Hall Ticket No: | | | | | | | | | | |

Question Paper Code : A1003

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

ENGINEERING CHEMISTRY

(Common to Computer Science and Engineering, Information technology & Electronics and Communication Engineering)

Date: 17 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1. a) Calculate the EMF of Daniel cell at 25^0C when the concentrations of $ZnSO_4$ and $CuSO_4$ are 0.001 M and 0.01 M respectively. The standard potential of the cell is 1.1 volts. 5M

   b) What is meant by a rechargeable cell? Discuss the construction and working of a lead-acid storage cell with discharging and recharging reactions. Give reasons for its failure after prolonged use. 10M

2. a) A conductance cell has two parallel electrodes of 1.25 sq.cm area placed 10.5 cm apart. When filled with an electrolyte solution, the resistance of the cell was found to be 1995 ohms. Calculate cell constant and specific conductance of the cell. 7M

   b) Define specific, equivalent and molar conductance with units. Write a note on the effect of dilution on specific and molar conductance. 8M

Unit - II

3. a) How is softening different from conditioning of water? Describe the demineralization process of purification of water. 8M

   b) Calculate temporary, permanent and total hardness of a sample of water in degree Clark and degree French which contains 32.4 mg of $Ca(HCO_3)_2$, 14.6mg of $Mg(HCO_3)_2$, 31 mg of $NaHCO_3$, 27.2 mg of $CaSO_4$ and 44.4 mg of $CaCl_2$ per liter. Given: (Atomic weight of Ca – 40, H – 1, C – 12, O – 16, Cl – 35.5, S – 32, Mg – 24, Na - 23). 7M

4. a) Differentiate between temporary and permanent hardness of water. Discuss in detail the various units of hardness. 8M

   b) What is phosphate conditioning? Explain why Na_3PO_4 is selected as the best reagent in the internal treatment of water? 7M

Cont...2

Unit - III

5. a) Compare chain polymerization to step polymerization with examples. 6M
   b) "Langmuir supported monolayer adsorption of gas molecules". Elaborate this statement with derivation. 9M
6. a) Mention the preparation and applications of following: 9M
      i. Buna-n Rubber
      ii. PVC
      iii. Polyethylene
   b) Define a colloid. Differentiate the colloids based on the affinity of dispersed phase and dispersion medium. 6M

Unit - IV

7. a) What is synthetic petrol? Discuss the Fischer-Tropsch method with the help of a neat diagram. 7M
   b) Write a note on the significance of proximate and ultimate analysis of coal. 8M
8. a) Define knocking. How is it related to Octane number? Give the importance of TEL as an antiknocking agent? 7M
   b) What is the significance of analysis of flue gas? Describe Orsats process. 8M

Unit - V

9. a) What are the raw materials used in manufacture of Portland cement? Describe the process of manufacturing Portland cement using these raw materials. 8M
   b) Describe the phenomenon of super conductivity with example. Give any four applications of super conductors. 7M
10. a) Draw the phase diagram of one component water system: 9M
      i. Define triple point and indicate on the phase diagram and give the values of temperature and pressure at this point
      ii. Using phase rule calculate degree of freedom at Triple point
      iii. What is critical point? Indicate the point on the phase diagram and give the values of critical temperature and pressure.
   b) State Gibbs phase rule and explain the terms involved. 6M

Hall Ticket No: | | | | | | | | | | | Question Paper Code : A1004

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

ENVIRONMENTAL SCIENCE

(Common to Electrical and Electronics Engineering, Mechanical Engineering, Aeronautical Engineering & Civil Engineering)

Date: 17 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1.	a)	Define environment and explain the components of environment with the help of a neat sketch.	8M
	b)	What are the ill effects of over utilisation of surface and ground water?	7M
2.	a)	Several parts of the world are facing water crisis. Discuss the water conservation strategies to tackle the same.	8M
	b)	List and explain the environmental effects of extracting and using mineral resources.	7M

Unit - II

3.	a)	Explain ecological pyramids in detail with examples.	8M
	b)	Explain food chain with examples?	7M
4.	a)	Define biodiversity and explain the threats to biodiversity.	8M
	b)	Explain the structure and function of an ecosystem?	7M

Unit - III

5.	a)	Solid waste management is a global problem. Highlight management strategies to tackle the same.	8M
	b)	Noise is a health hazard and a consequence of modern lifestyle. Justify the statement.	7M
6.	a)	Resettlement and rehabilitation is an important aspect of disaster management. Identify the problems and concerns regarding the same and give an example.	8M
	b)	Explain the impacts of improper solid waste disposal on environment?	7M

Unit - IV

7.	a)	Green buildings are becoming a necessity in the current environmental scenario. Explain the concept of green buildings.	7M
	b)	Explain clean development mechanism and polluter pay principle to protect the environment.	8M
8.	a)	What are clean development mechanism and its role in sustainable development?	7M
	b)	Environment and human health are closely related. Hence environmental management becomes the priority in all programmes. Highlight the importance of information technology in this matter.	8M

Unit - V

9.	a)	Write the salient features of Air Act 1981?	5M
	b)	Explain briefly about the role of State Pollution Control Board?	10M
10.	a)	What are NGO's? Give examples of five NGO's working for environment in India.	5M
	b)	Describe the methodology adopted in conducting EIA with a flow sheet.	10M

Hall Ticket No: | | | | | | | | | | | **Question Paper Code : A1005**

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

PROBABILITY, STATISTICS AND COMPUTATIONAL TECHNIQUES

(Electrical and Electronics Engineering)

Date: 21 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1. a) What are the axioms of probability? Give engineering examples. 5M

   b) Using the following probability distributing function: 10M

$$F(x)=\begin{cases}0 & x<1\\ 0.5x & 1\le x<3\\ 1 & 3\le x\end{cases}$$

   Find $P(x<3)$, $P(x\le 2)$ and $P(1\le x\le 2)$

2. a) The probability that a pen manufactured by a company will be defective is $\frac{1}{10}$. If 12 such pens are manufactured, find the probability that: 6M
      i. Exactly two will be defective
      ii. At least two will be defective
      iii. None will be defective

   b) Enumerate the applications of Binomial, Poisson distribution, Normal distribution. 9M

Unit - II

3. a) A machinist is making engine parts with axle diameter of 0.7 inch. A random sample of 10 parts shows mean diameter 0.742 inch with a standard deviation of 0.04 inch. On the basis of this sample would you say that the work is inferior. 8M

   b) Explain properties of Chi square and F-distribution? 7M

4. a) A set of five similar coins is tossed 320 times and the result is as shown in table. Test the hypothesis that the data follows a binomial distribution. 7M

No. of heads	0	1	2	3	4	5
Frequency	6	27	72	112	71	32

   b) In a locality containing 18000 families, a sample of 840 families was selected at random. Of these 840 families, 206 families were found to have a monthly income of Rs. 250 or less. It is desired to estimate how many out of 18000 families have a monthly income of Rs. 250 or less. Within what limits would you place your estimate. 8M

Cont...2

Unit - III

5. a) Explain the procedure adopted for solving a algebraic and transcendental equations using bisection method? 10M

   b) Use False position method to locate the root of $f(x) = (x^{10} - 1)$ between x = 0 and 1.3. 5M

6. a) Find by Newton's method, the real root of the equation $3x = \cos x + 1$ 7M

   b) From the following table estimate the number of students who obtained marks between 40 and 45 8M

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

Unit - IV

7. Fit a straight line to the x and y values based on the data provided in the following table: 15M

x	1	2	3	4	5	6	7
y	0.5	2.5	2.0	4.0	3.5	6.0	5.5

8. Using Two segment Trapezoidal rule to estimate: 15M
   $f(x) = 0.2 + 25x - 200x^2 + 675x^3 - 900x^4 + 400x^5$, from $a = 0$ *to* $b = 0.8$. Also determine the error. The exact value of the intergral can be determined analytically to be 1.640533.

Unit - V

9. a) Find by Taylor's series method the value of y at x = 0.1 to five places of decimals from $\frac{dy}{dx} = x^2 y - 1,\ y(0) = 1$. 6M

   b) Apply Runga – Kutta Method to find an approximate value of y for x = 0.2, if $\frac{dy}{dx} = x + y^2$, given that y = 1, where x = 0. 9M

10. Consider the solution of ordinary differential equation $2\frac{dy}{dx} = 4x - 2y$, with initial condition $y(1) = 3$. Using the data, determine $y(1.4)$ using Mile's Predictor – Corrector formula. 15M

Hall Ticket No: | | | | | | | | | | | **Question Paper Code : A1006**

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

COMPUTATIONAL TECHNIQUES

(Electronics and Communication Engineering)

Date: 21 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1. a) Using bisection method find a real root of $x\log_{10} x = 1.2$ lying between 2 and 3. Carry out three iterations. 8M

   b) Use the method of false position to find a real root of the equation $x^3 - 2x - 5 = 0$ correct to three decimal places. 7M

2. Use Newton Raphson method to derive the following: 15M

   i. An iteration formula for finding $\sqrt{N}$ and hence find $\sqrt{12}$

   ii. An iterative formula for finding the reciprocal of a number and hence find $\frac{1}{18}$

Unit – II

3 a) Prove that 8M

i. $\Delta \tan^{-1}\left(\frac{n-1}{n}\right) = \tan^{-1}\left(1-\frac{1}{n}\right)$ for $h = 1$

ii. $\Delta \log f(x) = \log\left\{1+\frac{\Delta f(x)}{f(x)}\right\}$

b) Using Newton's Interpolation formula find $y(1.4)$ from the following data 7M

x	1	2	3	4	5
y	10	26	58	112	194

4 Use the Lagrange's interpolation formula to find polynomial for the given data and hence the estimate y at $x = 2$. 15M

x	0	1	3	4
y	-12	0	6	12

Unit - III

5. a) Evaluate $\int_0^1 \frac{dx}{1+x}$ using Simpsons $\frac{3}{8}^{th}$ rule by dividing range into 6 equal parts. 7M

   b) Fit a second degree parabola to the following data: 8M

x	1.0	2.0	2.5	3.0	3.5	4.0
y	1.1	1.6	2.0	2.7	3.4	4.1

Cont...2

6. a) Use the method of least squares to find the straight line of form $p = mw + c$. Where p and w are taken in Kg-weight 7M

p	12	15	21	25
w	50	70	100	150

Compute p when w = 150Kg?

b) Evaluate $\int_2^8 \frac{dx}{\log_{10} x}$ using Simpsons $\frac{1}{3}^{rd}$ rule by dividing into 6 equal parts. 8M

Unit - IV

7. Obtain y(0.1) and y(0.2) by Runge - Kutta method with h = 0.1, given that $y^1 = x - y^2,\ y(0) = 1$. 15M

8. a) Using Taylor's series method find the solution of $\frac{dy}{dx} = 3x + y^2$, where y (0) =1, find the value of y for x = 0.01 correct to 4 decimal places. 8M

b) Using Picard method, find $y(1.1)$ from $y^1 = x + y$; y (1) = 0 7M

Unit - V

9. Find numerical solution of parabolic equation 15M

$\frac{\partial^2 u}{\partial x^2} = 2\frac{\partial u}{\partial t}$ When $u(0,\ t) = 0 = u(4,\ t)$ and $u(x,\ 0) = x(4-x)$ by taking $h = 1$.

Find values upto $t = 5$

10. Solve the elliptic equation $u_{xx} + u_{yy} = 0$ for the following square mesh with boundary values as shown in Fig.1 15M

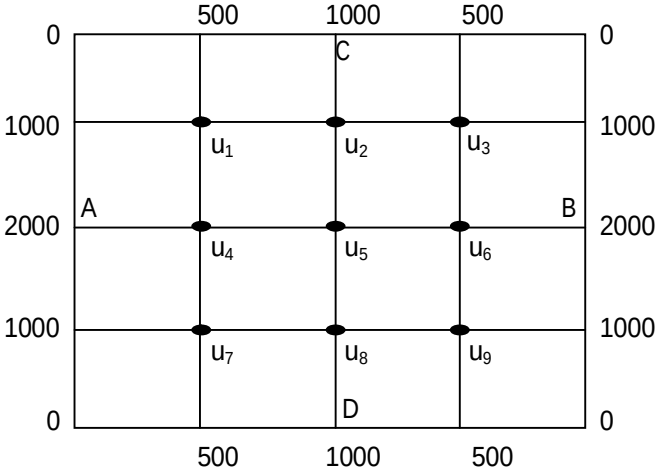


Fig.1

Hall Ticket No: | | | | | | | | | | |

Question Paper Code : A1007

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

MATHEMATICS-II

(Common for All Branches)

Date: 12 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1. a) Find the rank of the matrix $A=\begin{pmatrix} 2 & -2 & 0 & 6 \\ 4 & 2 & 0 & 2 \\ 1 & -1 & 0 & 3 \\ 1 & -2 & 1 & 2 \end{pmatrix}$ by reducing it into normal form. 8M

   b) Verify Cayley- Hamilton theorem for the matrix $A=\begin{pmatrix} 3 & 1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 5 \end{pmatrix}$ 7M

2. a) Reduce the matrix $A=\begin{bmatrix} -1 & 2 & -2 \\ 1 & 2 & 1 \\ -1 & -1 & 0 \end{bmatrix}$ to the diagonal form. 10M

   b) If λ is an Eigen value of an orthogonal matrix, prove that $\frac{1}{\lambda}$ is also its Eigen value. 5M

Unit - II

3. Reduce the quadratic form $3x^2+5y^2+3z^2-2xy+2yz-2zx$ to canonical form. Also specify the index, signature and the nature of the quadratic form. 15M

4. a) Show that $A=\begin{bmatrix} i & 0 & 0 \\ 0 & 0 & i \\ 0 & i & 0 \end{bmatrix}$ is Skew-Hermitian and also unitary. 7M

   b) Find the orthogonal transformation which transforms the quadratic form $x_1^2+3x_2^2+3x_3^2-2x_2x_3$ to canonical form. 8M

Cont...2

Unit - III

5. Solve, by separation of variables, $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, with $u(x,0) = 6e^{-3x}$. 15M

6. a) Form a partial differential equation by eliminating the arbitrary constants a, b and c from the relation $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1.$ 7M

   b) Solve: $(x + 2z)p + (4zx - y)q = 2x^2 + y.$ 8M

Unit - IV

7. a) Expand $f(x) = x$ as half range Fourier sine series for $0 \le x \le 1.$ 5M

   b) Express $f(x) = \begin{cases} 1 \text{ for } & 0 \le x \le \pi \\ 0 \text{ for } & x > \pi \end{cases}$ as a Fourier sine integral and hence evaluate $\int_0^\infty \frac{1-\cos(\pi\lambda)}{\lambda}\sin(\lambda x)d\lambda.$ 10M

8. If $f(x) = \begin{cases} 0, & if -\pi < x < 0 \\ \sin x, & if \ \ 0 < x < \pi \end{cases}$ prove that $f(x) = \frac{1}{\pi} + \frac{\sin x}{2} - \frac{2}{\pi}\sum_{m=1}^{\infty}\frac{\cos 2mx}{4m^2 - 1}$. 15M

Unit - V

9. a) If $f(x) = \begin{cases} 1 - x^2, & |x| < 1 \\ 0 \ \ , & |x| \ge 1 \end{cases}$, find the Fourier transform of $f(x)$. 10M

   b) Find the infinite Fourier sine transform of $f(x) = e^{-x}$. 5M

10. Solve the difference equation $u_{n+2} - 3u_{n+1} + 2u_n = 0$ with $u_0 = 0$ and $u_1 = 1$ by using z-transforms. 15M

Hall Ticket No: | | | | | | | | | | | Question Paper Code : A1201

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

BASIC ELECTRICAL ENGINEERING

(Common to Computer Science and Engineering & Information technology)

Date: 21 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1. a) Write the concept of source transformation technique with a suitable example. 6M
   b) Find the total resistance between the terminals A and B of the network shown in Fig.1 below and the total current. 9M

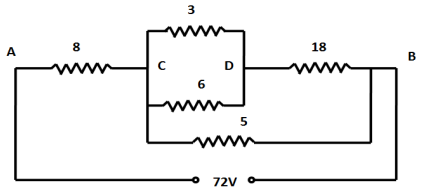


Fig.1

2. a) Reduce the circuit given in Fig.2 into a single equivalent current source using source Transformation technique. 8M

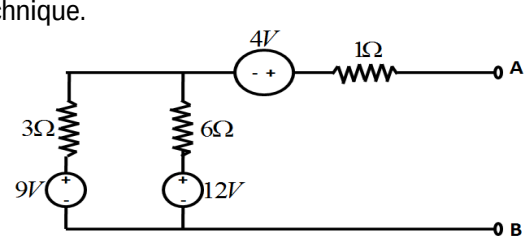


Fig.2

   b) Describe the relation between voltage and current for the 3 passive (R,L&C) elements. 7M

Unit – II

3. a) Find the voltage applied across AB in order to drive a current 5A into the circuit shown in Fig. 3 7M

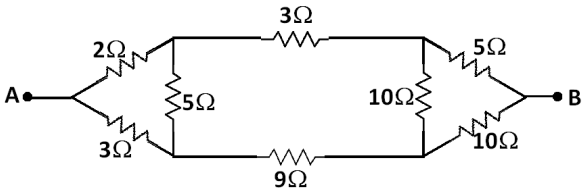


Fig. 3

   b) Explain the procedure with an example to solve a network using nodal equation by inspection. 8M

Cont...2

4. a) Deduce the Mathematical expression for star to delta conversion. 8M
   b) In the circuit of Fig. 4 Find: 7M
      i. The equivalent resistance of the circuit
      ii. The total current. The applied voltage is 200V

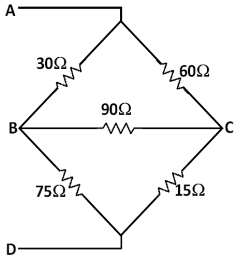


Fig. 4

Unit - III

5. a) Derive the relation between voltage and current of series RL circuit. 7M
   b) The alternating current is given by i= 62.35 sin 323t A. Determine: 8M
      i. Maximum value
      ii. Frequency
      iii. Average value
      iv. Form factor
6. a) Explain the concept of resonance for series RLC circuit with neat diagram. 7M
   b) Explain the following terms: 8M
      i. Impedance triangle
      ii. Complex power
      iii. Real power
      iv. Reactive Power

Unit - IV

7. a) State and explain Faraday's law of electromagnetic induction. 6M
   b) Define coefficient of coupling K and derive the relation between self inductances L_1, L_2, mutual inductance M and coefficient of coupling K. 9M
8. a) Explain the concept of dot convention with the help of diagram. 7M
   b) Explain: 8M
      i. Reluctance
      ii. Relative permeability
      iii. MMF
      iv. Flux density

Unit - V

9. a) Draw the Dual of the network shown in Fig.5. 9M

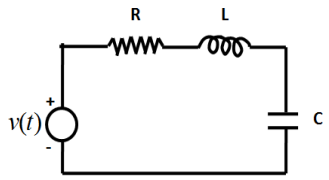


Fig.5

   b) The Z-parameters of the network are Z11=10 Ω, Z22 = 20 Ω and Z12=Z21=5 Ω. Find the Y parameters? 6M
10. a) Explain with example: 6M
      i. Incidence matrix
      ii. Tie set matrix
   b) Write the network equations of: 9M
      i. Z parameters
      ii. Y parameters
      iii. H parameters

Hall Ticket No: | | | | | | | | | | | Question Paper Code : A1202

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Mechanical Engineering, Aeronautical Engineering & Civil Engineering)

Date: 21 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1. a) Define the following terms: 8M
   i. Reluctance
   ii. Permeance
   iii. MMF
   iv. Flux density

   b) For the circuit shown below in Fig.1 Find the effective resistance between the terminals A and B 7M

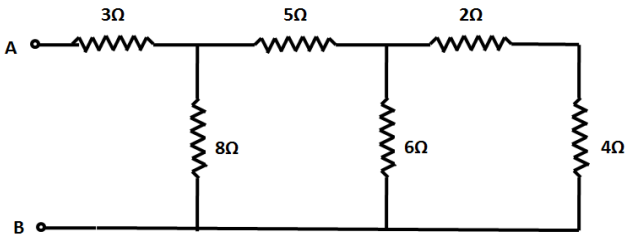


Fig.1

2. a) State and explain Faraday's laws. 6M
   b) State and explain Kirchhoff's laws with a neat circuit diagram. 9M

Unit - II

3. a) A pure inductance of 318mH is connected in series with a pure resister of 75Ω. The circuit is supplied from 50Hz source and the voltage across 75Ω resistor is found to be 150V. Calculate the supply voltage and phase angle. 8M

   b) The impedances (7+j5)Ω and (10-j8)Ω are connected in parallel. The supply voltage is 230V 50Hz. Calculate admittance, conductance and susceptance of the combined circuit. Also calculate total current drawn by the load. 7M

4. a) Define the following terms: RMS value, peak factor, form factor, frequency 8M

   b) Two impedances Z_1 = (6+j8)Ω and Z_2 = (8-j6)Ω are connected in parallel. If the applied voltage to the combination is 100V. Find: 7M
   i. Current and power factor of each branch
   ii. Main current and power factor of entire network

Cont...2

Unit - III

5. a) Explain deflecting torque, controlling torque and damping torque with reference to indicating instruments 7M
   b) With a neat sketch, explain the working of attraction type moving iron instrument. 8M
6. a) State and explain superposition theorem. 8M
   b) By using superposition theorem, find the currents in the branches and voltage across 6Ω resistor in the circuit shown in Fig 2. 7M

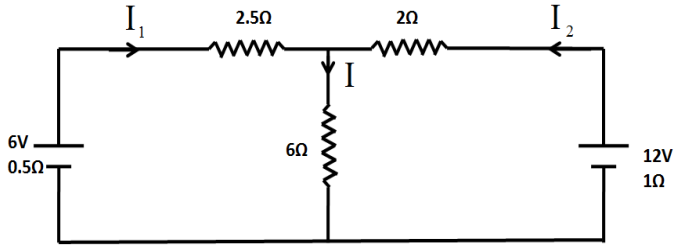


Fig.2

Unit - IV

7. a) Draw and explain the static characteristics of P-N junction diode. 8M
   b) With a neat circuit diagram and relevant waveforms, explain the operation of 1-Ø half-wave uncontrolled rectifier feeding R-load. Derive the expression for average value of output voltage. 7M
8. a) Define peak inverse voltage. Give an expression for peak inverse voltage in a half wave rectifier. Show relevant waveforms. 5M
   b) Draw the block diagram of a CRO and explain the working principle. 10M

Unit - V

9. a) Describe in brief about PNP and NPN transistors. 8M
   b) Draw an NPN transistor in CB configuration and explain the working. Draw its input characteristics. 7M
10. a) Compare the relative values of input and output resistances for CB and CE configurations. 8M
    b) Explain the functioning of BJT in CE configuration. Draw input and output characteristics? 7M

Hall Ticket No: | | | | | | | | | | |

Question Paper Code : A1304

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

ADVANCED ENGINEERING DRAWING

(Common to Mechanical Engineering, Aeronautical Engineering & Civil Engineering)

Date: 10 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit – I

1. A pentagonal lamina of 30 mm side rests on the corner such that the edge opposite to this corner makes an angle of 45° with VP. The two sides containing the corner make equal inclinations with HP. The surface of the lamina makes 60° with HP. Draw its projections using Auxiliary method. **15M**
2. A pentagonal pyramid 20 mm side of base and 35 mm altitude rests with one of its corners on HP such that the two base edges passing through the corner on which it rests make equal inclination with HP. The axis is inclined at 45° to VP and 30° to HP. Draw the top and front views of the pyramid using auxiliary method. **15M**

Unit - II

3. A cylinder of 40 mm diameter and 60 mm height (axis) rests on its base on HP. It is cut by a section plane which is perpendicular to profile plane and equally inclined to both the reference planes (HP and VP). The section plane bisects the axis of the solid. Draw the sectional T V, FV and an auxiliary view showing the true shape of the section. **15M**
4. A horizontal cylinder of 45 mm diameter and 90 mm long penetrates centrally a vertical hexagonal prism of 30 mm side and 90 mm long. The axis of the cylinder is parallel to VP. Develop the lateral surface of the cylinder which is extending out of the prism. **15M**

Unit - III

5. A vertical cone of 80mm diameter of base and axis 100mm long is penetrated by a horizontal cylinder such that the axes of the two solids intersect each other at right angles. The cylinder is 90mm long and 40mm diameter. The axis of the cylinder is parallel to VP and passes at a height of 30mm above the base of the cone. Show the intersection curves in the top and front views. **15M**
6. Draw the FV, TV and right profile view of the component shown Fig.1; looking in the direction. **15M**

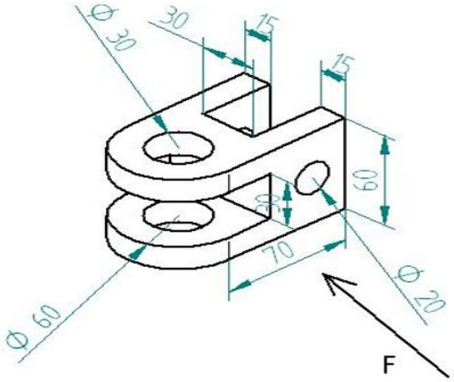


Fig.1

Cont...2

Unit - IV

7. A hemisphere of 60 mm diameter with its flat circular face at the top is placed centrally on the top flat end of another hemisphere of diameter 80 mm. Draw the isometric projection of the combination of the solids. 15M

8. A cone of base 40 mm diameter and height 60 mm rests on the frustum of a hexagonal pyramid base 50 mm side, top face 30 mm side and height 50 mm such that their axes coincide. Draw the isometric projection of the arrangement. 15M

Unit - V

9. A triangular prism of base edge 30 mm and 50 mm long is resting on one of its rectangular faces on the ground with its base edge making an angle of 40° with the PP. the nearest corner of the rectangular face on the ground is 10 mm behind PP. The station point is 70 mm from the PP and 10 mm to the right of the corner nearest to the PP. The horizon plane is 60 mm above the ground. Draw the perspective view of the object. 15M

10. A cylinder of base diameter 40 mm and height 60 mm is lying on one of its generator on the ground with the base inclined at 40° to the PP. One of the points on the circumference of the base is touching the PP. The station point is opposite to this point, 80 mm from the PP and 70 mm above the ground. Draw the perspective view of the object using vanishing point method. 15M

Hall Ticket No: | | | | | | | | | | | Question Paper Code : A1501

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

COMPUTER PROGRAMMING

(Common to Mechanical Engineering, Aeronautical Engineering & Civil Engineering)

Date: 19 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1.	a)	List and Explain the steps that a programmer follow in writing a program.	8M
	b)	Describe the basic steps in a System Development Life Cycle.	7M
2.	a)	Classify different standard data types supported in C program.	8M
	b)	Illustrate the precedence and associativity of operators with an example.	7M

Unit - II

3.	a)	List all the decision making and branching statements available in C language. With syntax and example discuss purpose of switch statement.	9M
	b)	Write a C program to compute and display sum of odd numbers and sum of even numbers from 1 to N, where N is input value supplied by user.	6M
4.	a)	What is the function? Explain the concept of call by value and call by reference by taking example of swapping contents of two variables using functions?	9M
	b)	Write a C program to read N integer values into an array (N value to be read from the user), find the maximum number in an array and print the number with its position.	6M

Unit - III

5.	a)	Explain in detail about string handling functions in C with examples?	10M
	b)	Write a program in C to find whether given string is palindrome or not without using string library functions.	5M
6.	a)	What is a pointer? Explain pointer arithmetic with examples?	10M
	b)	Write a program in C to read a set of characters using a pointer and to print in reverse Order ex: Input ABCDE output: EDCBA.	5M

Unit - IV

7.	a)	Write a C Program using structure to read today's date and print tomorrow's date.	8M
	b)	What is the structure? Write its syntax. Write a short note on pointers to structure.	7M
8.	a)	Write a simple program to illustrate the method of sending an entire structure as a parameter to a function.	7M
	b)	Explain the following terms with examples for first two: i. Array of Structures ii. Nested Structures iii. Difference between structure and unions	8M

Cont...2

Unit - V

9. a) What is a FILE? List any five important file handling functions available in C library with their description and syntax. 10M

   b) Write a C program to read data into file and print the same by using file functions. 5M

10. a) Write a C program to open a file named INVENTORY and store in it the following data: 10M

Item Name	Number	Price	Quantity
AAA	1111	17.50	115
BBB	2222	36.00	75

   Extend the program to read this data from the file INVENTORY and display the inventory table with the value of each item.

   b) With an example code demonstrate getc() and putc() file I/O functions. 5M

Hall Ticket No: | | | | | | | | | | | Question Paper Code : A1503

VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech II Semester Supplementary Examinations June - 2014

(Regulations: VCE-R11)

DATA STRUCTURES THROUGH C

(Common to Computer Science and Engineering, Information Technology, Electronics and Communication Engineering & Electrical and Electronics Engineering)

Date: 19 June, 2014 AN **Time: 3 hours** **Max Marks: 75**

Answer ONE question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

Unit - I

1. a) Define recursion. Differentiate recursion and iteration. How do we determine when we should express an algorithm recursively? 7M
   b) Write recursive functions to compute: 7M
      i. Factorial of a given number
      ii. GCD of two numbers
2. a) Write a short note on efficiency of sequential search. Using the same search the element 39 in the list: 88, 43, 24, 35, 63, 39, 18, 37, 80 and 16. 8M
   b) Write a C program to solve Towers of Hanoi problem (apply recursion). Trace the program for 3 disks. 7M

Unit - II

3. a) Write a function to implement an efficient bubble sort program with an example. What is the worst case time complexity? 8M
   b) Write a function to implement merge sort with an example. How many key comparisons does merge sort make in the best case? 7M
4. a) Write a function to implement quick sort. When does the quick sort behave the worst? What is the worst case efficiency? 8M
   b) What is a heap? Write a function to create a max Heap using the bottom up technique. Create a max heap for the following set of elements using the bottom up technique: 3,5,6,7,20,8,2,9? 7M

Unit - III

5. a) What is a data structure? What is a stack? What are the applications of stacks explain with examples. 7M
   b) Write an algorithm to convert an infix expression to postfix expression. Trace the algorithm for the following expression ((A – (B + C))*D) ^ (E + F). 8M
6. a) What is a Queue? What are the types of Queues? Explain Queue applications with examples. 7M
   b) Write a C function to implement Circular Queue. With an example. 8M

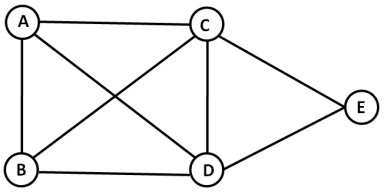
Cont...2

Unit - IV

7. a) What is a linked list? What are advantages of linked list over arrays? Explain each type of linked list with examples. 8M
   b) Write a C routine to reverse the ordering of the data in a Single linked list. 7M
8. a) Write a C routine to delete node from any position in a double linked list. Explain the same with an example. 7M
   b) Write a C function to add two polynomial equations using Linked List. 8M

Unit - V

9. a) Given the in order and post order traversal of a tree. Create the binary tree 7M
   In order : 9,3,1,0,4,2,7,6,8,5
   Post order : 9,1,4,0,3,6,7,5,8,2
   b) What is a graph? What are the types of graphs? Perform breadth first search on the following graph. 8M



10. a) Explain the different methods of representation of graphs. Write a function to implement depth first search traversal on a graph with an example. 9M
    b) What is a tree? What are tree traversals? Explain each with an example. 6M