



**B.Tech IV Semester Supplementary Examinations, July 2024**

**Structural Analysis-I**  
 (CE)

**Maximum Marks: 70**

Date: 27.07.2024 Duration: 3 hours

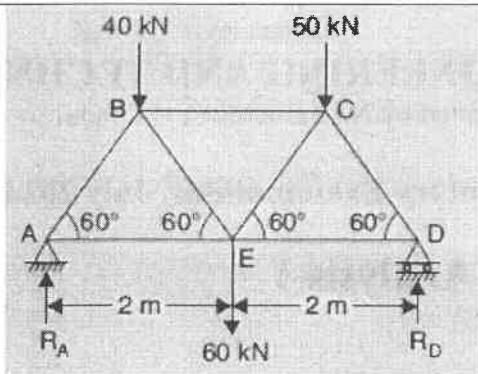
- Note:
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

**Part-A**

All the following questions carry equal marks		(10X2M=20 Marks)	CO	Bloom Tx
1	What are the relative merits of indeterminate over determinate structures?		1	L1
2	Distinguish between cantilever beam and propped cantilever beam.		1	L1
3	Differentiate the perfect frame and deficient frame with an example?		2	L1
4	Distinguish between pin jointed and rigidly jointed structure.		2	L1
5	Define Strain energy		3	L1
6	What are the types of arches?		3	L1
7	Explain Continuous beam with neat diagram		4	L1
8	Define Elastic curve.		4	L1
9	Define Influence Line.		5	L1
10	Explain the term focal length		5	L1

**Part-B**

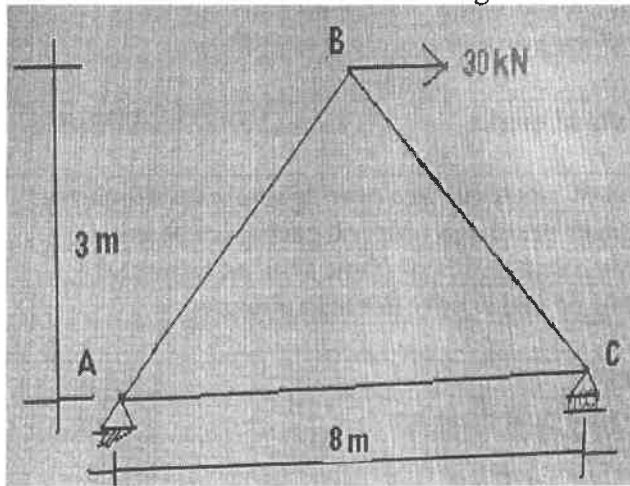
Answer All the following questions.		(5X10M=50Marks)		
11	Analyze a propped cantilever beam of length L carrying an UDL W Kn/m on entire span and draw SFD & BMD.	[10]	1	L2
OR				
12	A fixed beam of length 8m length is loaded with equal point loads of 130 KN each at distance 3m from each support. Draw the BMD & SFD where $E=2 \times 10^5 \text{KN/m}^2$ $I=8 \times 10^8 \text{mm}^4$ . [10]		1	L2
13	Determine the forces in all the members of the truss shown in Fig. and indicate the magnitude and nature of forces on the diagram of the truss. All inclined members are at $60^\circ$ to horizontal and length of each member is 2 m. [10]		2	L2



OR

14 Determine the forces in all the members using method of section. [10]

2 L2



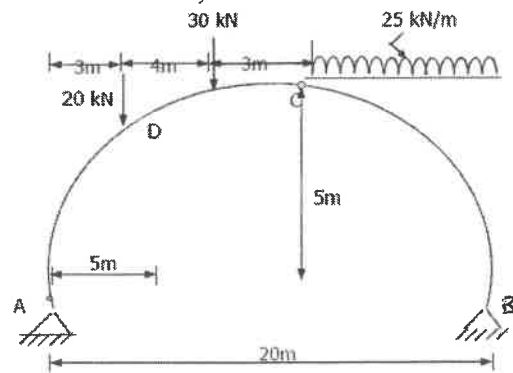
15 Derive the expression of strain energy due to axial load bending moment and shear forces. [10]

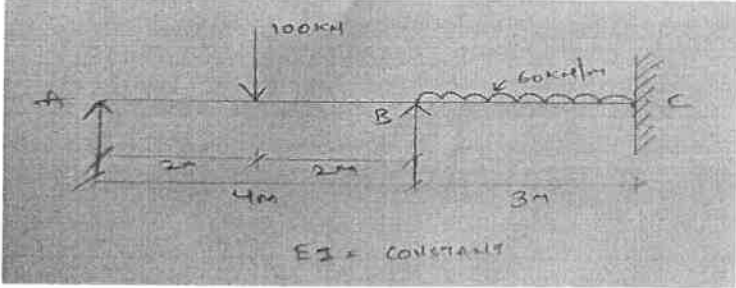
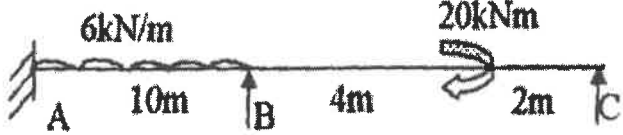
3 L2

OR

16 A parabolic 3 hinged arch shown in fig. carries loads as indicated. Determine (i) resultant reactions at the 2 supports (ii) bending moment, shear (radial) and normal thrust at D, 5m from A. [10]

3 L2



17	<p>Analyze the continuous beam given in figure by slope deflection method and draw the B.M.D. [10]</p> 	4	L2
OR			
18	<p>Analyze the continuous beam as shown in figure below by using moment distribution method. EI is constant. Draw the bending moment diagram and shear force diagram. [10]</p> 	4	L2
19	<p>Construct the influence diagram for reactions and bending moment at any section of a simply supported beam. Using the ILD, determine the support reactions and find bending moment at 2m, 4m and 6m for a simply supported beam of span 8m subjected to three-point loads of 10kN, 15kN and 5kN placed at 1m, 4.5m and 6.5m respectively. [10]</p>	5	L2
OR			
20	<p>Sketch the influence line diagram for S.F &amp; B.M at 5m from the right end of a simply supported girder of span 15m. Hence find the maximum S.F and maximum B.M at the section if two wheel loads of 10kN and 18kN spaced 4m apart move from left to right. [10]</p>	5	L2

