

Model Question Paper-1/2 with effect from 2022-23 (CBCS Scheme)

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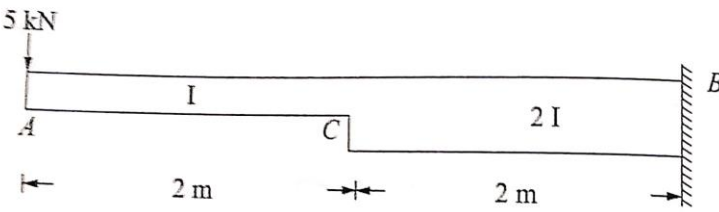
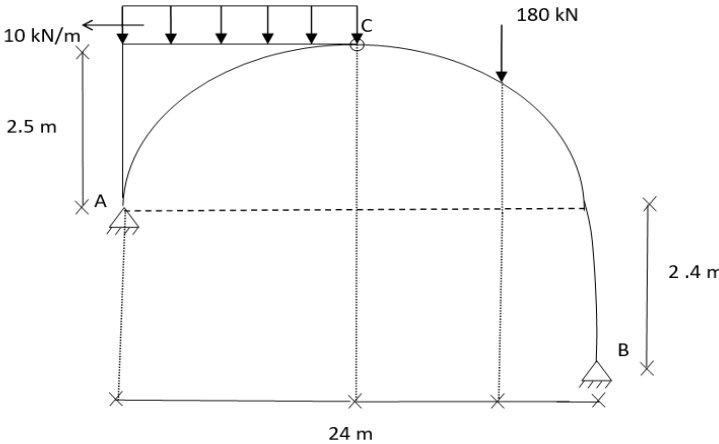
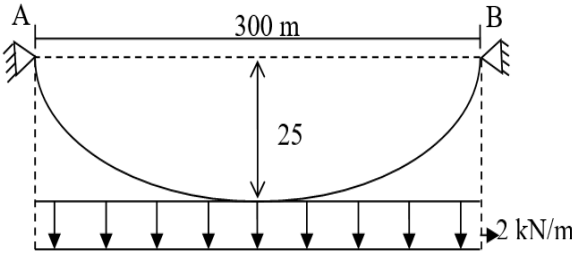
Fourth Semester B.E. Degree Examination
Analysis of Structures

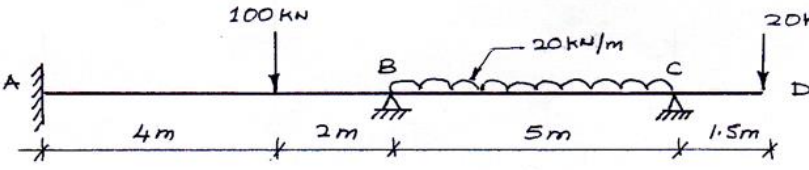
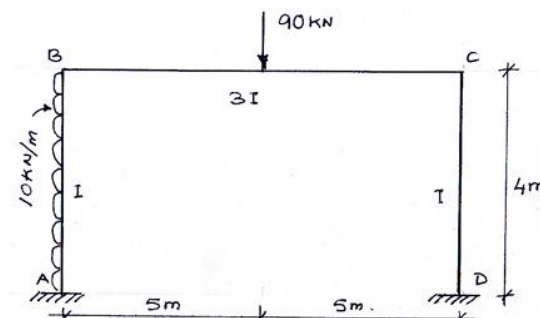
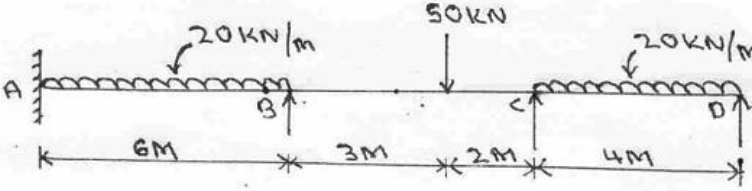
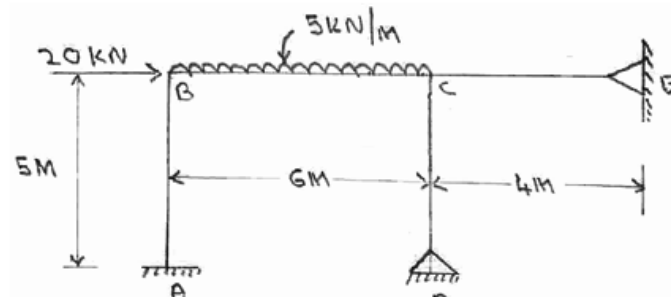
TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module - 1			*Bloom's Taxonomy Level	Marks
Q.01	a	Define equilibrium and compatibility conditions	L1	6
	b	Analyze the Truss shown in Fig. 1 using method of Joints. Indicate the forces in the members pictorially and tabulate the results. <div style="text-align: center;"> </div> <p align="right">Fig.1</p>	L3	14
OR				
Q.02	a	Write short notes on Static and Kinematic indeterminacies in structures	L1	6
	b	Find the forces in the members ED, EF and FG for the Fan truss shown in Fig.2. Use method of sections. Sketch appropriate figures by indicating the sectional diagrams. <div style="text-align: center;"> </div> <p align="right">Fig.2</p>	L3	14

Module-2			
Q. 03	a	State and Explain Mohr's Theorems	L1 5
	b	Analyze the cantilever beam shown in Fig. 1 using Moment Area method. Take $EI=15000 \text{ kNm}^2$. 	L3 15
OR			
Q.04	a	Define and derive Castigliano's first and second theorem	L1 5
	b	Derive the expression for strain energy due to bending.	L2 10
	c	State Principle of virtual displacements and forces	L1 5
Module-3			
Q. 05	a	Determine the reaction components at supports A and B for 3-hinged arch shown in fig.4. The distance between the two supports A & B is 24m and the distance of point load from B is 6m. Evaluate Normal thrust and radial shear at a distance 2.5 m from support A. 	L3 20
OR			
Q. 06	a	Explain the method of deriving equations for cable profile and tension in the cable when it is supported at the same level and subjected to horizontal UDL.	L2 8
	b	Analyse the cable and determine the length, max tension developed. If the cable supports a load of 2 kN/m on a horizontal span of 300m and the maximum sag is 25m. 	L3 12

		Module-4		
Q. 07	a	Analyse a propped cantilever beam subjected to UDL w kN/m and Span L , using Slope deflection method.	L2	8
	b	Analyse continuous beam ABCD in fig. 6 by slope deflection method and then draw bending moment diagram. Take EI constant.	L4	12
		 <p style="text-align: right;">Fig. 6</p>		
OR				
Q. 08	a	Analyse the portal frame subjected to loads as shown in Fig. 7. Also draw bending moment diagram. Consider Sway effects also.	L4	20
		 <p style="text-align: right;">Fig.7</p>		
Module-5				
Q. 09	a	Analyse the continuous beam as shown in fig.8 by moment distribution method and draw the B.M. diagrams. The support B sinks by 12mm, take $E = 2 \times 10^5$ kN/m ² and $I = 120 \times 10^{-6}$ m ⁴ .	L4	20
		 <p style="text-align: right;">Fig.8</p>		
OR				
Q. 10	a	Explain Fixed end moments for different loading and support conditions with relevant diagrams.	L2	5
	b	Analysis the frame shown in fig.9 by moment distribution method and draw BMD assume EI is constant	L4	15
		 <p style="text-align: right;">Fig. 9</p>		

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.