Rs. 32,000
10. Paid cash to Chandu Rs. 20,000
14. Received cash from Pushpa Kumar Rs.30,000
20. Paid salaries Rs. 8,000

UNIT-II

3. Describe various steps involved in preparation of final accounts. 12 Marks

(OR)

4. From the following Trail Balance of Visaka Traders Ltd., prepare Trading, Profit and Loss account for the year ended 31st March 2015. 12 Marks

TRAIL BALANCE

Debit	Rs.	Credit	Rs.
Opening Stock	10,000	Sales	2,40,000
Purchases	1,60,000	Returns	10,000
Returns	5,000	Commission	16,000
Furniture	18,000	Creditors	12,000
Carriage in	3,000	Bank Overdraft	6,000
Carriage out	5,000	Discount	3,000
Wages	15,000	Outstanding Salaries	10,000
Salaries	25,000	Interest	3,000
Debtors	40,000		
Depreciation on Plant	12,000		
Prepaid insurance	1,000		
Rent and rates	6,000		
	3,00,000		**3,00,000**

Adjustments:
i) Closing stock on 31-3-2015 was Rs. 20,000
ii) Sales include Rs. 5,000 on account of sale of old furniture.

UNIT-III

5. Differentiate between Share capital and Debenture capital. 12 Marks

(OR)

6. Define Capital and explain how the cost of capital is calculated with suitable examples. 12 Marks

UNIT-IV

7. a) Suppose the net sales are Rs.50,000/- for a firm and cost of goods sold is Rs.20,000/-. Calculate gross profit ratio. 4 Marks

   b) Given that the number of shares is 10,000 and the net profit after taxes for a given period is Rs.4,50,000/-. Calculate EPS. 4 Marks

   c) Given that current market price of a share Rs.300/- , face value of the share is Rs.100/-, percentage of dividend is 20% . Calculate yield. 4 Marks

(OR)

8. A company makes a single product with a sales price of Rs 10/- and a variable cost of Rs 6/- per unit, fixed costs are Rs 60,000/-. Calculate 12 Marks
   a) Number units to Break even.
   b) Sales at Break even.
   c) Contribution to sales ratio in terms of percentage.
   d) What number of units will need to be sold to achieve a profit of Rs.10,000/-?
   e) If an increase in the fixed cost by Rs 10,000/- per annum and increase in the variable cost by Rs.2/-, what will be the new BEP in units?

UNIT-V

9. Two projects costing Rs. 20,000/- each have the following cash flows. Which one do you choose under payback period method and why? 12 Marks

Particulars	Proposal A	Proposal B
1	8000	12000
2	12000	8000
3	10000	12000
4	9000	7000
5	7000	7000

(OR)

10. Find out the Average rate of return from the following data relating to CNC machine 1 and 2. 12 Marks

Particulars	Details
Cost	3,00,000/- each
Estimated life	3 years each
Estimated scrap	60,000/- each
Tax rate	50%

Additional working capital required 2,50,000/- each. The estimated cash inflows after tax is

Machine/year	1	2	3	4	Total
CNC machine 1	150000	300000	150000	--	600000
CNC machine 2	200000	300000	250000	150000	900000

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. I Semester (SVEC16) Regular Examinations January - 2017

COMPUTER ORGANIZATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Calculate the subtraction with the following unsigned binary numbers by taking the 2's complement of the subtrahend.
   a) 11010 – 10000 — 3 Marks
   b) 11010 - 1101 — 3 Marks
   c) 100 - 110000 — 3 Marks
   d) 1010100 – 1010100 — 3 Marks

(OR)

2. Demonstrate Error Detection Codes in transmission of data. — 12 Marks

UNIT-II

3. Evaluate Binary Counter with Parallel Load with a neat diagram. — 12 Marks

(OR)

4. Compare flip-flops with the graphic symbol and characteristic table in detail. — 12 Marks

UNIT-III

5. Measure the performance of CISC over RISC. — 12 Marks

(OR)

6. Categorize the addressing modes and explain with examples. — 12 Marks

UNIT-IV

7. Identify and discuss in detail about different types of computer instructions. — 12 Marks

(OR)

8. Describe various registers of a basic computer. — 12 Marks

UNIT-V

9. Construct and write about memory connection to CPU. — 12 Marks

(OR)

10. Explain in detail about associative memory. — 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular Examinations January - 2017

OPERATING SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Illustrate the services and system calls performed by Operating Systems.	12 Marks
		(OR)	
2.	a)	What is context switching?	6 Marks
	b)	List out the types of process schedulers.	6 Marks

UNIT-II

3.		Define Thread. Explain the advantages of Threads.	12 Marks
		(OR)	
4.		Enumerate multilevel Queue, multilevel feedback (or) feedback scheduling.	12 Marks

UNIT-III

5.	a)	Discuss about Bounded buffer problem.	6 Marks
	b)	Explain Peterson's solution for critical section problem.	6 Marks
		(OR)	
6.	a)	Explain Semaphores with example.	6 Marks
	b)	Illustrate features that characterize deadlocks.	6 Marks

UNIT-IV

7.		Illuminate the contiguous memory allocation.	12 Marks
		(OR)	
8.		How would you solve the following page reference String using optimal replacement algorithm: 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 page frames:3	12 Marks

UNIT-V

9.	a)	List out the program threats.	6 Marks
	b)	Predict, what would happen if program threats occur.	6 Marks
		(OR)	
10.		Give details about protection and security.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular Examinations January - 2017

PROGRAMMING IN C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Predict output by analyzing and testing the following program fragment. To show your output, draw a grid of atleast 8 lines with atleast 15 characters per line. 8 Marks

```
//local declaration
int x=10;
char w= 'y';
float z=5.1234;
//statements
printf("\n First \n Example \n:");
printf("%5d\n,w is %c\n",x,w);
printf("\nz is %8.2f\n",z);
```

b) Point out the following identifiers that are valid or invalid. Justify your answer. 4 Marks
i) num-2 ii) num 2 iii) num_2 iv) _num2

(OR)

2. a) Compare variables and constants in C with suitable example. 4 Marks
b) How would you prioritize the operators in evaluating the expression to find the value of x? `x = 3/2%6-3/9` 4 Marks
c) Explain the output of the following statement 4 Marks
printf("%s", "IARE-2015"+5);

UNIT-II

3. a) Write a C Program to swap two elements without using third variable. 6 Marks
b) Differentiate "if" statement and "if - else" statement with an example program 6 Marks

(OR)

4. Summarize Multidimensional Arrays with suitable example. 12 Marks

UNIT-III

5. a) In C, if you pass an array as an argument to a function, predict what actually gets passed? 6 Marks
b) Define pointer and write about any two pointer applications. 6 Marks

(OR)

6. a) Identify the storage class which allows the data to be stored in CPU. 6 Marks
b) State how a pointer variable can be declared and accessed with an example. 6 Marks

UNIT-IV

7.		Specify how union can be declared with initialization and its usage with a suitable example.	12 Marks

(OR)

8.	a)	Argue about Enumerated types in C with an example for creating Colors type.	3 Marks
	b)	Explain about nested structure with an example.	4 Marks
	c)	Differentiate Structures and Unions in C.	5 Marks

UNIT-V

9.		With the help of command line arguments, count the number of arguments supplied and display the strings passed to command line argument.	12 Marks

(OR)

10.		Distinguish between binary and text files with accessing modes listed.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations August - 2017

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Compute the truth table of the statement: 6 Marks
$(P \wedge Q) \vee (\neg P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$.

   b) Obtain the principal conjunctive normal form of the formula S given by 6 Marks
$(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$.

(OR)

2. a) Given the truth values of P and Q as T and those of R and S as F, find the truth values of the following : 6 Marks
   (i) $P \vee (Q \wedge R)$
   (ii) $(P \wedge (Q \wedge R)) \vee \neg((P \vee Q) \wedge (R \vee S))$ and
   (iii) $(\neg(P \wedge Q) \vee \neg R) \vee (((\neg(P \wedge Q) \vee \neg R) \wedge S)$

   b) Verify whether $(P \wedge (P \leftrightarrow Q)) \rightarrow Q$ is tautology. 6 Marks

UNIT-II

3. a) Define equivalence relation. Prove that the relation given below is an equivalence relation. Let X = {1,2,....., 7} and R = { (x,y) / x-y is divisible by 3}. 6 Marks

   b) Let A = {a,b,c,d} and P(A) be power set of A. Draw Hasse diagram for $< P(A), \subseteq >$, where $\subseteq$ is inclusion relation on the elements of A. 6 Marks

(OR)

4. a) Explain the following properties of binary relations with suitable examples. : 6 Marks
   i) Transitivity. ii) Reflexivity. iii) Irreflexivity.
   iv) Symmetry. v) Antisymmetry vi) Asymmetry.

   b) Define primitive recursive function. Show that the function f(x,y) = x+y is primitive recursive. 6 Marks

UNIT-III

5. a) Let f: g $\rightarrow$ H be a homomorphism from G onto H. If G is abelian, prove that H is also abelian 6 Marks

   b) Use mathematical induction to show that 6 Marks
$\mathbf{1^2 + 2 + 2^2 + \ldots + 2^n} = 2^{n+1} - 1$ for the integer n.

(OR)

6. a) If O is an operation on Z defined by x O y = x+y+1, 6 Marks
prove that < Z, O > is an abelian group.

   b) Prove that the set Z is a monoid but not a group. 6 Marks

UNIT-IV

7. Solve the recurrence relation using generating function. 12 Marks
$\boldsymbol{a_n - 7a_{n-1} + 10a_{n-2} = 0}$, for $\boldsymbol{n \geq 2}$, $\boldsymbol{a_o = 1}$ and $\boldsymbol{a_1 = 2}$.

(OR)

8. Find the coefficient of $\mathbf{x^{18}}$ in the following product: 12 Marks

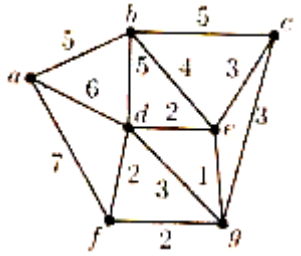
(i) $(x + x^2 + x^3 + x^4 + x^5)(x^2 + x^3 + x^4 + \ldots\ldots\ldots)^5$

(ii) $(x + x^3 + x^5 + x^7 + x^9)(x^3 + 2x^4 + 3x^5 + \ldots\ldots\ldots)^3$

UNIT-V

9. a) Prove that a graph G is a tree if and only if G is connected and lVl - 1=lEl. 6 Marks

b) Apply Kruskal's algorithm to the weighted graph given below: 6 Marks

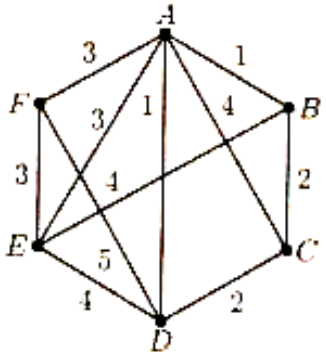


(OR)

10. a) Explain briefly the following 6 Marks

(i) Forest (ii) Minimal spanning tree (iii) Balanced tree.

b) Using Prim's algorithm, find a minimal spanning tree for the weighted graph shown below. 6 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. I Semester (SVEC16) Supplementary Examinations August - 2017

COMPUTER ORGANIZATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Solve the following Boolean function in sum-of-products form by means of a four-variable map. 6 Marks

   $F(A,B,C,D) = \sum(0,2,8,9,10,11,14,15)$

   Construct the logic diagram for the resultant expression by using 3 Marks

   i) AND-OR gates. ii) NAND gates. 3 Marks

(OR)

2. What is a logic gate? Discover the purpose of logic gates in digital systems. Illustrate logic gates available to digital systems with truth tables. 12 Marks

UNIT-II

3. a) Discriminate combinational circuits and sequential circuits and draw the block diagram for both circuits. 6 Marks

   b) Define multiplexer. Draw the block diagram of a 4-to-1 line multiplexer and explain its operation by means of a function table. 6 Marks

(OR)

4. a) Draw the diagram of JK flip-flop with its truth table. 6 Marks

   b) Distinguish between SR, D, JK and T flip-flops. 6 Marks

UNIT-III

5. Construct status bit conditions with diagram. 12 Marks

(OR)

6. Explain in brief about the stack organization. 12 Marks

UNIT-IV

7. Describe various registers of a basic computer. 12 Marks

(OR)

8. a) Classify memory reference instructions. 6 Marks

   b) Explain briefly about the design of basic computer. 6 Marks

UNIT-V

9. Discuss various techniques used for Modes of Transfer. 12 Marks

(OR)

10. Evaluate Input-Output-Processor (IOP) organization. 12 Marks

CODE No.:16MC10103 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations August - 2017

PROGRAMMING IN C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Define algorithm. Write algorithm for displaying the name, marks, total and grade of a student. Draw a flow chart for the above algorithm.	12 Marks
		(OR)	
2.	a)	Define problem. How to solve the problem with the help of solving aspect considering one suitable example to define a problem?	8 Marks
	b)	Inscribe categories of data types in C.	4 Marks

UNIT-II

3.		Implement a program to read and write the elements in to matrix using nested loop.	12 Marks
		(OR)	
4.	a)	Discuss String manipulation functions with example.	7 Marks
	b)	Elucidate about dynamic memory management functions.	5 Marks

UNIT-III

5.		State the various types of functions depending upon categories of arguments and return statements with example.	12 Marks
		(OR)	
6.	a)	Determine factorial of a given number using C functions.	7 Marks
	b)	Summarize the user defined functions with suitable examples	5 Marks

UNIT-IV

7.	a)	Define union. Implement unions with suitable example.	6 Marks
	b)	What is an anonymous structure? Explain with an example.	6 Marks
		(OR)	
8.		Experiment with a structure type called time_struct containing 3 members integer hour, integer minute and integer second. Develop a program that would assign values to the individual members and display the time in the format: 16:40:51	12 Marks

UNIT-V

9.		Illustrate various operations to access the records in a file with a suitable example.	12 Marks
		(OR)	
10.	a)	Compile the random access file with suitable example.	6 Marks
	b)	Enumerate different types of file operations in ‘C’ with an example.	6 Marks

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CODE No.:16MC2BS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular Examinations August - 2017

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) A continuous random variable X has a probability density function $f(x)=3X^2$, $0 \le X \le 1$, and $f(x) = 0$, otherwise. Find **K** such that **P(X≤ K) = P(X> K).** 6 Marks

   b) Two unbiased dice are thrown. Find the expected values of the sum of numbers of points on them. 6 Marks

(OR)

2. Cards are dealt one by one from a well-shuffled pack until an ace appears. Show that exactly n cards are dealt before the first ace appears is: $\frac{4(51-n)(50-n)(49-n)}{52,51,50,49}$. 12 Marks

UNIT-II

3. a) Explain the method of construction of np-chart. 6 Marks

   b) The following are figures for the number of defectives of 10 samples each containing 100 items: 8, 10, 9, 8, 10, 11, 7, 9, 6, 12. Draw control chart for fraction defective and comment on the state of control of the process. 6 Marks

(OR)

4. The following table gives the sample means and ranges for 10 samples, each of size 6, in the production of certain components. Construct the control charts for mean and range and comment on the nature of control. 12 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean $\bar{x}$	37.3	49.8	51.5	59.2	54.7	34.7	51.4	61.4	70.7	75.3
Range $\bar{R}$	9.5	12.8	10.0	9.1	7.8	5.8	14.5	2.8	3.7	8.0

UNIT-III

5. Find the rank correlation for the following data: 12 Marks

X :	56	42	72	36	63	47	55	49	38	42	68	60
Y :	147	12	160	118	19	128	150	145	115	40	152	155

(OR)

6. a) Explain the fitting of two Regression lines. 6 Marks

   b) Obtain the equations of two lines of regression for the following data. Also obtain the estimate of X for Y = 70. 6 Marks

X :	65	66	67	67	68	69	70	72
Y :	67	68	65	68	72	72	69	71

UNIT-IV

7. a) Before an increase in excise duty on tea, 800 persons out of a sample of 1000 persons were found to be tea drinkers. After an increase in excise duty, 800 people were tea drinkers in a sample of 1200 people. Using standard error of proportion, state whether there is a significant decrease in the consumption of tea after the increase in excise duty? 6 Marks

b) A sample of heights of 6400 English men has a mean of 67.85 inches and S.D. of 2.56 inches, while another sample of heights of 1600, Australians has a mean of 68.55 inches and a S.D. of 2.52 inches. Do the data indicate that Australians are on the average, taller than Englishmen? 6 Marks

(OR)

8. A population consists of five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size 2 that can be drawn without replacement from this population. 12 Marks

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.

UNIT-V

9. a) Below are given the gain in weights (in lbs) of pigs fed on two diets A and B: 6 Marks

Diet-A	25	32	30	34	24	14	32	24	30	31	35	25	-	-	-
Diet-B	44	34	22	10	47	31	40	30	32	35	18	21	35	29	22

Test, if the two diets differ significantly as regards their effect on increase in weight.

b) The following figures show the distribution of digits in number chosen at random from a telephone directory: 6 Marks

digit	0	1	2	3	4	5	6	7	8	9	Total
frequency	1026	1107	997	966	1075	933	1107	972	964	853	10000

Test whether the digits may be taken to occur equally in the distribution.

(OR)

10. a) A random sample of 10 boys had the following I.Q'S : 6 Marks

70, 120, 110, 101, 88, 83, 95, 98, 107, 100.

Do these data support the assumptions of a population mean I.Q. of 100?

b) Two independent samples of sizes 9 and 7 from a normal population had the following values of the variables. 6 Marks

Sample-I	18	13	12	15	12	14	16	14	15
Sample-II	16	19	13	16	18	13	15	-	-

Do the estimates of the population variance differ significantly at 5% level?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Regular Examinations August - 2017

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. State and explain entity types, entity sets, attributes and keys. 12 Marks

(OR)

2. What is meant by data abstraction? Mention the types of database users and state the responsibilities of DBA. 12 Marks

UNIT-II

3. Translate an ER diagram into a collection of tables with associated constraints to a relational database schema. 12 Marks

(OR)

4. Apply various complex integrity constraints supported by SQL with proper example. 12 Marks

UNIT-III

5. Construct an SQL language for the following: 12 Marks
   i) Select clause. ii) Insert into clause.
   iii) Set operators. iv) Arithmetic operators.

(OR)

6. With suitable example, explain various types of Normal Forms used in relational database. 12 Marks

UNIT-IV

7. a) What is Write-Ahead Log Protocol? What are different types of log records and when are they written? 6 Marks
   b) Outline the information maintained in the transaction table and the dirty page table. 6 Marks

(OR)

8. Write short notes on Conflict serializability and Strict 2PL. 12 Marks

UNIT-V

9. Build the hierarchy of memory. Sketch the structure of a magnetic disk to provide seamless access to data supporting DBMS and list out the performance implications of disk structure. 12 Marks

(OR)

10. Write short notes on:
    i) RAID levels. 6 Marks
    ii) Data on external storage. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular Examinations August - 2017

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) What is pseudocode? Justify usage of pseudocode as a problem solving tool. 4 Marks
   b) Translate following infix expression into its equivalent postfix expression: 8 Marks
   (a + b) + (c + d) - e * f and explain.

(OR)

2. a) Show the detailed contents of stack and trace the algorithm to evaluate the given postfix expression **1 2 3 + * 3 2 1 - + *.** 6 Marks
   b) Compare and contrast between iteration and recursion. 6 Marks

UNIT-II

3. a) What is a linear queue? List the applications of linear queue. 6 Marks
   b) Develop a 'C' program to perform insert and delete operations on linear queue using arrays. 6 Marks

(OR)

4. a) Define circular queue. Implement circular queue using array. 6 Marks
   b) Develop the routines to perform the following operations on the circular queue. 6 Marks
   i) Insertion. ii) Deletion. iii) Traversing.

UNIT-III

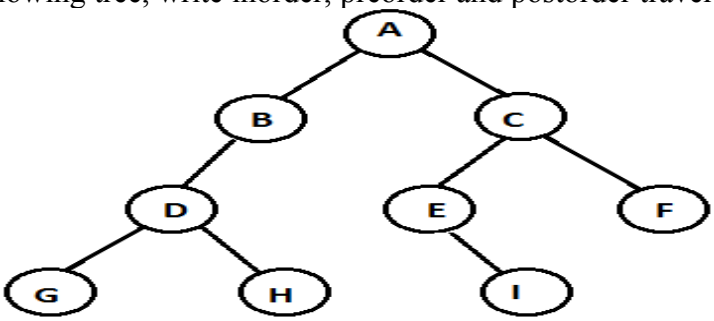
5. Explain the procedure for sorting the elements using the selection sort method with its complexity. 12 Marks

(OR)

6. Write a 'C' program to sort the given elements using merge sort technique. Discuss its time complexity. 12 Marks

UNIT-IV

7. a) Define the following: 6 Marks
   i) Binary Tree. ii) Complete Binary Tree.
   iii) Almost Complete Binary Tree. iv) Depth of a Tree.
   b) Given the following tree, write inorder, preorder and postorder traversals. 6 Marks



(OR)

8. a) What is a binary search tree? Construct a binary search tree for the following list of integers **8, 13, 10, 12, 6, 5, 12**. 4 Marks

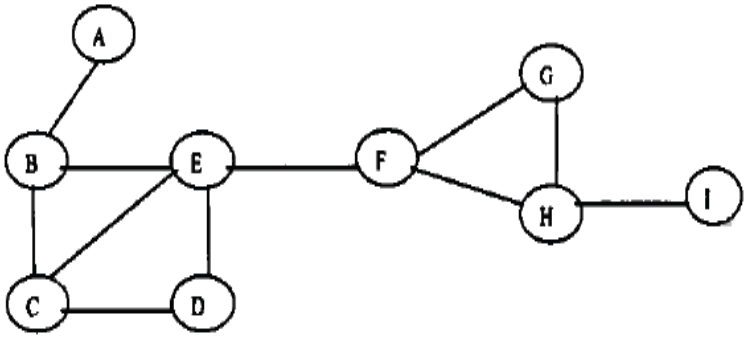
b) Specify various tree traversals. 4 Marks

c) List the applications of binary trees. 4 Marks

UNIT-V

9. a) Explain Depth First Search graph traversal algorithm with suitable example. 6 Marks

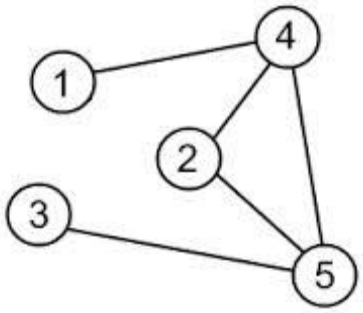
b) Traverse the graph using Depth First Search algorithm, starting from 'A'. 6 Marks



(OR)

10. a) Define graph. Discuss various methods used to represent graphs. 6 Marks

b) Illustrate BFS and DFS traversals of following graph. 6 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Regular Examinations August - 2017

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1. a) Write a Java program with the following data: 6 Marks
   Create an account class having members accno, bal, acctype and methods for these variables are like setValues(), getValues(), getBal(), deposit(), withdraw() and give one sample bank transaction.
   b) How can you make use of static keyword and finalize() method? 6 Marks

(OR)

2. Describe the basic concepts of Object Oriented Programming and list out its advantages. 12 Marks

UNIT-II

3. a) How multiple inheritance can be achieved in Java? Implement multiple inheritance with a suitable scenario. 6 Marks
   b) What is inheritance? Mention the different visibility modes while deriving a class from a base class. 6 Marks

(OR)

4. Compare and contrast Classes and Interfaces in Java. 12 Marks

UNIT-III

5. Discuss about the following: 12 Marks
   i) Iterator Interface.
   ii) List Iterator Interface.
   iii) Enumeration Interface.

(OR)

6. Explain Stack and Array List classes by simulating with an example. 12 Marks

UNIT-IV

7. Define Thread Priority. Demonstrate Thread Priorities in Java with an example. 12 Marks

(OR)

8. Describe the following: 12 Marks
   i) Nested try Statements.
   ii) Suspending, Resuming and Stopping Threads.

UNIT-V

9. a) State and explain various methods defined by Applet Class. 6 Marks
   b) Identify the limitations of AWT. How can you overcome by using Swings? 6 Marks

(OR)

10. Elaborate Event Sources and Event Listeners with examples. 12 Marks

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CODE No.:16MC20104 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Regular Examinations August - 2017

SOFTWARE ENGINEERING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Sketch evolutionary process models and explain each model.	12 Marks
		(OR)	
2.	a)	Justify agile process with respect to traditional mechanism.	8 Marks
	b)	Describe the scenario of extreme programming.	4 Marks

UNIT-II

3.	a)	Identify different levels of abstraction for the software design.	4 Marks
	b)	Explain architectural design in detail.	8 Marks
		(OR)	
4.		Predict various design issues with suitable example.	12 Marks

UNIT-III

5.	a)	What do you mean by integration testing? List out outcomes of integration testing.	5 Marks
	b)	How would you apply security testing for web applications?	7 Marks
		(OR)	
6.		What facts would you select to use in user interface testing for web applications?	12 Marks

UNIT-IV

7.	a)	How objects are identified in the software configuration? Explain.	8 Marks
	b)	Assess the output of software process.	4 Marks
		(OR)	
8.	a)	Write short notes on Software Configuration Management (SCM).	4 Marks
	b)	Identify SCM scenarios with its major elements. Explain in detail.	8 Marks

UNIT-V

9.	a)	Differentiate software reengineering and reverse engineering.	4 Marks
	b)	Mention valid challenges behind software maintenance.	3 Marks
	c)	How would you adapt RMMM plan in Risk Management.	5 Marks
		(OR)	
10.	a)	Interpret software reengineering process model.	6 Marks
	b)	“Reverse engineering will be used in understanding of data and process”. Justify.	6 Marks

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC10) Supplementary Examinations August - 2017

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 the multiplication theorem of probability.
b) A candidate is selected for interviews for three posts. For the first post there were 4 candidates ; for the second post 5 candidates and for the third post 2 candidates. What is the probability that the candidate is selected for at least one post ?

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) Find Mean and Variance of Binomial distribution.
b) In a normal distribution, 7% of the items are under 35 and 895 are under 63. Find the mean and standard deviation of the distribution.

4. a) What is the size of the smallest sample required to estimate an unknown proportion to within a maximum error of 0.06 with at least 95% confidence.
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.

5. a) Define: i) Null hypothesis ii)Type - I error iii) Type - II error
b) The fatility rate of typhoid patients is believed to be 17.26%.In a certain year 640 patients suffering from typhoid were treated in a metropolitan hospital and only 63 patients died. Can you consider the hospital efficient.

6. The following figures show the distribution of digits in numbers chosen at random from a telephone directory.

Digits	0	1	2	3	4	5	6	7	8	9
Frequency	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory.

7. From the following data, find out the regression of Y on X

X	65	63	67	64	68	62	70	66	68	67	69	71
Y	68	66	68	65	69	66	68	65	71	67	68	70

8. a) 10 samples each of size 50 were inspected and the number of defectives in the inspection was: 2, 1, 1, 2, 3, 5, 5, 1, 2, 3. Draw the appropriate control chart for defectives.
b) What are statistical quality control techniques?

CODE No.:14MC20102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Supplementary Examinations August - 2017

OBJECT ORIENTED PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the applications and features of procedure oriented and object oriented programming.	6 Marks
	b)	Explain the JVM architecture.	6 Marks
		(OR)	
2	a)	Differentiate Selection and Looping statements using Java methods.	6 Marks
	b)	Write a Java Program to arrange given names in ascending order.	6 Marks

UNIT-II

3	a)	What is constructor and explain overloading methods for constructors with suitable examples?	6 Marks
	b)	What is the difference between string Buffer and string Builder?	6 Marks
		(OR)	
4		What is garbage collection? What is the process that is responsible for doing that in Java?	12 Marks

UNIT-III

5		Demonstrate the use of ***super*** and ***final*** keywords in inheritance.	12 Marks
		(OR)	
6	a)	Demonstrate the access protection mechanism in Java.	8 Marks
	b)	Differentiate classes and interfaces.	4 Marks

UNIT-IV

7		Give different ways to write multi threaded programs. Write a sample program for each of the ways.	12 Marks
		(OR)	
8	a)	Explain about the exception handling keywords of Java language.	6 Marks
	b)	Give the hierarchy of I/O classes of Java language.	6 Marks

UNIT-V

9	a)	Explain the windows fundamentals with suitable examples.	6 Marks
	b)	Explain Graphics and Text in detail.	6 Marks
		(OR)	
10	a)	Explain the hierarchy of Swings with suitable example program.	6 Marks
	b)	Discuss different Swings components in detail.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Supplementary Examinations December - 2016

OBJECT ORIENTED PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Give different ways of declaring initialized and uninitialized, single dimensional and multi-dimensional arrays of Java language.	6 Marks
	b)	Explain about the all types of operators available in Java language. Also explain about jump statements.	6 Marks
		(OR)	
2	a)	What is overloading of a method? Give an example.	6 Marks
	b)	Give the meaning of the following object oriented programming terms: Encapsulation, Inheritance and Polymorphism.	6 Marks

UNIT-II

3	a)	Write a class called Complex for representing complex numbers and provide methods for addition and multiplication in addition to suitable constructors.	6 Marks
	b)	Explain about the usage of **final** keyword in all different contexts.	6 Marks
		(OR)	
4	a)	Give example code showing different types of nested classes. What is the need of nested classes?	6 Marks
	b)	Give any six methods of **String** class and show their usage with example statements.	6 Marks

UNIT-III

5	a)	Give the differences between classes and interfaces.	6 Marks
	b)	Explain about the functionality of **Date** class.	6 Marks
		(OR)	
6	a)	Why the package feature is required? How package names are related to the file system directories?	6 Marks
	b)	What is the difference between overloading and overriding a method? Give an example.	6 Marks

UNIT-IV

7		Give different ways to write multi threaded programs. Write a sample program for each of the ways.	12 Marks
		(OR)	
8	a)	Explain about the exception handling keywords of Java language.	6 Marks
	b)	Give the hierarchy of I/O classes of Java language.	6 Marks

UNIT-V

9		Write a Java program using Swing package to display a scrollable list of items and selected item should be displayed in a confirmation dialog box.	12 Marks
		(OR)	
10		List any three AWT events. When those events are raised? Give the corresponding listener interfaces and also provide outline event handler functions.	12 Marks

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CODE No.:14MC20103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC14) Supplementary Examinations December - 2016

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the advantages of DBMS over traditional file-processing system?	6 Marks
	b)	Write about different DBMS component modules in a database system environment.	6 Marks
		(OR)	
2	a)	What are the characteristics of Database approach?	6 Marks
	b)	Write about data models, schemas and instances.	6 Marks

UNIT-II

3	a)	Describe the various views of data in detail.	6 Marks
	b)	Define foreign key. What is this concept used for? How does it play a role in the join operation?	6 Marks
		(OR)	
4		What is a weak entity set? Draw an E-R diagram for banking system.	12 Marks

UNIT-III

5	a)	Explain various problems caused by data redundancy.	6 Marks
	b)	Write about equi-join, inner-join and outer-join.	6 Marks
		(OR)	
6	a)	What is decomposition of a relation? Explain the problems related to decomposition.	6 Marks
	b)	What is Normalization? Explain FIRST normal form and SECOND normal form with a suitable example.	6 Marks

UNIT-IV

7		How to manage lock table? Discuss the implementation of lock and unlock requests. Specify about the issues called Latches and convoys.	12 Marks
		(OR)	
8		How to deal with deadlocks and prevent from deadlocks?	12 Marks

UNIT-V

9		What is meant by RAID technology? Explain the various RAID levels with a neat sketch.	12 Marks
		(OR)	
10		Discuss in detail about implementation of Heap files with a sketch for Heap file organization with a linked list.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC14) Regular/Supplementary Examinations December - 2016

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Solve the following LPP by simple method. 12 Marks

Maximize $Z = 3x_1 + 2x_2 + 5x_3$

Subject to $x_1 + 2x_2 + x_3 \le 430$

$3x_1 + 2x_3 \le 460$

$x_1 + 4x_2 \le 420$

$x_1, x_2, x_3 \ge 0$

(OR)

2 Solve the following L.P.P. using Big-M method: 12 Marks

Maximize $Z = 3x_1 + 2x_2$

Subject to $2x_1 + x_2 \le 2$; $3x_1 + 4x_2 \ge 2$; $x_1, x_2 \ge 0$

UNIT-II

3 Find the optimal solution to the following transportation problem 12 Marks

	D_1	D_2	D_3	D_4	Supply
O_1	23	27	16	18	30
O_2	12	17	20	51	40
O_3	22	28	12	32	53
Demand	22	35	25	41	

(OR)

4 Solve the following assignment problem 12 Marks

		Job				
		1	2	3	4	5
Machine	A	2	9	2	7	1
	B	6	8	7	6	1
	C	4	6	5	3	1
	D	4	2	7	3	1
	E	5	3	9	5	1

UNIT-III

5 Determine the optimal sequence of jobs that minimizes the total elapsed time based on the following information. Processing time on machines is given in hours and passing is not allowed. 12 Marks

Job:	**A**	**B**	**C**	**D**	**E**	**F**	**G**
Machine M_1:	3	8	7	4	9	8	7
Machine M_2:	4	3	2	5	1	4	3
Machine M_3:	6	7	5	11	5	6	12

(OR)

6 A truck owner finds from his past records that the maintenance costs per year of a truck, whose purchase price is Rs.8,000/- are given below: 12 Marks

Year	1	2	3	4	5	6	7	8
Maintenance Cost (Rs.)	1000	1300	1700	2200	2900	3800	4800	6000
Resale Price (Rs.)	4000	2000	1200	600	500	400	400	400

Determine at what time it is profitable to replace the truck.

UNIT-IV

7 In a game of matching coins with two players, suppose A wins one unit of value, when there are two heads, wins nothing when there are two tails, and losses ½ unit of value when there are one head and one tail. Determine the payoff matrix, the best strategies for each player, and the value of the game to player A. 12 Marks

(OR)

8 Solve the following 2 × 4 game by graphical method 12 Marks

3	3	4	0
5	4	3	7

UNIT-V

9 A stockist purchases an item at the rates of Rs.40/- per piece from a manufacture, 2000 units of an item are required per year. What should be the order quantity per order, if the cost of order is Rs.15/- and inventory charges per year is 20 paise? Derive the economic order quantity. 12 Marks

(OR)

10 Given the following information: 12 Marks

Activity	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration (in days)	2	8	10	6	3	3	7	5	2	8

i) Draw the arrow diagram.
ii) Identify critical path and find the total project duration.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC14) Regular/Supplementary Examinations December - 2016

ORGANIZATIONAL BEHAVIOR AND HUMAN RESOURCE MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Why study Organizational Behaviour? What are the characteristics of Organizational Behaviour? Explain each of them.	12 Marks
		(OR)	
2		"Individual differences are because of Heredity *vs*. Environment". Critically analyses the statement.	12 Marks

UNIT-II

3		Compare and Contrast between different Theories of Personality.	12 Marks
		(OR)	
4		What are the managerial applications of Perception?	12 Marks

UNIT-III

5		Discuss the importance of Human Resource Planning.	12 Marks
		(OR)	
6		What are the tools available for Job analysis?	12 Marks

UNIT-IV

7	a)	Explain the nature and importance of recruitment. What are the steps in recruitment?	6 Marks
	b)	Explain the process of employee selection. What are the barriers to effective selection?	6 Marks
		(OR)	
8	a)	Define training and development. Explain the process of training employees.	6 Marks
	b)	Write a note on career management system available for employees.	6 Marks

UNIT-V

9	a)	Explain the components of remuneration.	6 Marks
	b)	What are incentives? How motivating are they to the employees? Explain.	6 Marks
		(OR)	
10		Explain the levels of employee participation in decision making. What are the limitations of employee participation?	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Regular/Supplementary Examinations December - 2016

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about elements of Object oriented model with paradigms.	6 Marks
	b)	Describe the three kinds of relationship that can be represented in UML diagrams.	6 Marks
		(OR)	
2	a)	Classify the relationships among classes.	6 Marks
	b)	Specify the four main elements of object model in object orientation process.	6 Marks

UNIT-II

3		Develop a class diagram for the following scenario: A ticket vending machine (TVM) dispenses tickets to passengers at a railway station. Passengers use the front panel to specify their boarding and destination place, details of passenger (number of adults and children) and data of travel. The machine displays the fare for the requested ticket. The passenger then deposits cash in the bin provided and press "accept cash". The machine checks the cash, if it is more than the balance cash is paid out and the ticket requested is printed. The system is also used by the operator who might want to know the cash held in the machine; the break-ups of small changes available in the machine withdraw or deposit cash when needed. And the report option also included the detailed report of transaction, summary report of the number of tickets sold for each destination, opening balance, cash collected, cash dispensed and current balance in the machine.	12 Marks
		(OR)	
4		Explain the use of Class diagram and Object diagram in Object Oriented product development. Explain with examples.	12 Marks

UNIT-III

5		Write about Interaction Models and explain Interaction models with examples.	12 Marks
		(OR)	
6		Discuss about Collaboration diagrams with examples and explain the concepts of Reverse Engineering related to it.	12 Marks

UNIT-IV

7	a)	Write and explain about Activity diagram with examples.	6 Marks
	b)	Develop an activity diagram for Library System.	6 Marks
		(OR)	
8	a)	Explain about State chart diagram.	6 Marks
	b)	Write in detail about Transitions and the Components of it.	6 Marks

UNIT-V

9	a)	Differentiate between Components and Interfaces. Write about modeling an API.	6 Marks
	b)	Define components. Write about modeling the distribution of components.	6 Marks
		(OR)	
10	a)	Write and explain about Architectural Modeling.	6 Marks
	b)	Write about modeling the Embedded Systems.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Regular/Supplementary Examinations December - 2016

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the need for data warehouse architecture with a block diagram and various components of data warehouse.	12 Marks
		(OR)	
2	a)	Mention the role of meta data in a data warehouse.	2 Marks
	b)	Compare and contrast operational and informational data stores.	8 Marks
	c)	Define data transformation.	2 Marks

UNIT-II

3		Write short notes on : i) Classification of Data mining systems	6 Marks
		ii) Data mining Task Primitives	6 Marks
		(OR)	
4		Suppose that a data warehouse consists of the three dimensions time, doctor, and patient, the two measures: count and charge, where charge is the fee that a doctor charges a patient for a visit. Enumerate and draw schema for the above data warehouse using three classes of schemas that are popularly used for modeling data warehouses.	12 Marks

UNIT-III

5		What are the methods used in performing data integration and data transformation to preprocess the data?	12 Marks
		(OR)	
6		Identify the steps in finding frequent item sets using Apriori algorithm.	12 Marks

UNIT-IV

7	a)	Compare the advantages and disadvantages of Eager Classification (e.g. Decision tree, Bayesian) versus Lazy Classification (e.g. k-Nearest Neighbor, Case Based Reasoning).	4 Marks
	b)	What is a Decision Tree? Explain how classification is done using Decision Tree Induction.	8 Marks
		(OR)	
8		What is k-means algorithm? Suppose that the data mining task is to cluster the following eight points (locations) into three clusters. A1(2,10), A2(2,5), A3(8,4), B1(5,8), B2(7,5), B3(6,4), C1(1,2), C2(4,9). The distance function is Euclidean distance, Suppose initially A1, B1, and C1 are assigned as the center of each cluster, respectively. Use k-means algorithm to show three cluster centers after the first round execution.	12 Marks

UNIT-V

9	a)	Explain outlier analysis in detail.	6 Marks
	b)	Identify several data mining applications which are useful for Biomedical or clinical applications.	6 Marks
		(OR)	
10		What is hierarchical clustering? With an example, discuss dendrogram	12 Marks

representation for hierarchical clustering of data objects.

CODE No.:14MC30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC14) Regular/Supplementary Examinations December - 2016

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain LAN, MAN, WAN and give an example of an application for each.	8 Marks
	b)	List out the uses of Computer Networks for mobile users.	4 Marks
		(OR)	
2		Explain various Wireless transmission technologies in Physical layer	12 Marks

UNIT-II

3	a)	Explain different framing approaches in Data Link Layer	7 Marks
	b)	What is ALOHA? Explain in detail.	5 Marks
		(OR)	
4		Describe about Collision - Free protocols in detail.	12 Marks

UNIT-III

5	a)	Define Quality of Service. Explain in detail about integrated and differentiated services.	7 Marks
	b)	Explain multicast routing with example.	5 Marks
		(OR)	
6	a)	Explain hierarchical routing in detail.	5 Marks
	b)	Describe congestion control for multicasting with example.	7 Marks

UNIT-IV

7	a)	Describe the services provided by the Transport layer to the upper layers.	5 Marks
	b)	Write a note on Multiplexing and Crash recovery in Transport layer.	7 Marks
		(OR)	
8		Elaborate on UDP protocol with necessary diagrams.	12 Marks

UNIT-V

9		Give a short notes on : i) HTTP. ii) SMTP. iii) IMAP. iv) POP3. v) Encryption and decryption. vi) Substitution cipher.	12 Marks
		(OR)	
10	a)	Explain DNS in detail.	6 Marks
	b)	Describe transposition cipher technique with example.	6 Marks

CODE No.:14MC4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular/Supplementary Examinations June - 2017

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Do you agree that, in its final form, communication is a manifestation of the personalities of both the sender and the receiver? Discuss.	12 Marks
	(OR)	
2	List out the important strategies in organizational communication.	12 Marks

UNIT-II

3	Justify the statement "Gestures are observed actions"' while discussing different elements of non-verbal communication.	12 Marks
	(OR)	
4	Present an evaluative essay on the role of communication in Crisis Management.	12 Marks

UNIT-III

5	Present the chief characteristics of the body of a business letter.	12 Marks
	(OR)	
6	Present the steps in compiling a routine business report.	12 Marks

UNIT-IV

7	Enumerate the functional aspects of group discussion with suitable illustrations.	12 Marks
	(OR)	
8	Present the key features of team presentations.	12 Marks

UNIT-V

9	"A resume is a micro cosmic representation of an individual's background". Substantiate the statement while presenting the components of a good resume.	12 Marks
	(OR)	
10	"An interview looks into the multidimensional personality of a candidate". Explain with illustrations.	12 Marks

CODE No.:14MC40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. IV Semester (SVEC14) Regular/Supplementary Examinations June - 2017

MANAGEMENT INFORMATION SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about systems approach.	6 Marks
	b)	Describe the frame work of MIS.	6 Marks
		(OR)	
2		Elaborate on management and organizational behavior.	12 Marks

UNIT-II

3		Explain the role of users in developing an information system for decision making and explain whether this give rise to its classifications.	12 Marks
		(OR)	
4		Explain why prototyping has become a popular way to develop a new computer based system.	12 Marks

UNIT-III

5		What is mean by Design Specification? Discuss various phases involved in preparing Design Specifications.	12 Marks
		(OR)	
6		Define the Conceptual Design concept. Explain about how to develop alternative Conceptual Design and process of selecting one from them.	12 Marks

UNIT-IV

7		Explain in detail the strategies adopted for Testing Security.	12 Marks
		(OR)	
8	a)	Write about evaluation of MIS.	6 Marks
	b)	Write about controlling techniques used for MIS.	6 Marks

UNIT-V

9		What are the fundamental weaknesses in MIS Development? Explain.	12 Marks
		(OR)	
10		Write short notes on:	
		i) Soft spots in planning.	6 Marks
		ii) TAR PIT.	6 Marks

CODE No.:14MC40102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular/Supplementary Examinations June - 2017

WEB PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the functionality of the following tags: i) COLGROUP ii) COORDS iii) MAP iv) PRE.	6 Marks
	b)	Write a *JavaScript* program that generates 10 random math problems. Each math problems should consists of three operands (random integers between **−10** and **10**, inclusive) and two operators (randomly from +, −, *****, / and **%**). For example, a problem might be **−4+7%3**. Display each problem in a prompt box and allow the user to enter an integer representing the value of the problem (follow standard *JavaScript* operator precedence rules). After all ten problems have been answered; output the number of correct answers.	6 Marks
		(OR)	
2	a)	How do you make an image clickable in HTML? Give an example code.	6 Marks
	b)	Write a *JavaScript* function **drawGrid( )** that takes a two dimensional array as its sole argument. Your function should produce an alert box displays the array with grid lines separating the elements.	6 Marks

UNIT-II

3	a)	How to create an XML document? Explain with an example.	6 Marks
	b)	Write an XSLT style sheet that accepts two currency codes and an amount as parameters and outputs the appropriate converted values using a simulated web service that is actually a hard-coded XML document.	6 Marks
		(OR)	
4		What is DOM Parser? How to create DOM Parser? Explain with an example code.	12 Marks

UNIT-III

5		What is the difference between HTTP GET and POST requests? Write a HTTP servlet that takes a request from a client with telephone number and send response to client with the telephone bill.	12 Marks
		(OR)	
6	a)	Write a servlet code that prints the selected color which is taken as an input from the user from a HTML web page.	6 Marks
	b)	Compare servlet with CGI.	6 Marks

UNIT-IV

7	a)	What are the responsibilities of JSP container? Explain.	6 Marks
	b)	Describe various standard action elements in JSP.	6 Marks
		(OR)	
8		How to develop, deploy and use custom actions in JSP? Explain with an example code.	12 Marks

UNIT-V

9	a)	Write a program to generate Fibonacci series using functions in PHP.	6 Marks
	b)	Explain any two conditional and looping statements in PHP.	6 Marks
		(OR)	
10		Explain various directories and file operations using PHP in detail.	12 Marks

CODE No.:14MC40103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular/Supplementary Examinations June - 2017

BIG DATA ANALYTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is big data? Discuss the evaluation of big data.	6 Marks
	b)	Discuss the various new revenue growth opportunities.	6 Marks
		(OR)	
2	a)	List the various big data sources and explain them.	6 Marks
	b)	Explain new business models based on big data.	6 Marks

UNIT-II

3	a)	Explain enterprise data platform ecosystem.	6 Marks
	b)	Compare the characteristics of RDBMS and Hadoop.	6 Marks
		(OR)	
4		Explain how to analyze, evaluate and develop the business hypothesis for loan repayment delinquency problem.	12 Marks

UNIT-III

5	a)	Compare RDBMS with MapReduce.	6 Marks
	b)	Explain analyzing data with Unix tools.	6 Marks
		(OR)	
6		Explain MapReduce data flow with a single reduce task using a neat diagram.	12 Marks

UNIT-IV

7	a)	Explain how data integrity is achieved in Hadoop.	6 Marks
	b)	What is serialization? Where and how serialization is used?	6 Marks
		(OR)	
8	a)	Write a short notes on failures in classic MapReduce.	6 Marks
	b)	Explain how Hadoop can process different input data formats from flat text files to databases.	6 Marks

UNIT-V

9		Explain map-side joins and reduce-side joins in detail.	12 Marks
		(OR)	
10		Explain cluster set up and installation.	12 Marks

CODE No.:14MC40104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular/Supplementary Examinations June - 2017

SERVICE ORIENTED ARCHITECTURE

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Describe how Service Oriented Architecture can be compared to client-server architecture.	12 Marks
		(OR)	
2		Compare Service Oriented Architecture to client-server and distributed architecture.	12 Marks

UNIT-II

3		Discuss about three service layers in detail.	12 Marks
		(OR)	
4	a)	Write short notes on: i) Orchestration. ii) Choreography.	6 Marks
	b)	Write a note on Atomic Transaction.	6 Marks

UNIT-III

5	a)	Explain in detail about service modeling guidelines.	6 Marks
	b)	Describe in detail about Service Oriented Architecture platform basics.	6 Marks
		(OR)	
6	a)	Describe in detail about web services description language.	6 Marks
	b)	Explain Entry-Centric and Task-Centric business service design in detail.	6 Marks

UNIT-IV

7		Explain Service Oriented Architecture platform and label the APIs in J2EE which is used to built Service Oriented Architecture.	12 Marks
		(OR)	
8		How is Service Oriented Architecture archived in .NET platform?	12 Marks

UNIT-V

9		Write in detail about Service Oriented Business process design.	12 Marks
		(OR)	
10		Discuss ws-BPEL language basics in detail.	12 Marks

CODE No.:14MC40111 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. IV Semester (SVEC14) Regular/Supplementary Examinations June - 2017

INFORMATION RETRIEVAL SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		What is Information Retrieval System? Explain the functional processes involved in Information Retrieval System.	12 Marks
		(OR)	
2	a)	What is a Contiguous Word Phrase? Explain its concept.	4 Marks
	b)	What are the difficulties in applying ranking when Boolean queries are used?	4 Marks
	c)	Explain the vocabulary browse and the canned query capabilities in Information Retrieval System.	4 Marks

UNIT-II

3	a)	Explain the concept of automatic indexing.	6 Marks
	b)	Trade off the use of pre-coordination versus post-coordination.	6 Marks
		(OR)	
4		Write short notes on N-Gram data structures and PAT data structure.	12 Marks

UNIT-III

5		Explain in detail about the following:	
		i) Natural Language processing.	6 Marks
		ii) Concept indexing.	6 Marks
		(OR)	
6		Describe automatic term clustering with a suitable example.	12 Marks

UNIT-IV

7	a)	What are the three levels of binding and why are there three levels of binding in the creation of a search?	6 Marks
	b)	Write a short note on weighted searches of Boolean systems.	6 Marks
		(OR)	
8		Discuss briefly about information visualization technologies.	12 Marks

UNIT-V

9		Explain the Boyer-Moore algorithm and Knuth-Pratt algorithm. List out the differences between them.	12 Marks
		(OR)	
10		List and explain the measures used in system evaluation.	12 Marks

CODE No.:14MC40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Supplementary Examinations December - 2016

MANAGEMENT INFORMATION SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about Systems approach.	6 Marks
	b)	Describe the frame work of MIS.	6 Marks
		(OR)	
2		Elaborate on Management and Organizational behavior.	12 Marks

UNIT-II

3		Define basic Information Systems. Discuss in detail about Financial Information Systems with corresponding block diagrams.	12 Marks
		(OR)	
4		Write about the following:	
		i) General Business Planning.	6 Marks
		ii) Work Break down structure for project control.	6 Marks

UNIT-III

5		What is mean by Design Specification? Discuss various phases involved in preparing Design Specifications.	12 Marks
		(OR)	
6		Define the Conceptual Design Concept. Explain about how to develop alternative Conceptual Design and process of selecting one from them.	12 Marks

UNIT-IV

7		Explain the organization and development procedures for implementation of MIS.	12 Marks
		(OR)	
8		Describe how to evaluate, control and maintain the MIS.	12 Marks

UNIT-V

9		What are the Fundamental weaknesses in MIS Development? Explain.	12 Marks
		(OR)	
10		Write short notes on:	
		i) Soft spots in planning.	6 Marks
		ii) TAR PIT.	6 Marks

CODE No.:14MC50101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC14) Regular Examinations December - 2016

INFORMATION SECURITY

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the round function of DES algorithm.	6 Marks
	b)	What is meant by Confusion and Diffusion of Block Ciphers?	6 Marks
		(OR)	
2	a)	Consider the following: Plaintext: "Cipher " Secret key: "Security" Calculate the Cipher text using Play fair Cipher Method.	6 Marks
	b)	Compare advantages and disadvantages of Steganography with Cryptography.	6 Marks

UNIT-II

3		Explain RC4 algorithm.	12 Marks
		(OR)	
4		Consider a Differ- Hellman scheme with a Common Prime q = 11 and a primitive root = 2. i) If user 'A' has Public Key $Y_A = 9$, what is 'A' Private Key X_A? ii) If user 'B' has Public Key $Y_B = 3$, what is shared Secret key K?	12 Marks

UNIT-III

5	a)	What are the requirements of hash function?	6 Marks
	b)	Explain the operation of Kerberos.	6 Marks
		(OR)	
6		Explain the SHA-512 algorithm.	12 Marks

UNIT-IV

7	a)	Explain Transmission and reception of PGP messages with a neat diagram.	6 Marks
	b)	Give a brief note on encapsulating security payload.	6 Marks
		(OR)	
8	a)	Briefly explain the scenario of IP security and its policy.	6 Marks
	b)	Draw and explain AH packet format.	6 Marks

UNIT-V

9	a)	With a neat diagram, show how messages are exchanged by the client and server during the handshake protocol.	8 Marks
	b)	Select any antivirus of your choice and explain its features.	4 Marks
		(OR)	
10	a)	What are the two types of audit records that can be used in intrusion detection? Explain the typical fields of an audit record.	8 Marks
	b)	Where would you place a web server in an organization assuming that you can use a network firewall and why?	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC14) Regular Examinations December - 2016

SOFTWARE TESTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	The defect rate of your organization is 3/1000 lines of code. You attend a vendor conference and there you find that your competitor has got 2/1000 lines of code. Can you use this information to bench mark in your organization? Explain.	6 Marks
	b)	If you create a set of tasks that achieve 100% coverage of the code, it ensures that the software has been tested well. Comment on this statement.	6 Marks
		(OR)	
2	a)	Give arguments for / against an independent testing group in an organization. Consider organizational size, resources, culture and types of software systems developed as factors in your argument.	6 Marks
	b)	Suggest suitable measures for monitoring tester productivity and testing costs.	6 Marks

UNIT-II

3	a)	Differentiate between primary and secondary mutants.	4 Marks
	b)	Write about basis Path Testing and its guidelines and applications in detail.	8 Marks
		(OR)	
4	a)	Explain why white box- is needed.	3 Marks
	b)	Differentiate between Loop Testing and Data Flow Testing with examples.	9 Marks

UNIT-III

5	a)	Define Software Metrics. Write about the need for it. Explain about product *Vs* procee Metrics and Objective *Vs* subjective Metrics.	6 Marks
	b)	Explain about the selection of testing tools and cost incurred in testing tools.	6 Marks
		(OR)	
6		Write about: i) Structural walk throughs.	4 Marks
		ii) Technical Reviews.	4 Marks
		iii) Function point analysis.	4 Marks

UNIT-IV

7	a)	Explain the work bench for testing programming phase.	6 Marks
	b)	Explain the Il-step Software Testing Process with a neat diagram.	6 Marks
		(OR)	
8		Explain the work bench for developing test plan with examples.	12 Marks

UNIT-V

9	a)	Explain the testing of Client Server Architecture with Eight Dimensions.	6 Marks
	b)	Describe the various issues involved in Rapid Application Development Testing.	6 Marks
		(OR)	
10	a)	State the importance of system documentation. What are the major factors that help in the documentation of a testing process?	6 Marks
	b)	Explain the testing process to be adapted for multi-platform environment.	6 Marks

CODE No.:14MC50103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. V Semester (SVEC14) Regular Examinations December - 2016

CLOUD COMPUTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Define Virtualization. Highlight the key points and identify the distinctions of different Virtualization approaches.	12 Marks
		(OR)	
2		What is meant by Hypervisor? Discuss at least two well know Hypervisors in detail with a neat diagram.	12 Marks

UNIT-II

3		What is NIST model in Cloud? Explain the architecture of NIST model with a neat diagram.	12 Marks
		(OR)	
4	a)	Write down the laws of Cloudonmics in Cloud Computing paradigm.	5 Marks
	b)	What is Cloud Computing? List out the merits and demerits of Cloud Computing.	7 Marks

UNIT-III

5	a)	Explain about load balancing and virtual machine techniques.	6 Marks
	b)	Discuss about SaaS characteristics and open SaaS.	6 Marks
		(OR)	
6	a)	Describe IDaaS interoperability.	6 Marks
	b)	Explain VMware V-sphere cloud computing infrastructure model.	6 Marks

UNIT-IV

7		How do you define a service in cloud? Describe the detailed working of Google APP Engine with a neat sketch.	12 Marks
		(OR)	
8		What are distinctions between PaaS and SaaS? Explain the working of Force**.**com in detail.	12 Marks

UNIT-V

9	a)	Write about the Identity protocol standards in Clouds.	6 Marks
	b)	Discuss about the Cloud security in detail.	6 Marks
		(OR)	
10	a)	Sketch and discuss about the architecture of Azure Platform and its services with a neat diagram.	8 Marks
	b)	Discuss about the emerging Cloud Management Standards.	4 Marks

CODE No.:14MC50106 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. V Semester (SVEC14) Regular Examinations December - 2016

MIDDLEWARE TECHNOLOGIES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the architecture of **.**Net framework.	12 Marks
		(OR)	
2		Explain String class showing String manipulation.	12 Marks

UNIT-II

3		Create a simple class in C**#.**Net demonstrating method overloading.	12 Marks
		(OR)	
4		Explain Debugging and Error handling in C**#.**Net.	12 Marks

UNIT-III

5		What is operator overloading? Write a C # program to implement operator over loading.	12 Marks
		(OR)	
6		What is role of generic type parameters? How to create custom generic methods? Explain.	12 Marks

UNIT-IV

7		List and explain ADO**.**Net components.	12 Marks
		(OR)	
8	a)	What is ADO**.**Net? Write the advantages of ADO**.**Net.	6 Marks
	b)	What is data set? Explain its architecture.	6 Marks

UNIT-V

9	a)	What is ASP**.**Net? Write the advantages of ASP**.**Net over ASP.	6 Marks
	b)	Write a simple program modeling the Event of ASP**.**Net Page.	6 Marks
		(OR)	
10	a)	What is Validation Control? Explain implementation in ASP**.**Net.	6 Marks
	b)	Explain Custom Validation Control for Server Side Validation.	6 Marks

CODE No.:14MC50108 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. V Semester (SVEC14) Regular Examinations December - 2016

BUSINESS INTELLIGENCE

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain Automated Decision Systems (ADS).	6 Marks
	b)	Define BI and briefly describe the major components of BI.	6 Marks
		(OR)	
2	a)	What are the various aspects of decision making?	6 Marks
	b)	Why is decision making so complex in today's business environment?	6 Marks

UNIT-II

3	a)	List out the DSS classifications of the AIS SIGDSS.	8 Marks
	b)	Compare Holsapple and Whinstons's classification with the AIS SIGDSS classification.	4 Marks
		(OR)	
4		How would you tackle decision making under certainty, risk and uncertainty?	12 Marks

UNIT-III

5		Briefly explain major data mining methods and algorithms.	12 Marks
		(OR)	
6	a)	What are the application areas of text mining?	6 Marks
	b)	What are the common tasks addressed by NLP	6 Marks

UNIT-IV

7	a)	Define Business Performance Management (BPM).	4 Marks
	b)	Compare Business Performance Management (BPM) and Business Intelligence (BI) with reasons for confusion still persist between BPM and BI.	8 Marks
		(OR)	
8		Explain the following terms: i) Learning Organization. ii) Organization learning.	12 Marks

UNIT-V

9	a)	Describe artificial intelligent applications.	6 Marks
	b)	Describe the Expert System (ES) development environment.	6 Marks
		(OR)	
10		Briefly describe the three step process description for SVM model development.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. V Semester (SVEC14) Supplementary Examinations June - 2017

INFORMATION SECURITY

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the sub key generation of DES algorithm.	6 Marks
	b)	What are the various security mechanisms?	6 Marks
		(OR)	
2		Consider the following: Plaintext: "NETWORK" Secret key: "SECURITY" Find the corresponding cipher text using hill cipher.	12 Marks

UNIT-II

3		Explain about AES structures with neat diagrams along with AES encryption and decryption process.	12 Marks
		(OR)	
4	a)	Distinguish between conventional and public key encryption.	4 Marks
	b)	Briefly explain the Man-in-the-Middle Attack on Diffie-Hellman Key Exchange with a neat sketch.	8 Marks

UNIT-III

5	a)	Explain Message Authentication requirements and what are the attacks related to message communication.	6 Marks
	b)	What are the situations in which message authentication code is used and draw the TCP segment with its explanation?	6 Marks
		(OR)	
6	a)	Explain the digital signatures with a real time example.	6 Marks
	b)	What problem was Kerberos designed to address? What improvements are made in Kerberos V5 over Kerberos V4?	6 Marks

UNIT-IV

7	a)	List and explain the types of messages in PGP and their purposes.	6 Marks
	b)	Explain the MIME content types.	6 Marks
		(OR)	
8	a)	Give examples of IP security applications and its services.	6 Marks
	b)	Explain IP security architecture and also explain basic combinations of security associations with a neat diagram.	6 Marks

UNIT-V

9	a)	Explain the operation of SSL change Cipher Spec Protocol.	4 Marks
	b)	What are the various components in SET?	4 Marks
	c)	What is Dual Signature?	4 Marks
		(OR)	
10	a)	Explain Trusted System.	6 Marks
	b)	What are the limitations of Firewalls?	6 Marks

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