

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1013



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech V Semester Supplementary Examinations June - 2014
(Regulations: VCE-R11)

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

(Mechanical Engineering)

Date: 10 June, 2014 FN

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) | Explain the different methods of demand forecasting? | 9M |
| | b) | What constitutes a scientific approach to forecasting? | 6M |
| 2. | a) | What are the factors governing elasticity of demand? | 10M |
| | b) | What is advertising elasticity? Write the expression for the same. | 5M |

Unit - II

- | | | | |
|----|----|---|----|
| 3. | a) | Write short notes on Iso-costs with an example. | 7M |
| | b) | State reasons for the following:
i. Iso-quants do not intersect
ii. Isoquant is an oval shaped curve | 8M |
| 4. | a) | A firm starts its business with fixed expense of Rs. 60,000 to produce commodity X. Its variable cost is Rs. 2 per unit. Prevailing market price of the product is Rs.6/-. How much the firm should produce to earn a profit of Rs. 20,000 at this price. | 6M |
| | b) | What are the assumptions in break even analysis and list a few limitations of break even analysis? | 9M |

Unit - III

- | | | | |
|----|----|--|----|
| 5. | a) | Enumerate the features of perfect competition. | 9M |
| | b) | Explain the different types of market structures? | 6M |
| 6. | a) | How are the price and output under monopoly determined? Illustrate with a diagram. | 8M |
| | b) | When will the monopolist maximize on profit? Explain. | 7M |

Unit - IV

- | | | | |
|----|----|--|----|
| 7. | a) | Write short notes on public enterprises and their types. | 7M |
| | b) | Write short notes on changing business environment in post liberalization scenario. Give appropriate examples. | 8M |
| 8. | a) | Explain the nature and scope of capital budgeting? | 6M |
| | b) | Write short notes on types of capital and methods and sources of raising finance. | 9M |

Cont...2

::2::

Unit - V

9. Prepare Trading, Profit and Loss account and balance sheet from the following balances, relating to year 31st March 2008. The closing stock was valued at Rs. 1450 15M

Capital	10000
Creditors	1200
Returns outwards	500
Sales	16,400
Bills payable	500
Plant and machinery	4000
Sundry debtors	2400
Drawings	1000
Purchases	10500
Returns/ Inwards	300
Wages	5000
Bank	1000
Repairs	50
Stock(1-4-2007)	8000
Rent	400
Manufacturing expenses	800
Trade expenses	700
Bad Debts	200
Carriage	150
Fuel and Power	100

10. Differentiate between the following: 15M
- i. Trial Balance and Balance sheet
 - ii. Profit and Loss account and Balance sheet
 - iii. Trading Account and Profit and Loss Account

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

DESIGN OF REINFORCED CONCRETE STRUCTURE

(Civil Engineering)

Date: 10 June, 2014 FN

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 – I0

1. a) Explain briefly about characteristic strength of concrete. What are the assumptions made in the design of limit state? 9M
- b) Explain balanced section and under-reinforced section as per L.S.M? 6M
2. a) Draw stress-strain curve of steel bars with and without definite yield point and indicate the yield stress f_y of them. 10M
- b) Define characteristic strength f_{ck} of concrete and also design strength of concrete as per L.S.M? 5M

Unit - II

3. a) Derive an expression for developmental length of bars in tension? 7M
- b) Determine the moment of resistance of an existing beam having the following data: 8M
 $b = 350 \text{ mm}$, $d = 900 \text{ mm}$, $d' = 50 \text{ mm}$; Tension reinforcement: 5-20 mm HYSD bars (Fe415); compression reinforcement 2-20 mm HYSD bars (Fe415). Grade of concrete: M15.
4. A reinforced concrete beam of M 20 grade concrete, 300 mm wide and 500 mm deep is required to resist a super-imposed moment of 152kN-m at an intermediate support of a continuous beam. Using mild steel bars, calculate A_{st} at top, if 4 number of 16 mm dia bars are required to be continued at bottom from one span to the other. Assume effective cover to compression steel as 45 mm and that to the tension steel as 50 mm. 15M

Unit - III

5. a) Explain the detailed procedure of flexural design of Beam? 10M
- b) Explain with neat sketch anchorage, developmental Length of reinforcing steel? 5M
6. a) Explain continuous slab? 3M
- b) Draw the typical cross section and plan of continuous slab showing the reinforcement details. 12M

Unit - IV

7. Design the longitudinal and lateral reinforcement in a rectangular reinforced concrete column of size 300mmX400mm; subjected to a design ultimate load of 1200KN and an ultimate moment of 200KN-m with respect to the major axis. Adopt M_{20} grade concrete and Fe 415 grade HYSD bars. Sketch the details of reinforcement. 15M
8. A reinforced concrete column 400mmX400mm supports an axial service of 1000KN. The safe bearing capacity of the soil at site is 200KN/m². Adopting M_{20} grade concrete and Fe415 HYSD bars design a suitable footing for the column and sketch the details of reinforcement. 15M

Unit - V

9. Design a simply supported RCC slab for an office floor having clear dimensions of 4mX10m with 230mm thick walls all-round. Adopt M_{20} grade concrete and Fe 415 grade HYSD bars. Sketch the details of reinforcement. 15M
10. Design an RCC slab for a room of size 4mX5m with discontinuous and simply supported edges on all the sides with corners prevented from lifting to support a live load of 4KN/m². Adopt M_{20} grade concrete and Fe 415 HYSD bars. Sketch the details of reinforcement. 15M

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1115



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech V Semester Supplementary Examinations June - 2014
(Regulations: VCE-R11)

GEO TECHNICAL ENGINEERING-I
(Civil Engineering)

Date: 12 June, 2014 FN

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) With the aid of schematic diagram, explain the principal clay minerals kaolinite, montmorillonite and illite. 7M
- b) A soil sample with a water content of 15% is coated with paraffin wax of specific gravity 0.9. It displaced 135cc of water and weighs 2N. After the wax is peeled off, the sample weighs 1.4N. If the specific gravity of soil solids is 2.7, determine void ratio, porosity and dry unit weight of soil. 8M
2. a) List and explain the different clay minerals with a neat sketch. 7M
- b) Classify the given soil as per I.S. classification System 8M
% passing IS 4.75mm sieve=86
% passing IS 75 μ sieve=10
 $C_u=6.2, C_c=1.5$
Liquid limit=45 %, Plastic limit=20%

Unit - II

3. a) List and explain the various factors affecting coefficient of permeability. 7M
- b) It is observed that in 12min 800ml of water passes through a soil sample of 10cm thick and 75cm² of C/S area under a head of 60cm. Determine the discharge velocity and coefficient of permeability. On oven drying the sample weights 0.00685KN. Compute the seepage velocity assuming specific gravity of soil solids as 2.7. 8M
4. a) Define total stress, neutral and effective stress when related to soil. 7M
- b) A clay stratum 6m thick lying below a sand layer 5m thick. The water table is at a depth of 2m from the surface. The sand has a porosity of 40% and $G=2.7$. Sand above water table may be taken as dry. Water content of soil in clay layer is 60% and clay soil has $G=2.65$. Calculate total stress, pore water pressure and effective stress at the middle of the clay layer. 8M

Unit - III

5. a) A laboratory compaction test on a soil having $G=2.67$ gave a maximum dry density of 18 kN/m³ and the moisture content is 12%. Find the degree of saturation, air content and percentage of air voids at the maximum dry density. Also find the theoretical maximum dry density with respect to zero-air voids at O.M.C. 8M
- b) Differentiate between normally consolidated and over consolidated soils. 7M
6. a) Define compaction. How does compaction differ from consolidation? 7M
- b) Discuss the effect of compaction on properties of soil 8M

Cont...2

::2::

Unit - IV

- | | | |
|----|---|----|
| 7. | a) A concentrated load of 500KN is applied on a soil mass, determine the intensity of vertical stress induced at a depth of 4m below the loading, at a distance of 3m from axis of loading at the same depth. Use Boussinesq and Westergaards theory. | 8M |
| | b) State the assumptions made in the Boussinesq's and Westergaard's theory | 7M |
| 8. | a) Explain the concept of 'pressure bulb'? | 8M |
| | b) Discuss the construction of Newmark's influence chart for vertical stress distribution | 7M |

Unit - V

- | | | |
|-----|---|----|
| 9. | a) Explain Mohr-coulomb's failure theory? | 8M |
| | b) What are the advantages and limitations of vane shear test? Explain the method of conducting the test in the field? | 7M |
| 10. | a) Define shear strength of soil. How soils are classified based on drainage conditions? | 7M |
| | b) Two identical specimens were tested in a triaxial apparatus at a cell pressure of 10KN/m^2 and 20KN/m^2 . The corresponding deviator stresses were found to be 15KN/m^2 and 25KN/m^2 . Determine the shear strength parameters of soil. Check your answers analytically. | 8M |

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

WATER RESOURCES ENGINEERING-I

(Civil Engineering)

Date: 14 June, 2014 FN

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 hydrologic cycle and explain it with the help of a neat sketch. 7M
- b) A catchment area has seven rain gauges A, B, C, D, E, F and G. In a year the annual rainfall recorded in cm by them are 130.0, 142.1, 118.2, 108.5, 165.2, 102.1 and 146.9 respectively. For a 10% error in the estimation of the mean rainfall, calculate the minimum number of additional stations required to be established in the catchment. 8M
2. a) Explain Horton's equation of Infiltration Capacity. 5M
- b) The following data of a storm producing a runoff 6cm. Calculate ϕ -index and W-index. 10M

Time (Hours)	1	2	3	4	5	6	7	8
Rainfall (cms)	0.1	1.0	1.4	2.6	2.0	1.5	1.0	0.4

Unit - II

3. a) Define hydrograph. With a neat sketch, explain various elements of a flood hydrograph. 7M
- b) Given the ordinates of a 4-h unit hydrograph as below derive the ordinates of a 12-h unit hydrograph for the same catchment. 8M

Time (h)	0	4	8	12	16	20	24	28	32	36	40	44
Ordinates of 4-h UH	0	20	80	130	150	130	90	52	27	15	5	0

4. a) Derive an expression for the silt supporting capacity of a channel according to Kennedy's theory. 7M
- b) For the given data, design a channel by Lacey's theory. Discharge $Q = 35$ cumecs, silt factor $f = 0.9$, side slope 0.5:1. 8M

Unit - III

5. a) Explain Unconfined and Confined aquifer? 6M
- b) Derive an expression for Steady Radial flow to a well for determining discharge. 9M
6. a) What are the methods of applying Irrigation water to crops? 8M
- b) What are the requirements of quality Irrigation water? 7M

Unit - IV

7. a) Describe the method of estimating a T_r year flood using Log-Pearson type III distribution. 7M
 b) Flood frequency computations for the river Chambal at Gandhisagar dam, by using Gumbel's method yielded the following results: 8M

Return Period T (years)	Peak flood (m^3/s)
50	40,809
100	46,300

8. a) Describe the Muskingum method of routing an inflow hydrograph through a channel reach. Assume the values of coefficients K and x for the reach are known. 8M
 b) A bridge has an expected life of 25 years and is designed for a flood magnitude of return period 100 years. 7M
 i. What is the risk of this hydrologic design?
 ii. If a 10% risk is acceptable, what return period will have to be adopted?

Unit - V

9. a) Define the following terms: 8M
 i. Intensity of irrigation
 ii. Capacity factor
 iii. Saturation capacity
 iv. Base period
 b) Explain the factors affecting the duty of a canal system? 7M
10. a) The culturable command area of a distributor is 16000 ha. The intensity of irrigation for Rabi is 40% and for Kharif is 20%. If the Kor period is taken as 4 weeks for Rabi and 2.5 weeks for Kharif, determine the outlet discharge. Depths of Kor water for Rabi are 13.5 cm and for Kharif 19.0 cm may be assumed. List the measures of improving the canal water duty. 8M
 b) List the measures for improving the canal water duty. 7M



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

STRUCTURAL ANALYSIS-II

(Civil Engineering)

Date: 17 June, 2014 FN

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) A three hinged arch of span l and rise h carries a uniformly distributed load of w per unit run over the whole span. Show that the horizontal thrust at each support is $wl^2/8h$. 5M
- b) A two hinged parabolic arch of span 12m and central rise 2.4 m has a secant variation for moment of inertia of the rib. It carries two concentrated loads of 50 KN each at quarter span and mid span. Calculate the horizontal thrust and BM at the load points. 10M
2. a) Derive an expression for horizontal thrust of a two hinged parabolic arch.. 5M
- b) A three hinged parabolic arch has a span of 20m and central rise of 4m. It is loaded with a udl of 20 KN /m for a length of 8m from left end support. Draw the BMD and find the position of max BM. 10M

Unit - II

3. Analyse the continuous beam shown in Fig.1 by Kani's method. 15M

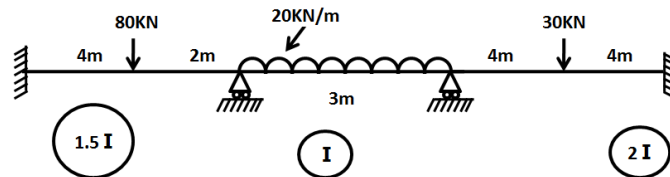


Fig.1

4. Analyse the rigid frame shown in Fig.2 by Kani's method. 15M

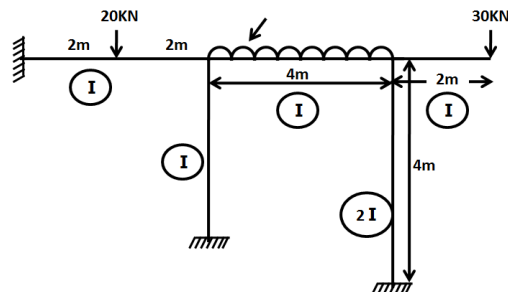


Fig.2

::2::

Unit - III

5. Find the moments at A, B, C, D shown in Fig.3 by Slope Deflection Method and draw the BMD. 15M

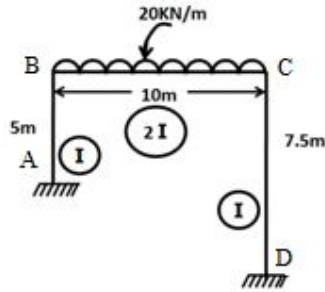


Fig.3

6. a) Explain Distribution factor with an example? 3M
b) Analyze the continuous beam loaded as shown in Fig.4 by moment distribution method. Sketch the bending moment and shear force diagrams. 12M

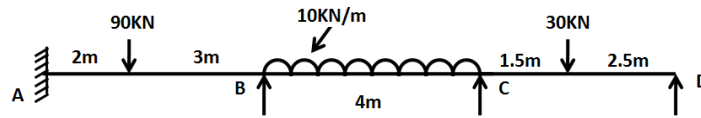


Fig.4

Unit - IV

7. a) Differentiate between static and kinematic indeterminacy. 3M
b) Analyse the continuous beam shown in Fig.5 by flexibility matrix method. 12M

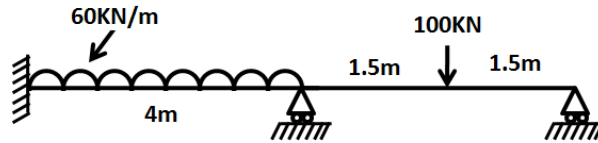


Fig.5

8. Analyse the continuous beam shown in Fig.6 by flexibility matrix method. EI is constant throughout. 15M

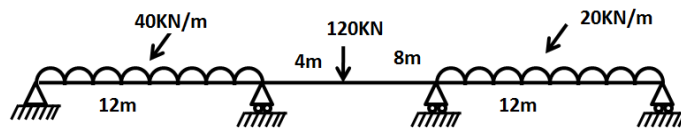


Fig.6

Unit - V

9. a) Write down the step by step procedure of analysis of continuous beams using stiffness method. 5M
b) Analyze the continuous beam shown in the Fig.7 by stiffness method and Draw the bending moment diagram. 10M

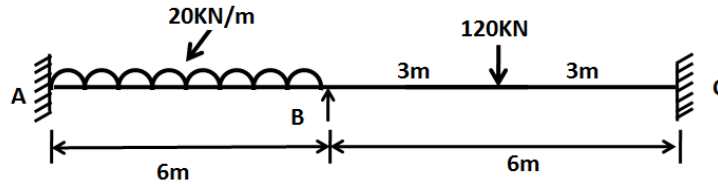


Fig.7

10. A two span continuous beam ABC is fixed at A and simply supported over the supports B and C. AB=6m and BC = 6m. The moment of Inertia is constant throughout and the beam is loaded as shown in Fig.8. Analyze the beam by Stiffness method .Draw the BMD and SFD. Also sketch the elastic curve. 15M

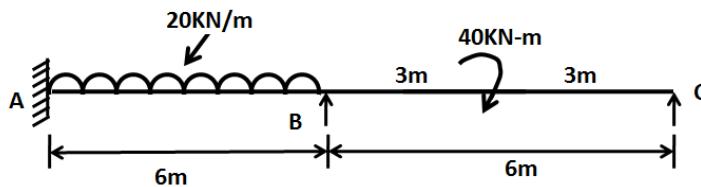


Fig.8

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1118



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

ENGINEERING GEOLOGY

(Civil Engineering)

Date: 19 June, 2014 FN

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 is Engineering Geology? Explain the sub divisions of Geology which are useful to carry out various civil engineering projects with example. 8M
- b) What are the components of earth environment? Explain the structure and composition of Lithosphere and its Engineering importance. 7M
2. a) What is mechanical weathering of rocks? Explain the formation of clay mineral from Granite with chemical equation. 7M
- b) What is silting up of reservoir? Explain briefly the controlling measures. Add a note on failure of Dam due to weathered formation. 8M

Unit - II

3. a) List out physical properties of minerals which are helpful in identification of minerals. Explain briefly different habits and moh's scale of hardness exhibited in minerals. 7M
- b) Explain the properties of following common rock forming minerals: 8M
 - i. Quartz
 - ii. Orthoclase Feldspar
 - iii. Hornblende
 - iv. Augite
4. a) Define Economic or ore mineral and rock forming minerals. List out any 5 industrial minerals. 7M
- b) Explain the properties of the following economic minerals: 8M
 - i. Bauxite
 - ii. Chromite
 - iii. Magnetite
 - iv. Pyrite

Unit - III

5. a) Explain any four structures of Igneous rocks. 8M
- b) What is metamorphism? Mention the types of metamorphism. 7M
6. a) What is unconformity? Mention different types of unconformity? Explain the importance of unconformity in the civil engineering projects. 7M
- b) Distinguish between a joint and fault in rocks. Explain Horst and Garben Fault. 8M

Cont...2

::2::

Unit - IV

7. a) What is importance of electrical resistivity studies in civil engineering? 7M
b) What are Mining and Quarrying? Mention the main types of mining and add a note on rock blasting. 8M
8. a) Write a note on improvement of competency of sites by Grouting. 8M
b) What are the applications of seismic reflection methods? 7M

Unit - V

9. a) Give a brief account of Geological & Geotechnical considerations to be taken in selecting a suitable site for the construction of a dam structure. 8M
b) Explain the role of geological factors in leakage of reservoirs. 7M
10. a) Discuss the suitability of occurrence of following rocks at dam site: 8M
i. Limestone
ii. Granite
iii. Laterites
iv. Basalt
- b) Explain geological considerations in lining of tunnels. 7M

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

ESTIMATING AND COSTING

(Civil Engineering)

Date: 21 June, 2014 FN

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 is an Estimate and what is its purpose? 10M
- b) Differentiate between Revised Estimate and Supplementary Estimate. 5M
2. a) Write a brief note on: 10M
 - i. Detailed Estimate
 - ii. Abstract Estimate
- b) Mention the factors to be considered for preparing a detailed Estimate. 5M

Unit - II

3. Prepare an estimate of the following items of residential building shown if Fig.1 below 15M
 - Excavation for foundation
 - Sand filling in plinth
 - PCC (1:4:8) for foundation
 - First class brick masonry in c.m (1:6) up to plinth
 - First class brick masonry in c.m (1:6) in super structure.

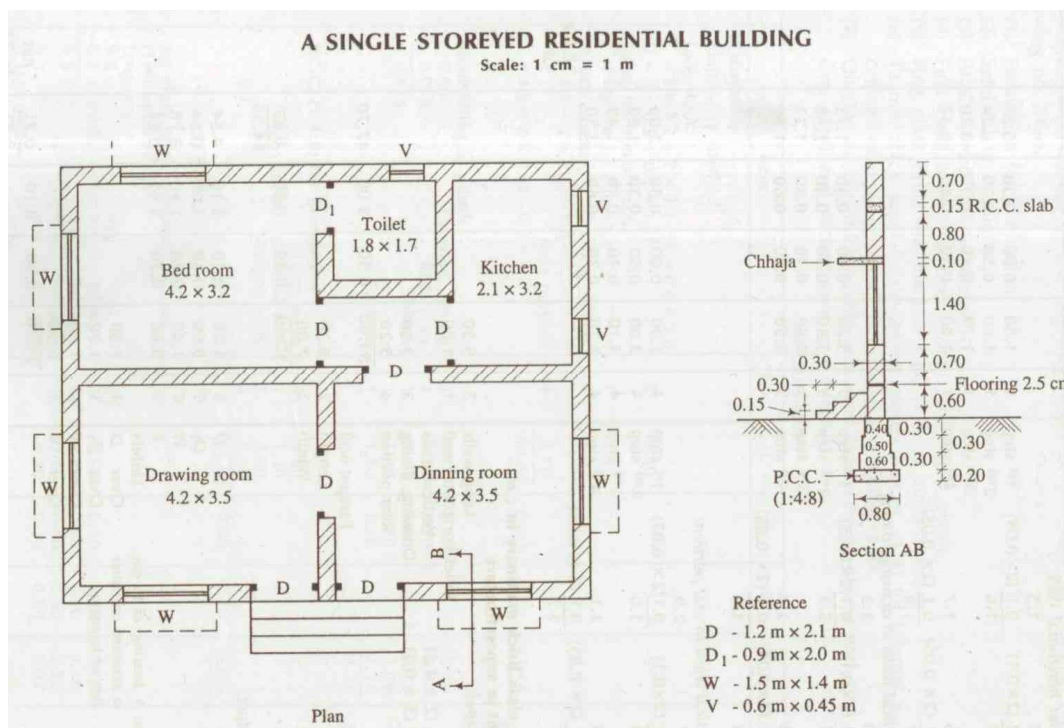


Fig.1

::2::

4. Calculate the volume of earth work for a proposed road having formation width 10m and 15M side slope 2:1 using mid sectional area method. The cross section and longitudinal section of a road is shown below in Fig.2.

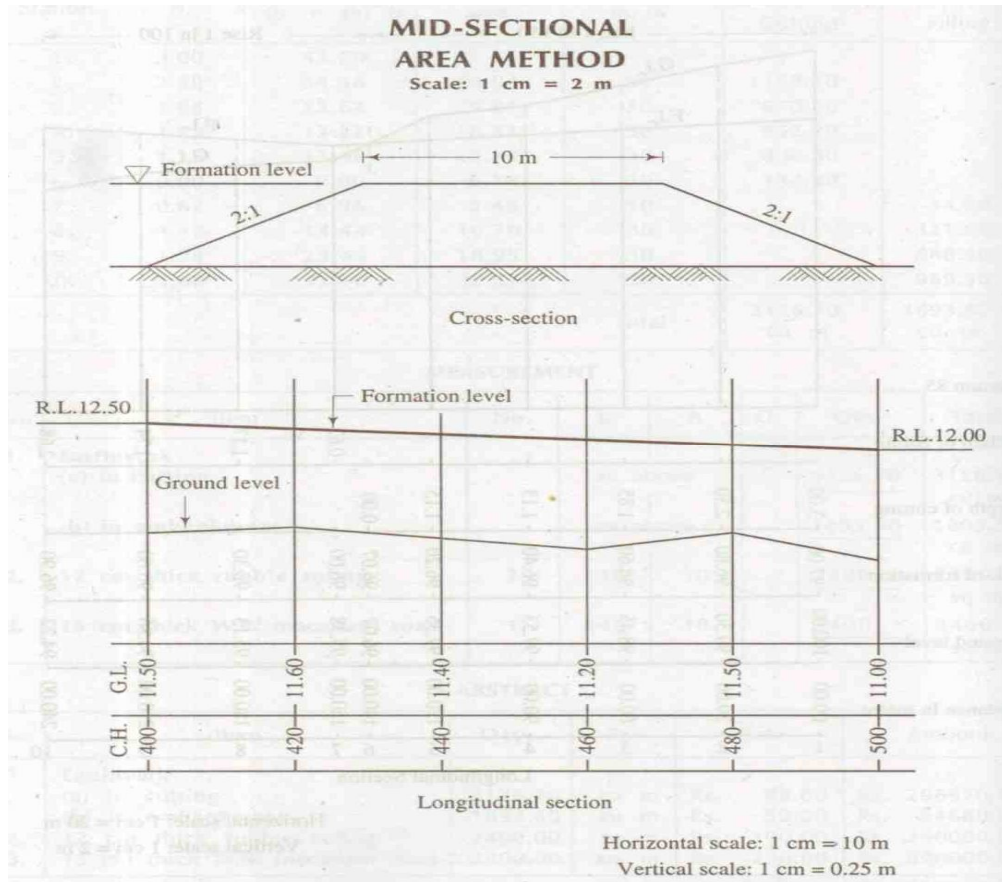


Fig.2

Unit - III

5. a) Prepare a detailed Rate Analysis for Cement Concrete 1:2:4 excluding reinforcement for foundation. 8M
b) Differentiate between Rate Analysis and Schedule of Rates. 7M
6. a) Prepare a detailed Rate Analysis for R.C.C 1:1.5:3 for Columns including reinforcement. 8M
b) Prepare a detailed Rate Analysis for Reinforced Brick Work in CM 1:3 for Slabs including reinforcement. 7M

Unit - IV

7. a) Write a brief note on Administrative approval and Technical Sanction. 8M
b) Differentiate between Security Deposit and Retention Money. 7M
8. a) What are the various essentials of a Contract Document? 8M
b) Briefly explain the duties and liabilities of an Owner in executing a Project 7M

::3::

Unit - V

9. a) Explain what is dematerialization and rematerialization processes? 8M
b) Describe in detail comparative method of valuation for open lands. 7M
10. a) Calculate the depreciated replacement cost of a building having the following particulars 8M
by adopting straight – line method and sinking fund method:
Total built up area of all the floors 350m²
Age of the building 25 years
Total life of the building 70years
Scrap value at the end of useful life 10%
Percentage for sinking fund 5%
Assume present rate of construction as Rs 1300/- per m² and comment on the results obtained by the two methods.
- b) Compare and differentiate the following: 7M
i. Reproduction cost and Replacement cost
ii. Depreciation and Deletion

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1217



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

POWER SYSTEM TRANSMISSION AND DISTRIBUTION

(Electrical and Electronics Engineering)

Date: 17 June, 2014 FN

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) Derive the expression for the capacitance per km of a single phase line without ground effect? 7M
- b) Find the capacitance of a single phase transmission line 40km long consisting of two parallel lines each 4mm in diameter and 2m apart. Determine the capacitance of the same line taking into account effect of ground. The height of conductors above ground is 5m? 8M
2. a) Explain the necessity of transposition in transmission lines? 8M
- b) A single phase transmission line has two parallel conductors 3m apart. The radius of each conductor being 1cm. Calculate the loop inductance per km length of the line if the material of the conductor is i) copper ii) steel with $\mu_r = 100$. 7M

Unit - II

3. a) Derive the ABCD constants for a medium transmission line which can be analyzed using Nominal π method? 9M
- b) Using a nominal π model find the sending end voltage and regulation of a 250 km three phase line delivering 50 MVA at 0.85 p.f lag, 132 kV, 50 Hz. The conductors are spaced 3m apart equilaterally. The conductor diameter is 1.6 cm and resistance is 0.11 Ω /km. 6M
4. a) Show that for a transmission line the receiving end voltage and current (V_r, I_r) are given in terms of sending end voltage and current (V_s, I_s) and auxiliary constants (ABCD) as
 $V_r = DV_s - BI_s$
 $I_r = -CV_s + AI_r$ 7M
- b) A short three phase transmission line connected to a 33kV, 50Hz generating station at the sending end is required to supply a load of 10MW at 30kV, 0.8pf lagging at the receiving end. If the minimum transmission efficiency is to be limited to 96%, estimate the resistance and inductance values of the line. 8M

Unit - III

5. a) What is corona? Discuss the various factors affecting corona. 8M
- b) Derive an expression for the sag when supports are at unequal levels? 7M
6. a) Distinguish between disruptive critical voltage and visual critical voltage. Give expressions for the same? 8M
- b) Calculate the sag for a span of 200 m if the ultimate tensile strength of conductor is 5788 kg. Factor of safety is 2. Weight of conductor is 604 Kg/km. 7M

Cont...2

Unit - IV

7. a) Derive an expression for string efficiency. Why should shielding be provided to insulators? 8M
b) Obtain expressions for the voltages across 4 units of an insulator string in terms of voltage across its top most unit. 7M
8. a) Briefly describe the three main types of insulators highlighting their advantages. 9M
b) A string of 6 suspension insulators is to be graded to obtain uniform distribution of voltage across the string. If the pin to earth capacitances are equal to C , and the self capacitance of the top insulator is $10C$. Find the mutual capacitance of each unit in terms of C . 6M

Unit - V

9. a) Distinguish between ring main and radial distribution systems. 8M
b) Prove that the volume of copper required for single phase 2 wire system is more than three phase 4 wire system. 7M
10. a) Briefly describe any three different types of DC distributors. 9M
b) Compare the DC 2 wire, AC 3-phase 3-wire on the basis of equal maximum potential difference between any two conductors? 6M

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

AC MACHINES-II

(Electrical and Electronics Engineering)

Date: 19 June, 2014 FN

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) Give reasons why armature winding is on the stator and the field winding is on the rotor. 7M
- b) Derive an expression for the pitch and distribution factor of an alternator. 8M
2. a) With a neat sketch, briefly explain the constructional details (Cylindrical rotor type) of an alternator. 8M
- b) A 3-phase, 16-pole synchronous generator has a star-connected winding with 144 slots and 10 conductors/slot. The flux per pole is 0.04 Wb and the speed is 375 RPM. Find the Frequency, phase EMF and line EMF. The total turns/phase may be assumed to be series connected. 7M

Unit - II

3. a) What is the significance of Slip test in synchronous machine? Describe the procedure for determination of X_d and X_q from Slip test. 8M
- b) Describe the procedure to compute the voltage regulation of a synchronous machine through EMF method. 7M
4. a) Discuss Blondel's two reaction theory applicable to salient pole synchronous machine. 8M
- b) With relevant characteristics, describe how voltage regulation of a synchronous machine can be found through zero power factor method. 7M

Unit - III

5. a) Discuss in brief about the various benefits of parallel operation of alternators. 8M
- b) What are the conditions to be fulfilled for parallel operation of two synchronous machines? Explain with diagram two dark and one bright lamp method. 7M
6. a) In brief, discuss about the changes that take place with changing mechanical torque to two alternators operating in parallel. 7M
- b) Draw and explain the phasor diagram of a salient-pole synchronous generator supplying full-load lagging current. Show that the power output per phase is given by: 8M

$$P = \frac{VE_f}{X_d} \sin\delta + \frac{V^2}{2} \left[\frac{1}{X_q} - \frac{1}{X_d} \right] \sin 2\delta$$

Unit - IV

7. a) Write short notes on: 8M
 - i. Starting of synchronous motor
 - ii. Damper windings
- b) Discuss in brief about the synchronous condenser of a synchronous motor. 7M
8. a) Explain effects of varying excitation on armature current and power factor in a synchronous motor. Draw "V" curves. 7M
- b) What is hunting in synchronous motor? How do you minimize the same in synchronous motor? 8M

Unit - V

9. a) With neat sketch, explain the construction details of reluctance motor. 8M
- b) With a neat sketch and phasor diagram, explain the operation of resistance split phase motor? 7M
10. a) Explain with neat diagram the principle and performance of A.C. series motor. 7M
- b) Using double revolving field theory explain the torque-slip characteristics of a single phase induction motor and prove that it cannot produce any starting torque. 8M

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

DYNAMICS OF MACHINERY

(Mechanical Engineering)

Date: 12 June, 2014 FN

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) Obtain an expression for gyroscopic couple? 5M
- b) An aero plane makes a complete half circle of 50 m radius towards left when flying at 200 Km/hr. The mass of the rotary engine and propeller is 400 kg with a radius of gyration 300 mm. The engine runs at 3000 rpm counterclockwise when viewed from the rear. Determine the gyroscopic couple and its effect on the aircraft. 10M
2. a) What is lubrication? Explain the differences between thin film lubrication, boundary lubrication & fluid film lubrication? 7M
- b) An effort of 1500 N is required to just move a certain body up an inclined plane of angle 12° , force acting parallel to the plane. If the angle of inclination is increased to 15° , then the effort required is 1720 N. Find the weight of the body and the coefficient of friction. 8M

Unit - II

3. a) With a neat sketch, explain the working of a multi plate friction clutch? 7M
- b) A cone clutch with a semi cone angle of 15° transmits 10 KW at 600 rpm. The normal pressure intensity between the surfaces in contact is not to exceed 100 Kpa. The width of the friction surface is half of the mean diameter. Assume $\mu = 0.25$ and determine: 8M
 - i. The outer & inner diameters of the plates
 - ii. Width of cone face
 - iii. The axial force necessary to engage the clutch
4. a) A simple band brake of drum diameter 600 mm has a band passing over it with an angle of contact of 270° , while one end is connected to the fixed pin, the other end is connected to the brake lever at a distance of 125 mm from the fixed pin. The brake lever is 750 mm long. The brake is to absorb a power of 35 KW at 200 rpm. Coefficient of friction $f=0.25$. Determine: 8M
 - i. The minimum pull necessary & the direction of rotation.
 - ii. Width of 3 mm thick steel band if the tensile stress is not to exceed 55 N/mm^2
- b) Differentiate between absorption type & transmission type dynamometers. Explain any one type of absorption dynamometer with a neat sketch. 7M

Cont...2

::2::

Unit - III

5. a) Explain the applications of governors. 5M
b) Draw a neat sketch of a Proell Governor and explain the working. 10M
6. The mass of each ball of a Proell governor is 7.5 kg and the load on the sleeve is 80kg. Each of the arms is 300mm long. The upper arms are pivoted on the axis of rotation whereas the lower arms are pivoted to links of 40mm from the axis of rotation. The extensions of the lower arms to which the balls are attached are 100mm long and parallel to the governor axis at the minimum radius. Determine the equilibrium speeds corresponding to the extreme radii of 180mm and 240mm. 15M

Unit - IV

7. a) Explain the necessity for balancing of rotating masses? 5M
b) A rotating shaft carries four masses 1, 2, 3 & 4 which are radially attached to it. The mass centers are 30 mm, 38 mm, 40 mm and 35 mm respectively from the axis of rotation. The masses 1, 3 and 4 are 7.5, 5, & 4 kg respectively. The axial distance between the planes 1 and 2 is 400 mm & between 2 and 3 is 500 mm. The masses 1 & 3 are at right angles to each other. Find for complete balance: 10M
i. Angle between 1, 2 & 1, 4
ii. Axial distance between 3 & 4
iii. Magnitude of mass 2
8. Four masses A, B, C and D are completely balanced. Masses C and D make angles 90° and 195° respectively with B in the same sense. The rotating masses have the following properties $M_b = 25\text{kg}$, $m_c = 40\text{kg}$, $m_d = 35\text{kg}$, $r_a = 150\text{mm}$, $r_b = 200\text{mm}$, $r_c = 100\text{mm}$, $r_d = 180\text{mm}$. Planes B and C are 250mm apart. Determine Mass A and its angular position. 15M

Unit - V

9. a) Explain with neat sketch damped vibrations? 6M
b) Derive an equation for Dunkerleys method? 9M
10. a) Write short notes on whirling of shafts. 7M
b) A cantilever shaft 50 mm diameter and 300 mm long has a disc of mass 100 kg at its free end. The Young's modulus for the shaft material is 200 GN/m^2 . Determine the frequency of longitudinal and transverse vibrations of the shaft. 8M

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1318



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

MACHINE TOOLS

(Mechanical Engineering)

Date: 14 June, 2014 FN

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 objectives of machine tool? Explain the various elements of machine tool? 8M
b) What are the principle angles of single point cutting tool and explain: 7M
 - i. Back rake angle
 - ii. Clearance angle
2. a) What are the characteristics of cutting tool materials? List out the different types of cutting tool materials. 8M
b) A high speed steel tool is used for machining a work piece of mild steel. While machining at a cutting speed of 30m/min. The useful life of the tool is found to be 1 hour. What will be the tool life if the same tool is used to cut at a speed of 40m/min, other parameters remaining the same? Assume the value of exponent (n) of standard Taylor's equation = 0.12. 7M

Unit - II

3. a) Describe the taper turning attachment on a lathe. What are its merits and demerits over other methods of taper turning? 8M
b) What are the attachments used on a center lathe and what purpose do they serve? 7M
4. a) Explain with a neat sketch the working principle of a lathe? 10M
b) Explain the classification of lathes? 5M

Unit - III

5. a) Draw a neat sketch and explain the principal parts of a shaper. 7M
b) Explain with the help of a neat sketch the angular cutting operation on a shaper? 8M
6. a) Find the gear combination and indexing movement necessary for 139 divisions. 8M
b) Draw a neat sketch of a plain milling cutter and explain it in detail? 7M

Unit - IV

7. a) What is drilling? What is the tool used for drilling? Brief out the reason for the modern drilling machine. 7M
b) Illustrate the salient design features of vertical precision boring machine. 8M
8. a) List out the advantages & disadvantages for vitrified and silicate bond. 8M
b) What is the cutting tool used for performing the grinding operation? On what factors the cutting tool selection is made in the case of grinding? 7M

Unit - V

9. a) Classify Jigs and Fixtures. 5M
b) Compare grinding, lapping and honing process. 10M
10. Draw a neat sketch and explain any three types of locating devices. 15M

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1319



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

THERMAL ENGINEERING-II

(Mechanical Engineering)

Date: 17 June, 2014 FN

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) Draw a neat P-V diagram and T-S diagram of a Rankine cycle and explain its working? 7M
b) A simple Rankine cycle works between pressures 28 bar and 0.06 bar, the initial condition of steam being dry & saturated. Calculate: 8M
 - i. Cycle efficiency
 - ii. Work ratio and
 - iii. Specific steam consumption
2. a) Draw a neat sketch and explain the flue gas analysis. 10M
b) Calculate the air fuel ratio for burning of propane (C_3H_8) with 130 percent theoretical air. 5M

Unit - II

3. a) Draw a neat sketch of a water level indicator and explain the working of it? 12M
b) Define the term draught and classify it. 3M
4. a) Write short notes on functions and applications of nozzles. 6M
b) Dry saturated steam at a pressure of 11bar enters a convergent & divergent nozzle and leaves at a pressure of 2 bar. If the flow is adiabatic and frictionless, determine: 9M
 - i. The exit velocity of steam
 - ii. Ratio of cross section at exit and that of throatAssume the adiabatic expansion to be 1.135.

Unit - III

5. a) Draw a neat sketch of any one type of a jet condenser and explain the working of it? 11M
b) Steam enters a condenser at $36^\circ C$ and with barometer reading of 760mm. If the vacuum of 695mm is produced find the vacuum efficiency. 4M
6. a) Define a steam turbine and state its field of application. 5M
b) In a De-Laval turbine, steam issues from the nozzle with a velocity of 1200 m/s, the nozzle angle is 20° , the mean blade velocity is 400 m/s and the inlet and outlet angle of the blade are equal. The mass of steam flowing through the turbine per hour is 1000 kg calculate: 10M
 - i. Blade angle
 - ii. Relative velocity of steam entering the de blades
 - iii. Power developed
 - iv. Blade efficiency

Cont...2

::2::

Unit - IV

7. a) Explain the difference between an impulse turbine and reaction turbine? 5M
b) A gas turbine unit receives air at 1 bar and 300K and compresses it adiabatically to 6.2 bar. The compressor efficiency is 88%. The fuel has a heating value of 44186KJ/Kg and the fuel to air ratio is 0.017 KJ/kg of air. The turbine internal efficiency is 90% calculate the work of turbine and compressor per Kg of air compressed and thermal efficiency. Take $C_p = 1.147$ KJ/Kg K and adiabatic index = 1.333. 10M
8. a) Describe with neat sketch the working of a simple constant pressure open cycle gas turbine. 5M
b) Draw a neat sketch and explain the process of intercooling to improve the thermal efficiency of an open cycle gas turbine plant? 10M

Unit - V

9. a) Explain briefly principle of operation of jet propulsion? 5M
b) With expression explain basic cycle for turbo-jet engine? 10M
10. a) List some of the applications of rockets. 5M
b) With neat sketch explain the components of a rocket? 10M

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech V Semester Supplementary Examinations June - 2014
(Regulations: VCE-R11)

DESIGN OF MACHINE MEMBERS-I
(Mechanical Engineering)

Date: 19 June, 2014 FN

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) | Explain the factors for selecting a material? | 7M |
| | b) | State the advantages and disadvantages of using cast iron as an engineering materials. | 8M |
| 2. | a) | Draw a stress strain diagram of a ductile and explain all the salient points in it. | 8M |
| | b) | Write short notes on theories of failure. | 7M |

Unit - II

- | | | | |
|----|------|--|-----|
| 3. | a) | Define the following: | 10M |
| | i. | Stress concentration | |
| | ii. | Theoretical stress concentration factor | |
| | iii. | Fatigue stress concentration factor | |
| | iv. | Notch sensitivity | |
| | v. | Endurance limit | |
| | b) | With sketches explain the methods of reducing the stress concentration | 5M |
| 4. | a) | Define the following with respect to fatigue strength: | 6M |
| | i. | Reversed load | |
| | ii. | Repeated load | |
| | iii. | Fluctuating load | |
| | b) | Derive Goodman's equations for ductile and brittle material subjected to fluctuating stresses. | 9M |

Unit - III

- | | | | |
|----|----|--|-----|
| 5. | a) | A circular shaft 50mm in diameter is welded to a support by means of a fillet weld as shown in Fig.1. Determine the size of the weld, if the permissible shear stress in the weld is limited to 100N/mm^2 . | 10M |
|----|----|--|-----|

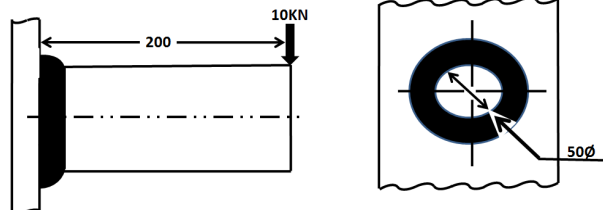


Fig.1

- | | | | |
|--|----|--|----|
| | b) | Write a short note on strength of welded joints. | 5M |
|--|----|--|----|

6. The structural connection as shown in Fig.2, is subjected to eccentric force P of 10kN with an eccentricity of 500mm. The center distance between bolts 1 and 2 is 200mm and the center distance between bolts 1 and 3 is 150mm. all bolts are identical. The bolts are made from plain carbon steel 30C8 and the factor of safety is 2.5. Determine the size of the bolts. 15M

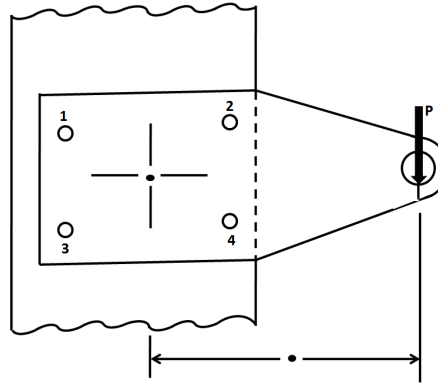


Fig.2

Unit - IV

7. a) Prove that a square key is equally strong in crushing and in shear. 5M
 b) Design a socket and spigot type cotter joint to connect two rods subjected to a steady axial pull of 100kN. The material used for spigot end, socket end and the cotter is C40 (40C8) steel having tensile yield strength of 328.6MPa. Take factor of safety as 4 for tension, 6 for shear and 3 for crushing based on the tensile yield strength. 10M
8. A section of steel shaft of 2 meters long supported between bearings carries a pulley of diameter 600mm weighing 1kN at its midpoint. The pulley delivers power to a machine causing a tension of 6kN in the tight side of the belt and 3kN in the slack side. The belt drive is horizontal. Assume the loads are steady, determine the diameter of the shaft, if the allowable shear stress in the shaft material is 40Mpa. 15M

Unit - V

9. a) A rigid coupling is used to transmit 50kw of power at 300 rpm. There are six bolts. The outer diameter of flanges is 200mm while the recess diameter is 150mm. The coefficient of friction between the flanges is 0.15. The bolts are made of steel 45C8 ($S_{yt} = 380\text{N/mm}^2$) and the factor of safety is 3. Determine the diameter of the bolts. 10M
 b) What are the different types of couplings available and state the applications of them. 5M
10. A semielliptical laminated spring is to carry a load of 5000N and consists of 8 leaves, 46mm wide, two of the leaves being of full length. Spring is to be made 1000mm between the eyes and is held at the centre by a 60mm wide band. Assume that the spring is initially stressed so as to induce an equal stress of 500 N/mm² when fully loaded. Design the spring giving i) thickness of leaves ii) eye diameter iii) length of leaves iv) maximum deflection and camber. Assume $E = 2.1 \times 10^6 \text{N/mm}^2$. 15M

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

METROLOGY AND SURFACE ENGINEERING

(Mechanical Engineering)

Date: 21 June, 2014 FN

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) Why is it necessary to give a tolerance on an engineering dimension? Give an example of both the bilateral and unilateral tolerances. 7M
- b) Determine the dimensions and tolerances of shaft and hole having size of $30 H_7 / h_8$ fit. Also determine the allowance and maximum clearance. 8M
2. a) What is basic dimension? Explain different ways of expressing tolerances. 7M
- b) Determine the tolerances on the hole and the shaft for a precision running fit designated by $50H7/g6$. 50mm lies between the range 30 – 50mm. $i=0.46(D)^{1/3} + 0.001D$, microns. Fundamental deviation for H hole=0. Fundamental deviation of g shaft= $-2.5D^{0.34}$. State the actual maximum and minimum sizes of the hole and shaft also, maximum and minimum clearances. 8M

Unit - II

3. a) Discuss the desirable features of 'End Standard'. 7M
- b) With a neat sketch describe a method of measuring unknown angle of a component using *sine bar*. 8M
4. a) With a neat sketch explain the principle of 'GO' and 'NO-GO' gauges. 7M
- b) With a neat sketch explain the method of measuring taper using roller set. 8M

Unit - III

5. a) Explain the construction of Autocollimator with a neat sketch? 7M
- b) What is an optical flat? Describe how an optical flat is used in the measurement of flatness with the help of a neat sketch. 8M
6. a) What is a Thread comparator? How is this used in the measurement of effective diameter of internal threads? Explain with a sketch. 7M
- b) How is three wire method used to measure the effective diameter of a screw? Explain with the help of a sketch? 8M

Unit - IV

7. a) Describe the classification of surface roughness parameters involved in evaluation of surface finish. What are the factors affecting surface roughness? 7M
- b) What are the methods of measuring surface finish? Explain briefly. What is microscopic inspection and micro interferometer? 8M
8. a) What is a profilometer? Explain with a neat sketch the Tomlinson surface meter. 8M
- b) What are the advantages and disadvantages of mechanical comparators and optical comparators respectively? 7M

::2::

Unit - V

- | | | | |
|-----|----|---|----|
| 9. | a) | What are Coordinate measuring machines (CMM)? Mention their types. | 8M |
| | b) | What are the different remedial measures for protecting the surface from corrosion? | 7M |
| 10. | a) | What is surface treatment process? Explain briefly. | 8M |
| | b) | List various organic and in-organic coatings. Briefly discuss this with applications. | 7M |

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

INTEGRATED CIRCUITS APPLICATIONS

(Common to Electronics and Communication Engineering &
Electrical and Electronics Engineering)

Date: 14 June, 2014 FN

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) Explain the following with respect to OP-AMP: 9M
 - i. Internal Architecture
 - ii. Ideal and Typical Characteristics
 - iii. Offset Parameters
- b) What is slew rate and explain its significance in OP-AMP? If slew rate of an OP-AMP is $0.5 \text{ V}/\mu\text{s}$ and is connected as inverting amplifier with a gain of 5, what will be the bandwidth achieved? Explain. 6M
2. a) Draw the equivalent circuit and transfer characteristics of ideal OP-AMP and explain. 6M
- b) Explain the following parameters and their measurement: 9M
 - i. V_{io}
 - ii. Z_{in}
 - iii. CMRR

Unit - II

3. a) Explain the operation of a sample and hold circuit. Design an OP-AMP differentiator that will differentiate an input signal with $f_{max}=100 \text{ Hz}$, $C_1=0.01 \mu\text{F}$? 9M
- b) Explain the working of voltage to current converter. 6M
4. a) Discuss the operation of triangular waveform generator circuit. 8M
- b) Discuss the operation of multiplier and divider. 7M

Unit - III

5. a) Draw the circuit of a first order low pass Butterworth filter and derive the gain of the filter and also plot its frequency response. 9M
- b) Design a second order low pass filter at a high cut-off frequency of 1KHz. Given $C_2=C_3=0.0047 \mu\text{F}$. 6M
6. a) Explain the operation of astable multivibrator using 555 timer? 10M
- b) In an astable multivibrator, $R_a=2.2\text{k}$, $R_b=3.9\text{k}$, $C=0.1 \mu\text{F}$. Determine the positive pulse width t_c , negative pulse width t_d , and free running frequency f_o . 5M

Unit - IV

7. a) List and explain the specifications of DAC. 7M
- b) With necessary design equations, show the design of adjustable voltage regulator using 78XX. List the advantages of three terminal regulators. 8M
8. a) Draw the block diagram of counter type ADC and explain its working. Give the comparison of different types of ADCs in terms of speed. 8M
- b) With a neat circuit schematic, explain the working of regulator using OP-AMP. List the requirements of a good regulator. 7M

::2::

Unit - V

- | | | | |
|-----|------|--|-----|
| 9. | a) | Explain the switching action of a MOSFET. Draw the circuit of a CMOS NOR gate and explain its operation. | 10M |
| | b) | Explain the working of a four-bit parallel adder. | 5M |
| 10. | a) | Define the following terms: | 7M |
| | i. | Noise Margin | |
| | ii. | Power Dissipation | |
| | iii. | Fan-out | |
| | iv. | Speed-Power Product | |
| | v. | Propagation Delay | |
| | b) | Explain the working of serial-in-serial-out shift register. | 8M |

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1416



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

DIGITAL DESIGN THROUGH VERILOG HDL

(Electronics and Communication Engineering)

Date: 17 June, 2014 FN

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) Briefly explain the steps involved in conventional electronic circuit design. 7M
b) Describe the following levels of design description: Circuit level, Gate level, Data flow, Behavioral level. 8M
2. a) Describe the physical design in a ASIC design flow. 7M
b) Explain the structure of a typical simulation module by using eight input NAND gate as an example? 8M

Unit - II

3. a) With instantiation, functional representation and functional description, explain tri-state buffer primitives. 8M
b) Write Verilog module for 8-bit comparator with test bench. 7M
4. Explain in detail net, gate and tri-state delays with examples and Verilog code? 15M

Unit - III

5. a) Design a module of an up-down counter and a test bench for the same. 7M
b) With an example explain how the INITIAL construct used in Verilog. 8M
6. a) Explain how the ALWAYS statements are used in Verilog? 8M
b) Design a counter module and test bench to illustrate the use of WAIT construct in a Verilog. 7M

Unit - IV

7. a) Explain with example how assign and net declarations can be combined? 5M
b) Write the operator precedence for unary, binary and ternary operators in Verilog. 10M
8. a) Draw the basic functional unit of a dynamic shift register using switch level modelling. Also write Verilog module and test bench. 10M
b) Differentiate between regular and resistive switches in Verilog. 5M

Unit - V

9. a) Illustrate the differences between * > and => operators in specify block. 8M
b) Why 'specparam' construct is used in specify block? Explain. Also compare 'specparam' and 'parameter'. 7M
10. a) Explain recursive function with example? 6M
b) Briefly explain combinational and sequential UDPs in Verilog. Also write Verilog module for D latch using UDP. 9M

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1417



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

ANALOG COMMUNICATIONS

(Electronics and Communication Engineering)

Date: 19 June, 2014 FN

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) Explain with circuit diagram, the generation of AM wave using switching modulator with analysis and spectrum? 8M
- b) Consider the message signal $m(t)=20 \cos 2\pi t$ Volts and the carrier wave $c(t)=50 \cos(100\pi t)$ volts. Give the time-domain expression for the resulting conventional AM wave for 75% modulation. Find the power developed across a load of 100Ω due to this AM wave. 7M
2. a) Explain in brief, the block diagram representation of Costas receiver suitable for demodulating DSBSC waves? 8M
- b) The output current of 60 percent modulated AM generator is 1.5A. To what value will this current rise if the generator is modulated additionally by another audio sine wave, whose modulation index is 0.7? What will be the percentage power saving if the carrier and one of the sidebands are now suppressed. 7M

Unit - II

3. a) Explain coherent detection of SSBSC wave? 8M
- b) Find the Hilbert transform of the pulse given in below Fig.1. 7M

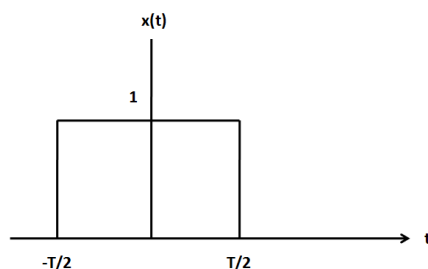


Fig.1

4. a) Explain generation of VSBSC using filtering technique? 8M
- b) Explain envelope detection of VSBSC wave? 7M

Unit - III

5. a) Derive an expression for wideband FM wave with sinusoidal modulation. 8M
- b) In an FM system, when the audio frequency is 500Hz and modulating voltage is 2.5V, the deviation produced is 5K Hz. Calculate the new value of frequency deviation produced if the AF voltage is raised to 10 V while the modulating frequency dropped to 250Hz. Calculate the modulation index in each case. 7M
6. a) Explain the two methods of generating FM waves? 10M
- b) Explain the FM demodulation using slope detection method? 5M

Cont...2

::2::

Unit - IV

- | | | | |
|----|----|---|----|
| 7. | a) | Explain De-emphasis and pre-emphasis in FM? | 7M |
| | b) | Prove the figure of merit of FM is $(3/2) \beta^2$. | 8M |
| 8. | a) | Find the figure of merit of DSBSC (Double Sideband Suppressed Carrier)? | 8M |
| | b) | Explain how noise effects the performance of analog modulation systems? | 7M |

Unit - V

- | | | | |
|-----|----|---|----|
| 9. | a) | With neat block diagram explain the working of super heterodyne receiver | 8M |
| | b) | An AM receiver has an IF 455 kHz and is tuned to 1000kHz, the tuned circuit in RF stage has a Q of 60. Find:
i. Image frequency
ii. Image rejection in db's | 7M |
| 10. | a) | Find the image frequency range for a receiver which tunes 40 to 10 MHz with an IF of 1.8MHz do any of the image frequencies fall in the receiver pass band if IF circuits have a combined Q of 50 at the top end of the band. Find the image rejection ratio in decibels at that frequency. | 8M |
| | b) | Explain FM stereo broadcast transmitter? | 7M |

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

ANTENNAS AND WAVE PROPAGATION

(Electronics and Communication Engineering)

Date: 21 June, 2014 FN

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: 10M
 - i. Radiation Intensity
 - ii. Directivity
 - iii. Gain
 - iv. HPBW
 - v. Effective Area of an antenna and write the corresponding mathematical expressions.
- b) Two lossless polarization matched antennas aligned for maximum radiation between them, are separated by a distance of 50λ . The antennas are matched to their transmission lines and have directivities of 20dB. If the power at the input terminal of the transmit antenna is 10W, calculate the power at the receiver antenna terminal. 5M
2. a) Derive the expression for Friis formula. 6M
- b) Find the directivity for the following intensity patterns: 9M
 - i. Unidirectional cosine pattern $U = U_m \cos\theta$
 - ii. Bidirectional cosine pattern $U = U_m \cos\theta$
 - iii. Bidirectional sine pattern $U = U_m \sin\theta$

Unit - II

3. a) Derive the expressions for the far field components for a small loop antenna. 6M
- b) Show that the radiation resistance of a small loop antenna is $R_r = 31171(A/\lambda^2)^2$ 9M
4. a) Given a linear uniform array of 16 elements with a separation of $\lambda/4$ between the elements. Compare the directivity of the array if the array is: 6M
 - i. Broadside array
 - ii. Ordinary end fire array
- b) For any array of 2 isotropic antennas, show that the patterns are identical 9M

Unit - III

5. a) Explain the practical design considerations for the monofilar axial –mode helical antenna? 10M
- b) With a neat diagram, explain the helix structure? 5M
6. a) Explain the different antennas having essentially a single travelling wave? 10M
- b) Explain the operation of V antenna in detail? 5M

Unit - IV

7. a) Discuss the method adopted to obtain optimum flare angles of a pyramidal horn and the conditions on horn length to realize such a horn. 5M
b) Determine the length L , H-plane aperture and flare angles θ_E and θ_H of a pyramidal horn for which $a_E = 10\lambda$. The horn is fed by a waveguide with TE_{10} mode. Take $\delta_E = 2\lambda$ and $\delta_H = 0.375\lambda$. Also calculate the beam widths and directivity. 10M
8. a) Write the advantages offered by dielectric lens antennas. 5M
b) How does a folded dipole differ from its standard version? Show that a λ folded dipole offers a fourfold increase in its input impedance over that of a standard dipole. 10M

Unit - V

9. a) Discuss the prominent modes of wave propagation and factors affecting them. 10M
b) In an ionospheric propagation, the angle of incidence made at a particular layer at a height of 200 km is 45° with a critical frequency of 6 MHz. Calculate the skip distance. 5M
10. a) Find the far field distance from an antenna with maximum dimension of 1m and operating frequency of 900 MHz. 5M
b) Define the terms surface and elevated ducts and duct gradient. Also discuss the duct propagation. 10M

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

SIGNAL ANALYSIS AND TRANSFORM TECHNIQUES

(Electrical and Electronics Engineering)

Date: 12 June, 2014 FN

Time: 3 hours

Max Marks: 75

Answer ONE question from each Unit

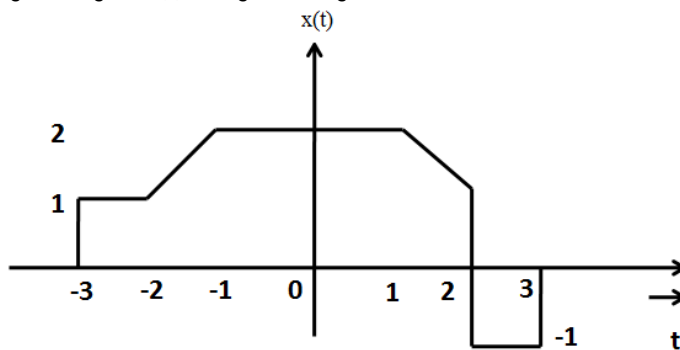
All Questions Carry Equal Marks

All parts of the question must be answered in one place only

Unit - I

1. a) Show that $\delta(at) = \frac{1}{|a|} \delta(t)$ 6M
- b) Determine the Fourier series representation for the signal 9M

$$x(t) = 10 \cos \left[\frac{\pi}{2} t + \pi / 3 \right]$$
2. a) Represent the given signal $x(t)$ using basic signals 7M



- b) Determine the DTFS for the signal $x(n) = \cos \frac{\pi}{3} n + \cos \frac{\pi}{4} n$ 8M

Unit - II

3. a) Find the Fourier transform of the following functions: 9M
 - i. $x_1(t) = \delta(t)$
 - ii. $x_2(t) = e^{-at} u(t)$
 - iii. $x_3(t) = \text{rect}(t)$
- b) For the sequences $x_1[n] = \cos \left(\frac{2\pi n}{N} \right)$; $x_2[n] = \sin \left(\frac{2\pi n}{N} \right)$; $0 \leq n \leq N-1$, find the 6M
 N-point circular convolution between $x_1[n]$ and $x_2[n]$.
4. a) State and prove duality property for Fourier transform 6M
- b) Compute linear convolution of $s(n)$ and $h(n)$ using DFT method 9M
 Given $s(n) = \{1, 0.5, 0\}$, and $h(n) = \{0.5, 1, 0\}$

Unit - III

5. a) A system is described the following input-output relation 6M
 $y[n] = T\{x[n]\} = \sum_{k=-\infty}^{\infty} x[k]$
 Check for the following system properties:
 i. Stability
 ii. Causality
 iii. Linearity
 iv. Time-invariance
 v. Memory
- b) Convolute the two continuous time signals $x_1(t)$ and $x_2(t)$ given below 9M
 $x_1(t) = \cos(\pi t) [u(t+1) - u(t-3)]$
 $x_2(t) = u(t)$
6. a) Check Whether the following systems are linear, causal and time – invariant. 6M
 $Y(t) = \text{odd part of } x(t).$
 $Y[n] = x[n] x[n-1].$
- b) Convolute the sequences $x_1[n] = \alpha^n u[n]$ and $x_2[n] = \beta^n u[n].$ 9M

Unit - IV

7. a) Find the Unilateral Laplace transform of $x(t) = \cos \Omega_0 t.$ 7M
 b) State and prove time convolution property for unilateral Laplace transform. 8M
8. a) Find the inverse unilateral Laplace transform of 6M

$$X(s) = \frac{2s + 1}{(s + 1)(s^2 + 2s + 2)}$$
- b) Find the output of the system as shown in Fig.1 for the input $e^{-2t}u(t)$ using Laplace transform. 9M

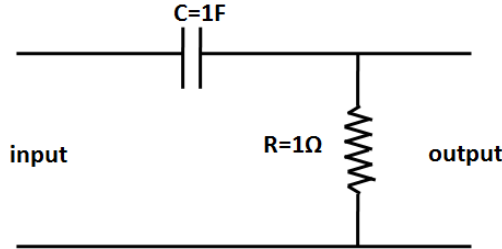


Fig.1

Unit - V

9. a) State and explain sampling theorem for continuous time signals. 6M
 b) Determine the Z- transform of $s(n) = A^n u(n) + B^n u(-n - 1).$ 9M
10. a) For the signal $x(t) = 5 \cos(2000\pi t) + 10 \cos(6000\pi t).$ 6M
 What is the Nyquist rate and Nyquist interval?
 Draw the spectrum of the sampled signal when $f_s = 5000\text{Hz}.$
- b) Find the inverse Z transform of $X(Z)$ using partial fraction approach 9M

$$X(z) = \frac{z+1}{3z^2 - 4z + 1}, \text{ ROC : } |z| > 1.$$

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

MICROPROCESSORS AND INTERFACING

(Common to Computer Science and Engineering & Information Technology)

Date: 10 June, 2014 FN

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) Explain the purpose of pointers, index registers and segment registers. 7M
- b) Draw the pin diagram of 8086 and explain the following pins briefly: 8M
 - i. *READY*
 - ii. *ALE*
 - iii. *\overline{BHE}*
 - iv. *RESET*
2. a) What is the purpose of "trap flag" in 8086 microprocessor and explain structure of flag register? 8M
- b) Draw and explain the "minimum mode write machine cycle" timing diagram. 7M

Unit - II

3. a) Explain the following assemblers directives with an example: 8M
 - i. LABEL
 - ii. LENGTH
 - iii. PTR
 - iv. ALIGN
- b) Write an assembly language program to find average of two numbers. 7M
4. a) Write a program for the addition of a series of 8-bit numbers. The series contains 100 numbers. 7M
- b) What is macro? Explain how parameters passed to a macro? 8M

Unit - III

5. a) Design an interface between 8086 CPU and two chip of 16K×8 EPROM and two chips of 32K×8 RAM. Select the starting address of EPROM is F8000H and RAMS starting address's 00000H. Use 74138 decoder to select the memory chips. 8M
- b) Interface a stepper motor to 8086 microprocessor with all hardware details. Write an ALP to move stepper motor shaft to 180° clock wise direction and then 90° in anti-clock wise direction. 7M
6. a) Show the interfacing details of 4×4 Matrix keyboard to an 8086 microprocessor. Write a subroutine for key detection and encoding. 10M
- b) Write an assembly language program to generate triangular wave with an amplitude of 5V. Use DAC0808 IC for waveform generation. 5M

Unit - IV

7. a) Describe the response of 8086 to the interrupt coming on NMI pin along with interrupt vector table. 7M
- b) With a neat block diagram explain the maximum mode of 8086 processor. 8M
8. a) Briefly explain the 8086 Software interrupts. 6M
- b) Justify how DMA reduces the time for read/write operations along with block diagram. 9M

Unit – V

- | | | | |
|-----|----|---|----|
| 9. | a) | Draw the internal architecture of 8251 and in brief explain each block. | 8M |
| | b) | Write in brief virtual 8086 mode of 80386processor. | 7M |
| 10. | a) | Briefly explain RS-232c serial data standard and connectors often used for RS-232c connections. | 6M |
| | b) | With a neat block diagram, explain 80286 microprocessor architectural features. | 9M |

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech V Semester Supplementary Examinations June - 2014
(Regulations: VCE-R11)

OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Common to Electronics and Communication Engineering &
Electrical and Electronics Engineering)

Date: 10 June, 2014 FN

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) Justify "Java is platform independent language" and explain any three object oriented concepts with example for each? 10M
- b) Write a Java program to alphabetically sort a list of student's names using bubble sort technique. 5M
2. a) How are object oriented systems different from traditional systems and explain any two methods provided by String class for modifying a String object. 9M
- b) Write a Java program to accept a number from the user and print the name of the day of the week. 6M

Unit - II

3. a) Design a class called Dimensions has length and breadth as member. Extend this class to compute area of two shapes namely Rectangle and Square. 7M
- b) With an example, illustrate the need for abstract class. 8M
4. a) Create a subdirectory 'mypack' consisting of the following three classes Addition, Multiplication and Division which performs addition, multiplication and division of two integers. Create another subdirectory 'mypacktest' with a class Demo which is a test driver of the above classes. 9M
- b) Write byte array to a file using FileOutputStream. 6M

Unit - III

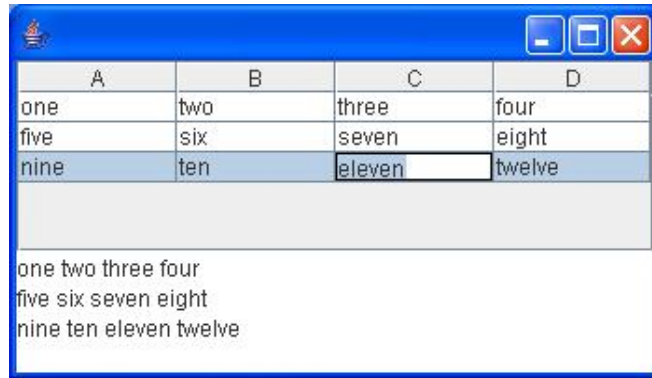
5. a) What is exception? Illustrate it with an example. 6M
- b) Assume that there are three threads. Design a program to demonstrate that threads execute concurrently not sequential. 9M
6. a) What is a Thread? How does it differ from a process? What are the two ways of creating threads in java? List any two disadvantages of using Thread Class. 8M
- b) Assume an online portal application for PG studies through Correspondence. User's age should not be less than 25 and should not be greater than 35. So as per their age we need to allow users to access the application. Define an Exception to handle the users age from 25 to 35. If user's age not matches the condition then the program should throw a Exception. 7M

Unit - IV

- 7. a) What do you mean by AWT in Java? With a neat diagram show the AWT class hierarchy. 6M
- b) Write an applet program to demonstrate "mouse event handling" using delegation event model. 9M
- 8. a) Write an AWT program to create a simple calculator that support +, -, /, * operations. 12M
- b) What are the advantages of the delegation event model over the event-inheritance model? 3M

Unit - V

- 9. a) Explain briefly parameter passing in applets? 7M
- b) Write a Java Program to demonstrate JScrollPane? 8M
- 10. Write a java program to create the following table using Jtable of Swings? 15M





VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

Four Year B. Tech V Semester Supplementary Examinations June - 2014
(Regulations: VCE-R11)

THEORY OF COMPUTATION
(Information Technology)

Date: 19 June, 2014 FN

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

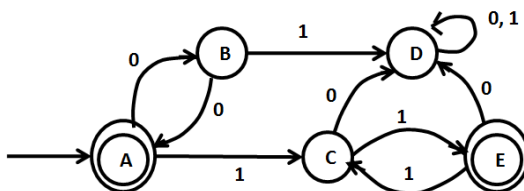
1. a) Write the procedure to convert the ϵ -NFA to DFA by subset construction method and convert the following ϵ -NFA to DFA. 8M
 $A = (\{p,q,r\},\{a,b,c\}, \delta, p, r)$
 δ is given as follows :-

$\delta(p,a) = \{p\}$	$\delta(p,b) = \Phi$	$\delta(p,c) = \Phi$	$\delta(p, \epsilon) = \{q\}$
$\delta(q,a) = \Phi$	$\delta(q,b) = \{q\}$	$\delta(q,c) = \Phi$	$\delta(q, \epsilon) = \{r\}$
$\delta(r,a) = \Phi$	$\delta(r,b) = \Phi$	$\delta(r,c) = \{r\}$	$\delta(r, \epsilon) = \Phi$
- b) Design a DFA to accept decimal strings divisible by 3. 7M
2. a) Design a DFA to accept the following language. 7M
 $L = \{w : |w| \text{ mod } 3 = 0\}$ on $\Sigma = \{a,b,c,d\}$
- b) Convert the following NFA to DFA. 8M
 $A = (\{p,q,r\},\{0,1\}, \delta, p, r)$
 δ is given as follows :-

$\delta(p,0) = \{p,q\}$	$\delta(p,1) = \{p\}$
$\delta(q,0) = \Phi$	$\delta(q,1) = \{r\}$
$\delta(r,0) = \Phi$	$\delta(r,1) = \Phi$

Unit - II

3. a) How do you define Regular expression? Write Regular expression for the following Languages. 7M
 $L = \{a^n b^m \mid n \geq 4, m \leq 3\}$
 $L = \{a^n b^m c^p \mid n \leq 4, m \geq 2, p \leq 2\}$
- b) State and prove KLEEN's theorem 8M
4. a) Obtain a Regular expression for the finite automata shown below: 8M



- b) State and prove pumping lemma theorem for regular expression. 7M

Unit - III

5. a) Obtain a CFG to generate strings of a's and b's consisting of equal number of a's and b's. Also justify 7M
 b) Let G be the grammar 8M
 $S \rightarrow AB | \epsilon$
 $A \rightarrow aB$
 $B \rightarrow Sb$
 for the string aabbbb, Find:
 i. Leftmost Derivation
 ii. Rightmost Derivation
 iii. Derivation Tree
6. a) For the following grammar : 11M
 $S \rightarrow ABC | BbB$
 $A \rightarrow aA | BaC | aaa$
 $B \rightarrow bBb | a | D$,
 $C \rightarrow CA | AC$,
 $D \rightarrow \epsilon$
 i. Eliminate ϵ -productions
 ii. Eliminate any unit productions in the resulting grammar
 iii. Eliminate any useless symbols in the resulting grammar
- b) Show that the following CFG ambiguous 4M
 $S \rightarrow iCtS | iCtSeS | a$
 $C \rightarrow b$

Unit - IV

7. a) Define DPDA. Construct a PDA to accept the language $L = \{w | n_a(w) = n_b(w)\}$. 8M
 b) Write an algorithm to convert CFG to PDA. 7M
8. a) Construct a PDA to accept the Language $L = \{a^n b^{2n} | n \geq 1\}$ 7M
 b) Obtain CFG for the given PDA 8M
 $\delta(q_0, a, Z) = (q_0, AZ)$
 $\delta(q_0, a, A) = (q_0, A)$
 $\delta(q_0, b, A) = (q_1, \epsilon)$
 $\delta(q_1, \epsilon, Z) = (q_2, \epsilon)$

Unit - V

9. a) Name any three languages which are accepted by a Turing Machine. 7M
 b) Write a note on recursively enumerable language 8M
10. a) Construct a Turing machine to accept the language 8M
 $L = \{WW^R | W \in \{a, b\}^*\}$
 b) Write a short notes on: 7M
 i. Chomsky hierarchy
 ii. Linear Bounded automata

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1513



VARDHAMAN COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

(Regulations: VCE-R11)

SOFTWARE ENGINEERING

(Common to Computer Science and Engineering & Information Technology)

Date: 12 June, 2014 FN

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) "Software doesn't wear out." Comment. 7M
b) Explain the significance of incremental process model (IPM)? 8M
2. a) Describe any four activities of a generic process framework for software engineering. 8M
b) List the objectives of Team Software Process as stated by Humphrey. 7M

Unit - II

3. a) Discuss some of the problems that occur when requirements must be elicited from three or four different customers. 8M
b) What kinds of errors are sought during requirements validation? 7M
4. a) Briefly describe the non-functional requirements. Explain the metrics for specifying non-functional requirements? 10M
b) What are the main uses for the requirements models? 5M

Unit - III

5. a) Describe the following design issues of a user interface: 6M
i. Response time
ii. Error handling
6. b) Design a class diagram to model online shopping cart system. 9M
a) Write a sequence diagram for a typical ATM system. 10M
b) Write a brief note on white box testing. 5M

Unit - IV

7. a) Define the terms measures, metrics and indicators with respect to product metrics. 6M
b) Give definitions and measures of following software quality indicators: 9M
i. Correctness
ii. Integrity
8. Explain any five metrics used to measure the software project. 15M

Unit - V

9. a) Highlight on any five guidelines for formal technical reviews. 10M
b) Write a brief note on software safety. 5M
10. a) Describe any five measurable characteristics of an OO design. 10M
b) Can a program be correct and still not be reliable? Explain. 5M

--	--	--	--	--	--	--	--	--	--



**VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)**

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

(Regulations: VCE-R11)

UNIX PROGRAMMING

(Common to Computer Science Engineering & Information Technology)

Date: 14 June, 2014 FN

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) | Explain briefly the architecture of UNIX operating system? | 7M |
| | b) | Explain the following command with two line description, syntax and an example: | 8M |
| | | i. In | |
| | | ii. Find | |
| | | iii. Sort | |
| | | iv. Tar | |
| 2. | a) | Give command with one line explanation to: | 9M |
| | | i. Delete Empty Directories in Unix | |
| | | ii. Delete Nested Empty Directories in Unix | |
| | | iii. Delete Directory which has Content (Directory with Files and Sub-directories) | |
| | | iv. Deleting a directory recursively & interactively | |
| | | v. Deleting a file interactively | |
| | b) | Differentiate between cmp and diff. | 6M |

Unit - II

- | | | | |
|----|----|---|-----|
| 3. | a) | Write a shell program to display the file permission and read the octal value to change its permission. | 5M |
| | b) | Discuss the positional parameters and command line arguments in shell programming with example. | 10M |
| 4. | a) | Write a Non-Recursive Shell script that accepts any number of arguments and print them in the Reverse order, (For example, if the script is named rargs, then executing rargs A B C should produce C B A on the standard output). | 8M |
| | b) | Write a Shell script that accepts two file names as arguments, check if the permissions for these files are identical and if the permission are identical, outputs the common permissions, otherwise outputs each file name followed by its permission. | 7M |

Unit - III

- | | | | |
|----|----|--|----|
| 5. | a) | Explain the three functions for dynamic memory allocation in C with prototypes? | 6M |
| | b) | Write a C program to block and unblock the SIGINT signal continually in a loop. If a user enters Ctrl-C while SIGINT is blocked, then the program should terminate only after it is unblocked. If a user types Ctrl-C while SIGINT is unblocked, the program should terminate immediately. | 9M |

::2::

6. a) A parent process receives a SIGCHLD signal whenever the child process terminates. This allows a parent process to go off and do other things but still track the status of its child processes. Write a C program to accomplish this by setting up a signal handler that gets called whenever the process gets a SIGCHLD signal and have that signal handler call wait. Normally, wait puts the process to sleep but in this case we already have that outstanding signal so wait simply picks up the status of a child and returns immediately. 12M
- b) Why would one use realloc() function to resize a dynamically allocated array rather than using free() function before calling the malloc() function again? Write Prototype of realloc(). 3M

Unit - IV

7. Give the syntax of shmctl in shared memory operations. Write a C program to illustrate IPC between parent and child using memory mapped I/O of /dev/zero. 15M
8. Assume that there is a main process P1 and 2 child processes C1 and C2, the main process reads a string and passes it to C1. The child process C1 receives string from P1, find its length and sends the value to P1. 15M
C1 also reads an integer array of length equal to the length of the string and sends it to C2. C2 receive integer array from C1, find the sum of the elements and sends the sum to the parent process P1. Use Pipe as Interprocess Communication mechanism for implementing the same.

Unit - V

9. a) Write the syntax of socket function. Discuss different Socket communication domains and Socket types. 10M
- b) Differentiate between connection oriented and connection less service in computer networking. 5M
10. Explain different interfaces used in client server socket programming with the help of neat diagram? 15M

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1515



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

COMPUTER NETWORKS

(Common to Computer Science and Engineering & Information Technology)

Date: 17 June, 2014 FN

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) Explain guided and unguided media in detail? 7M
b) Compare OSI reference model with TCP/IP reference model. 8M
2. a) What do you mean by circuit switching? Explain in detail? 7M
b) With a neat diagram, explain the different layers of the OSI reference model. 8M

Unit - II

3. a) Generate CRC code for the data word 10101010 using the divisor x^4-x^2-1 7M
b) With a neat diagram, explain the different types of high level data link control Frames. 8M
4. a) Discuss hidden and exposed station problem and how it is overcome. 8M
b) Explain CSMA/CA protocol with a neat diagram? 7M

Unit - III

5. a) Explain IPv6 datagram format with diagram in detail? 7M
b) What do you mean by congestion control? Explain the various approaches of congestion control? 8M
6. a) Explain link state routing algorithm and trace the algorithm for a network? 7M
b) Classify the congestion control algorithms and briefly explain any one of them. 8M

Unit - IV

7. a) Explain TCP connection establishment using three way handshaking? 8M
b) Explain the salient features of UDP? 7M
8. a) What is the difference between routing & forwarding? Explain in detail? 5M
b) Compare UDP and TCP. Also mention at least two applications which use TCP and UDP. 10M

Unit - V

9. a) Explain in brief that how DNS works? 8M
b) Explain how Uniform Resource Locators (URLs) works? 7M
10. a) Explain the short notes on following: 10M
i. SNMP Protocol
ii. MIME Header
b) Write short notes on SMTP. 5M

Hall Ticket No:

--	--	--	--	--	--	--	--	--	--

Question Paper Code : A1516



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

SYSTEMS PROGRAMMING

(Computer Science and Engineering)

Date: 19 June, 2014 FN

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) Explain the different instruction formats of SIC/XE machine? 6M
b) Write the algorithm for pass-2 of an assembler. Assume that Symbol table is created in pass-1 and OPCODE table is available. 9M
2. a) Compare and contrast control sections and program blocks? How are they helpful? Explain with an example? 9M
b) What is program relocation? What are its advantages? How is it achieved? 6M

Unit - II

3. a) What is absolute loader? Write the algorithm of an absolute loader. 8M
b) What is Bootstrap loader? Explain in detail? 7M
4. a) What is Relocation loader? Explain in detail? 7M
b) Write short notes on following: 8M
 - i. Absolute Loader
 - ii. Linkage Editor

Unit - III

5. a) Write an algorithm for one-pass macro processor. 8M
b) Explain features of general purpose macro processor? 7M
6. a) Explain the following macro processor features: 8M
 - i. Conditional macro expansion
 - ii. Keyword macro parameters
- b) Write a note on MASM macro processor 7M

Unit - IV

7. a) List five services provided by an operating system that are designed to make it more convenient for users to use the computer system. 10M
b) What do you mean by process scheduler? Explain the various type of process scheduler. 5M
8. a) What do you mean by machine independent operating system? 5M
b) Explain the different process states with the help of diagram? 10M

Cont...2

::2::

Unit - V

- | | | | |
|-----|----|---|----|
| 9. | a) | Explain features and functions of embedded software? What are the additional challenges compared to other system softwares? | 7M |
| | b) | Write short notes on Mobile system software and Android system software. | 8M |
| 10. | a) | What is virtualization? Explain. Explain different types of virtualization? | 8M |
| | b) | What is the basic concept of a cloud? How is it useful? | 7M |

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

DESIGN AND ANALYSIS OF ALGORITHMS

(Common to Computer Science and Engineering & Information Technology)

Date: 21 June, 2014 FN

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) Give a big-O estimate for each of these functions. Use a simple function in the big-O estimate. 7M
 - i) $3n + n^3 + 4$.
 - ii) $1 + 2 + 3 + \dots + n$.
- b) Illustrate the operations of merge sort on $A = \langle 3, 41, 52, 26, 38, 57, 9, \text{ and } 49 \rangle$. Write the code for merge sort and the time complexity of the algorithm. 8M
2. a) What is an algorithm? With a neat diagram, explain the algorithmic design & analysis process. 6M
- b) Explain the Strassen's matrix multiplication and compare it with basic matrix multiplication method. Mention the time complexity for both the methods? 9M

Unit - II

3. a) Explain the greedy method of problem solving technique with an example? 7M
- b) Explain the concept of optimal storage on tapes. Consider $n = 3$ tapes and we want to store files of length $(L_1, L_2, L_3) = (5, 10, 3)$ on three tapes. How should we store them on the three tapes so that the mean retrieval time is minimized? 8M
4. a) Write the differences between Prim's and Kruskal's algorithm. Mention the applications of spanning tree. 7M
- b) Find the BFS and DFS for the graph given below in Fig.1: 8M

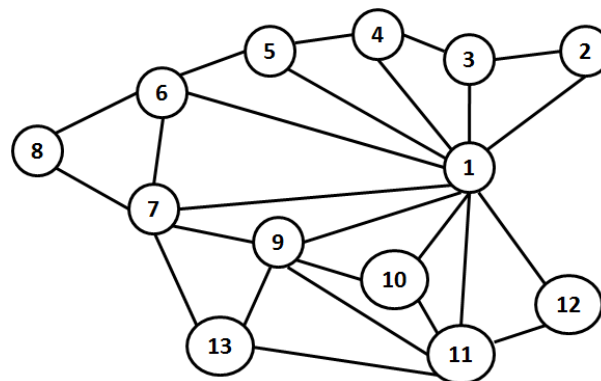


Fig.1

::2::

Unit - III

- | | | | |
|----|----|---|----|
| 5. | a) | Write the algorithm for optimal binary search tree and discuss its time complexity. | 7M |
| | b) | Discuss the matrix chain multiplication problem using dynamic programming approach. | 8M |
| 6. | a) | Discuss the concept of string editing with suitable example. | 8M |
| | b) | Explain the all pairs shortest path algorithm with an example? | 7M |

Unit - IV

- | | | | |
|----|----|--|----|
| 7. | a) | Explain the working of 8-Queens problem using dynamic programming. | 8M |
| | b) | A business traveler leaves every morning from his home and needs to visit a number of customers and then go back home. How should he go about minimizing the total distance he travels? (We are supposing that the distances between each pair of customers as well as between the customers and the traveler's home are known) Justify your answer. | 7M |
| 8. | a) | Explain the travelling salesman problem using the branch and bound technique? | 7M |
| | b) | Write the interactive backtracking algorithm and estimate the efficiency of the backtracking algorithm. | 8M |

Unit - V

- | | | | |
|-----|----|---|-----|
| 9. | a) | Draw comparison tree for sorting four elements that is produced by the binary insertion method. | 7M |
| | b) | How do you determine a problem in NP Hard or NP complete? Explain with examples. | 8M |
| 10. | a) | What do you mean by non deterministic algorithm? Explain. | 5M |
| | b) | Explain the concept of decision trees for sorting algorithms. | 10M |

--	--	--	--	--	--	--	--	--	--



VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

(Regulations: VCE-R11)

AEROSPACE VEHICLE STRUCTURES-II

(Aeronautical Engineering)

Date: 19 June, 2014 FN

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

- What is meant by complete tension field beam? 7M
 - Explain semi-monocoque and monocoque structures? 8M
- What is the function of ribs, stringers and spar webs on the function of aircrafts? 15M

Unit - II

- Derive an equation for direct stress distribution due to bending of an unsymmetrical beam? 8M
 - A beam having the cross section as shown in Fig.1 is subjected to a bending moment of 1500 N m in a vertical plane. Calculate the maximum direct stress due to bending stating the point at which it acts? 7M

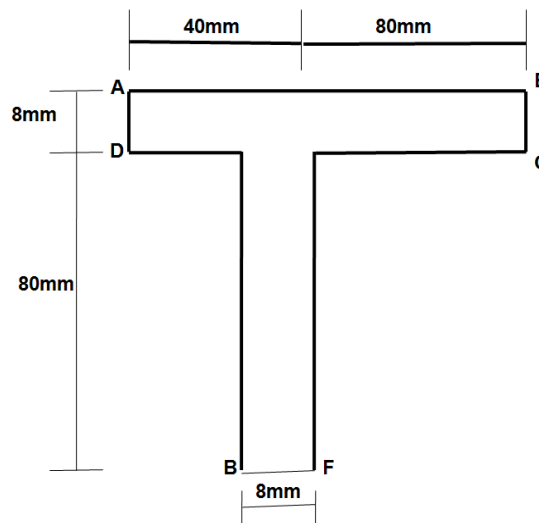


Fig.1

::2::

4. a) Derive an equation for Bending moment in a symmetrical section beam. 7M
b) The cross section of a beam has the dimensional as shown in Fig.2 if the beam is subjected to a negative bending moment of 100 KNm applied in a virtual plane, determine the distribution of direct stress through the depth of the section. 8M

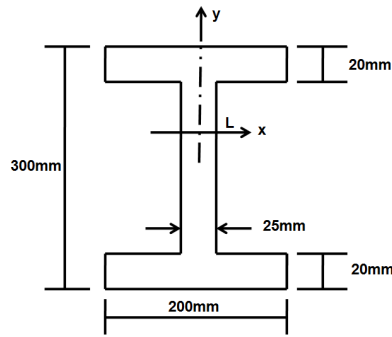


Fig.2

Unit - III

5. a) Explain the concept of stability of stiffened Panels? 7M
b) Explain the terms shear flow, shear center and elastic axis?
6. a) Determine the shear flow distribution in the thin walled Z section queen in the as shown in Fig.3 due to shear load s_y applied through the shear inter of the section 8M

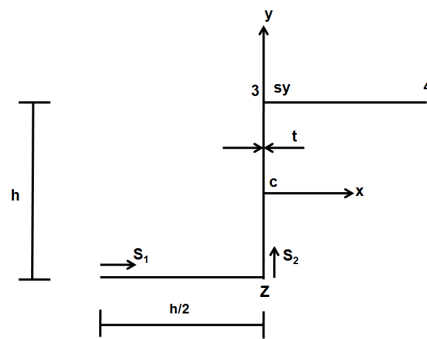


Fig.3

- b) Explain the phenomenon of local instability? 7M

Unit - IV

7. a) Derive the generative torsion bending equation for an open section subjected to torsion and wheel is axially constrained? 8M
b) Discuss in brief the concept of warping of beams? 7M
8. a) Obtain an expression for torsion – bending constant? 8M
b) Explain the phenomenon of Torsion and bending? 7M

Unit – V

9. a) Derive: 10M
i. Equation of equilibrium
ii. Compatibility Equations
b) Differentiate between Plane Stress and Plane Strain problems. 5M
10. A three-flange wing section is stiffened by the wing rib shown in Fig. 4. If the rib flanges and stiffeners carry all the direct loads, while the rib panels are effective only in shear, calculate the shear flows in the panels and the direct loads in the rib flanges and stiffeners. 15M

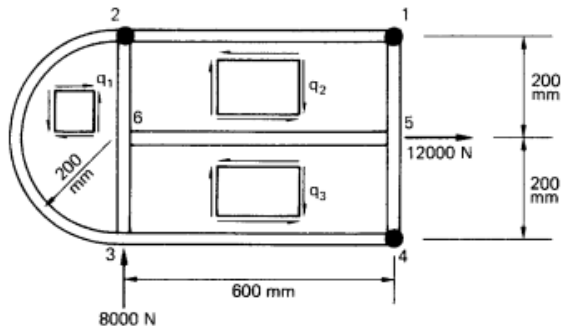


Fig.4