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<b>R-11/R-13</b>
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**Code: 1GA51**

III B.Tech. I Semester Supplementary Examinations November 2016

**Managerial Economics and Financial Analysis**

(Common to CE, ME and ECE)

Max. Marks: 70

Time: 3 Hours

Answer any five questions

All Questions carry equal marks (14 Marks each)

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1. Define Managerial Economics. Explain the relationship of managerial economics with other fields of study. 14M
2. What do you understand by Demand function? Explain about the determinants of Demand. 14M
3. From the following data calculate
  - a. P/V Ratio
  - b. Profit when sales are Rs 5,00,000
  - c. New Break-Even Point, if the selling price is reduced by 20%  
Fixed expenses Rs. 1,00,000  
Break even point Rs. 2,50,000 14M
4. How is price determined under competitive conditions? 14M
5. "Joint stock company form of organisation is better than Partnership", explain. 14M
6. Given the following information for two project proposals. Rank them by applying the criteria of
  - a. Payback method
  - b. ARR

Year	Proposal 1 Cash Inflows in Rupees	Proposal 2 Cash Inflows in Rupees
1	11,750	13,500
2	12,250	12,500
3	12,500	12,250
4	13,500	11,750

7. From the following transactions prepare journal entries and post them in the appropriate Ledger accounts, in the books of AVINASH&CO. 14M

2008, May 1 Commenced Business with Rs 1,00,000  
 May 5 Purchased goods from Rahul&Co Rs10,000  
 May 7 Sold goods worth Rs20,000  
 May 10 Salaries paid Rs1,500  
 May 11 Purchased Stationery worth Rs1,000  
 May 15 Bought furniture worth Rs20,000  
 May 18 Cash deposited into bank Rs9,000  
 May 20 Paid wages Rs5,000  
 May 24 Cash withdrawn from bank Rs3,000  
 May 28 Paid rent by cheque Rs1,800

8. Following is the summarised Balance sheet of Verizon Company Ltd as on 31<sup>st</sup> December 2015.

**Balance sheet as on 31<sup>st</sup>December 2015**

Liabilities	Rs	Assets	Rs
Equity Share Capital	2,50,000	Goodwill	20,000
6% Preference Share Capital	1,50,000	Land & Buildings	2,50,000
Reserves & Surplus	20,000	Machinery	1,75,000
5% Debentures	1,00,000	Furniture	10,000
Profit & Loss	15,000	Stock	90,000
Sundry Creditors	28,000	Debtors	21,000
Bills Payable	12,000	Cash at Bank	5,000
		Patents	4,000
	<b>5,75,000</b>		<b>5,75,000</b>

**Additional Information:** Total sales Rs4,00,000; in that 20% of which is made on credit. Gross Profit is Rs 80,000 and Net Profit is Rs20,000.

Comment on the Financial condition of the Verizon Company Ltd by calculating

- |                       |                     |                         |     |
|-----------------------|---------------------|-------------------------|-----|
| a. Current Ratio      | b. Quick Ratio      | c. Debt-equity Ratio    |     |
| d. Gross Profit Ratio | e. Net Profit Ratio | f. Stock turnover ratio | 14M |

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**Code: 1G651**

III B.Tech. I Semester Supplementary Examinations November 2016

**Structural Analysis II**

( Civil Engineering )

Max. Marks: 70

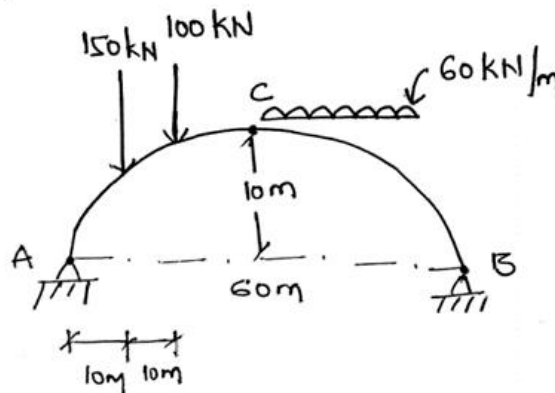
Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (14 Marks each)

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1. A three hinged parabolic arch has a span of 60 meters and rise of 10 meters. The arch carries two concentrated loads of 150kN and 100kN at distances of 10m and 20m from the left end. It also carries UDL of 60 kN/m on the right half of the span. Calculate the reaction components at supports. Also calculate the normal thrust and radial shear at a section 15m from the left support.



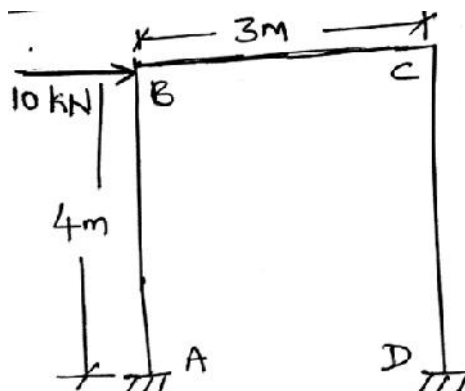
14M

2. a) What is the effect of "Rib shortening" 4M
- b) A two hinged parabolic arch of span 50 m and rise 5m is subjected to a central concentrated load of 60 kN. It has an elastic support which yields by 0.0001 mm/kN. Taking  $E=200 \text{ KN/mm}^2$ ,  $I=5 \times 10^9 \text{ mm}^4$ , Average area  $A_m = 10000 \text{ mm}^2$ ,  $\alpha = 10 \times 10^{-6}/^\circ\text{C}$  and assuming secant variation, calculate the horizontal thrust developed when the temperature rises by  $15^\circ\text{C}$ .

i. Consider rib shortening

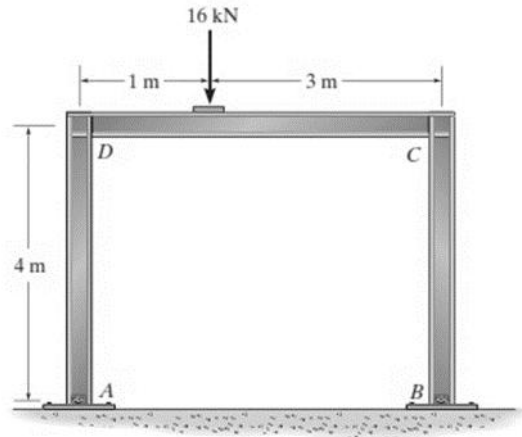
ii. Neglect rib shortening 10M

3. Determine the moments at each joint of the frame shown in Figure and draw the Bending moment diagram. The supports at A and D are fixed and joint C is assumed pin connected. EI is constant for each member. Use slope deflection method.



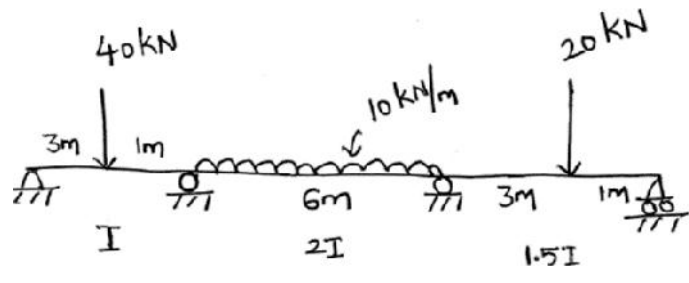
14M

4. Determine the moments at D and C, then draw the moment diagram for each member of the frame. Assume the supports at A and B are pins. EI is constant. Use Moment Distribution method.



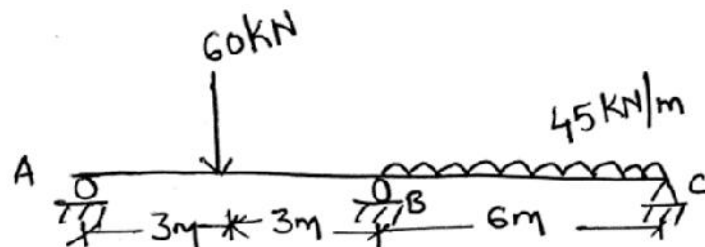
14M

5. Analyze the continuous beam shown in Figure. The relative value of I for each span are indicated along the members and take E is constant for all members.



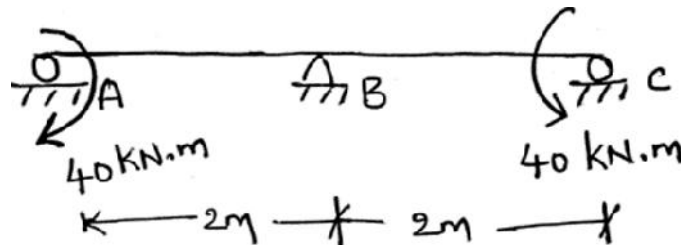
14M

6. Determine the reactions at the supports A, B and C, then draw the shear and bending moment diagrams. Assume EI is constant.



14M

7. The beam shown in Figure is subjected to the two couple moments. If the center support B settles 1.5 mm, determine the reactions at the supports. Assume the roller supports at A and C. Take  $E = 200 \text{ GPa}$  and  $I = 22 \times 10^{-6} \text{ m}^4$ .



14M

8. a) Calculate the shape factors  
 i. Triangle with depth 5m and width 3m.  
 ii. Square with one diagonal horizontal of side 2m  
 b) Explain the lower and upper bound theorem.

4M

10M

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Code: 1G653

III B.Tech. I Semester Supplementary Examinations November 2016

**Engineering Hydrology-I**

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questionsAll questions carry equal marks ( **14 marks** each)

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1. a) The normal annual precipitation of five raingauge stations P,Q, R,S and T are respectively 125, 102, 76, 113, and 137 cm. During a particular storm the precipitation recorded by stations P, Q, R and S are 13.2, 9.2, 6.8 and 10.2 cm respectively. The instrument at station T was inoperative during that storm. Estimate the rainfall at station T during that storm. 7M
- b) Represent hydrologic cycle in the form of a diagram and explain in brief. 7M
2. a) Define evaporation and explain any one method to measure evaporation. 7M
- b) What is infiltration and how do various factors influence infiltration. 7M
3. a) Give the definition for runoff and explain the various components of runoff. 7M
- b) List out the various techniques available to measure stream flow and explain any one technique in detail. 7M
4. a) Two catchments A and B are considered meteorologically similar. Their catchment characteristics are given below.
 

<u>Catchment A</u>	<u>Catchment B</u>
L=30 km	L=45 km
$L_{ca}=150\text{km}$	$L_{ca}=25\text{km}$
$A=250\text{ km}^2$	$A=400\text{ km}^2$

For catchment A, a 2-h unit hydrograph was developed and was found to have a peak discharge of  $50\text{ m}^3/\text{s}$ . The time to peak from the beginning of the rainfall excess in this unit hydrograph was 9.0h. Using Snyder's method develop a unit hydrograph for catchment B. 7M
- b) Define unit hydrograph. Also, give the limitations and applications of unit hydrograph. 7M
5. a) Derive the expression for rate of flow for a case of steady flow into a well in a confined aquifer. 7M
- b) What are the various types of wells. 7M
6. Explain various types of irrigation in detail. 14M
7. a) Give a diagrammatic representation of vertical distribution of soil moisture. 7M
- b) Define the terms duty and delta. Also derive the relation between them. 7M
8. a) Using Lacey's theory design a channel section for the following data. Discharge  $Q=30\text{cumecs}$ , silt factor  $f=1.00$ , side slope= $(1/2):1$ . Find also the longitudinal slope. 7M
- b) Write short notes on canal lining. 7M

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Code: 1G655

III B.Tech. I Semester Supplementary Examinations November 2016

**Design and Drawing of Reinforced Concrete Structures**

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

use of IS 456:2000, SP16 Design aided charts only and IS:875 (Part 1 & Part 2) books is permitted in the examination hall.

**PART - A**

(Answer any one question)

1 × 28 = 28 marks

- 1 Design a slab for a room of clear internal dimensions 3m x 5m supported on walls of 300mm thickness with corners held down. Two adjacent edges of the slab are continuous and the other two discontinuous. Live load on the slab is 3 KN/m<sup>2</sup>, Floor finish is 1KN/m<sup>2</sup>. Use M<sub>20</sub> grade concrete and Fe<sub>415</sub> grade steel. Draw the cross section of the designed slab showing clearly the bar bending schedule of the reinforcement. 28M
- 2 Design a sloped square footing to transfer a dead load of 1000KN and an imposed load of 400KN from a square column 400mm x 400mm (with 16mm diameter bars). Use M<sub>20</sub> grade concrete and Fe<sub>415</sub> grade steel. Safe bearing Capacity of the soil is 200KN/m<sup>2</sup>. Draw the sectional elevation of the footing showing reinforcement details. 28M

**PART - B**

(Answer any three questions)

3x14 = 42 marks

3. a) Determine the balanced percentage of reinforcement required for a rectangular beam subjected to flexure, interns of grade of concrete and grade of steel? 5M
- b) Define the term "Partial safety factors" as used in limit state design. Identify the various factors and state the values recommended in IS456-2000. 4M
- c) Briefly explain stress – block parameters. 5M
4. An isolated T-beam has flange of 2400mm wide and 120mm deep. The effective width and depth of web are 300mm and 580mm respectively. The tension Reinforcement consists of eight bars of 20mm diameter. The effective span of the simply supported beam is 3.6m. Determine the moment of resistance of the beam? Use M<sub>20</sub> grade concrete and Fe<sub>415</sub> grade steel. 14M
5. a) Briefly describe the various bond failure mechanisms. 4M
- b) Define development length. What is its significance? 3M
- c) Design the shear reinforcement for a beam of size 230mm x 450mm subjected to a shear force of 80KN. The tension reinforcement is four bars of 16mm diameter. Use Fe<sub>500</sub> grade steel and M<sub>25</sub> grade concrete. 7M
6. a) What is the maximum length of columns allowed by IS code for R.C. columns? Give reasons for specifying their limits. 3M
- b) Design the reinforcements in a rectangular column of size 300mm x 500mm to support a design ultimate load of 500KN, together with a factored moment of 200KN.m. Use M<sub>20</sub> grade concrete and Fe<sub>415</sub> grade steel. 11M
- 7 a) What are the adverse effects of cracking? 4M
- b) A simply supported rectangular beam of effective span 6m is having breadth 230mm and effective depth of 450mm. Tension steel provided is six numbers of 20mm and compression steel is two numbers of 16mm diameter bars. The beam is loaded by an uniformly distributed load of 20KN/m. Estimate the short term deflection? 10M

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