U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

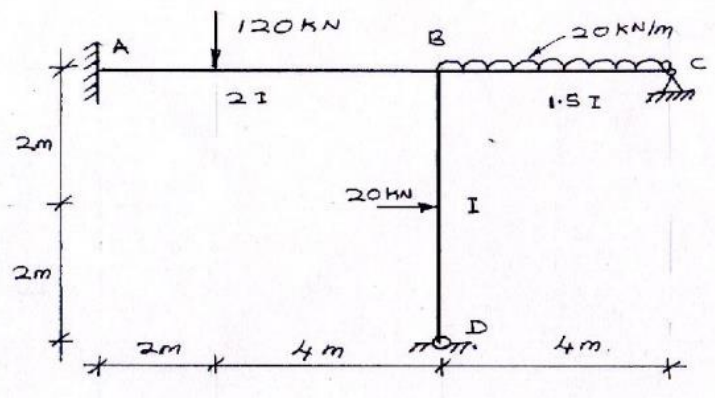
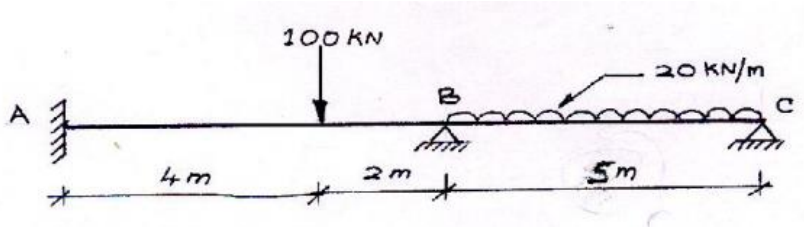
Programme: B.E. **Semester: V**

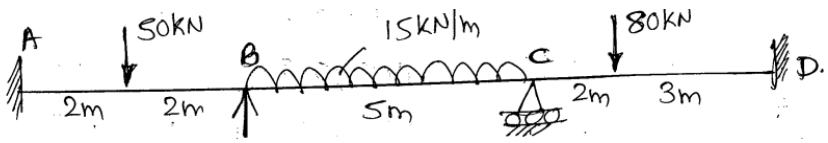
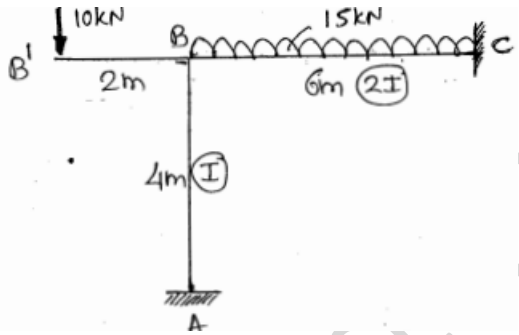
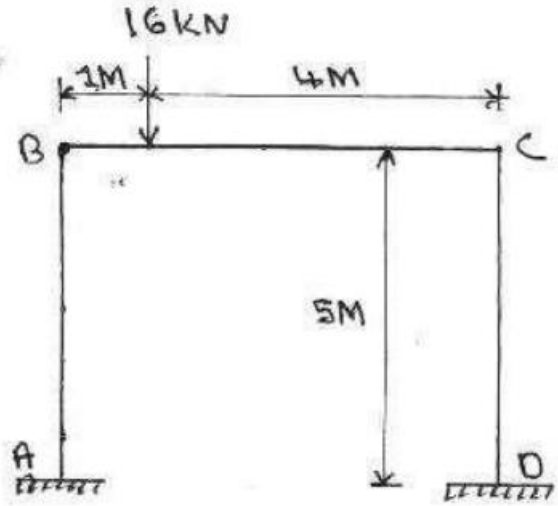
Branch: CIVIL ENGINEERING **Duration: 3 hrs.**

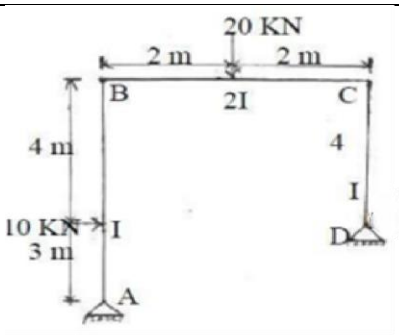
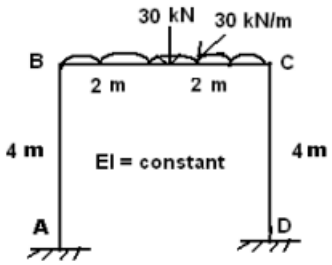
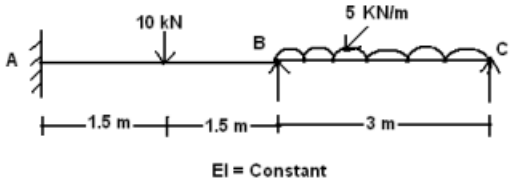
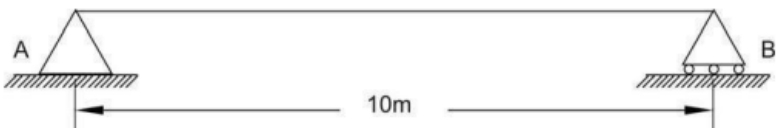
Course Code: 23CV5PCSSA / 22CV5PCSSA **Max Marks: 100**

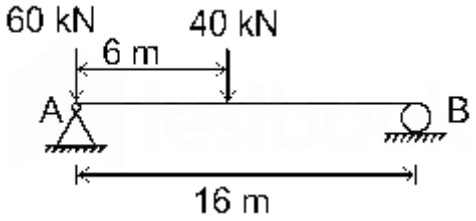
Course: Structural System Analysis

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

		UNIT - I	CO	PO	Marks
1		Analyse the simple frame shown in Fig. 1 by slope deflection method. End A is fixed and ends D & C are hinged. Draw the bending moment diagram and elastic curve.  Fig. 1	1	1,2	20
		OR			
2		Analyze two span continuous beam ABC shown in Fig. 2 by slope deflection method. Then draw B.M.D and elastic curve. Take EI constant.  Fig. 2	1	1,2	20

			UNIT - II			
	3		Analyze the continuous beam shown in Fig. 3 by Moment Distribution Method. Draw B.M.D and elastic curve.  Fig. 3	*1*	*1,2*	**20**
			OR			
	4		Analyze the rigid frame shown in Fig. 4 by Moment Distribution Method. Draw BMD and elastic curve.  Fig. 4	*1*	*1,2*	**20**
			UNIT - III			
	5		Analyze the frame shown in Fig. 5 by moment distribution method. Assume EI is constant. Draw BMD and elastic curve.  Fig. 5	*1*	*1,2*	**20**
			OR			
	6		Analysis the rigid frame shown in Fig. 6 by slope deflection method. Draw BMD and elastic curve.	*1*	*1,2*	**20**

			 Fig. 6			
			UNIT - IV			
	7		Analyse the portal frame ABCD shown in Fig. 7 by direct stiffness method. Also sketch BMD and elastic curve.  Fig. 7	*2*	*1,2*	**20**
			OR			
	8		Analyze the continuous beam ABC shown in Fig. 8 by Direct stiffness method. Draw BMD and elastic curve.  Fig. 8	*2*	*1,2*	**20**
			UNIT - V			
	9	a)	Construct the influence line for reactions, bending moment and shear force for the beam of span 10 m. The beam structure is shown in Fig. 9  Fig. 9	*3*	*1,2*	**6**
		b)	Find the value of absolute maximum bending moment and shear force, when a series of concentrated loads 100kN, 180kN, 200kN, and 150kN spaced at 1.5m, 2.0m and 1.5m crosses the girder of span 20m. Take 150 kN load leading.	*3*	*1,2*	**14**

			OR			
	10	a)	Two loads of 40kN and 60kN are moving towards support B as shown in Fig 10. What is the maximum negative shear force at B?  Fig. 10	*3*	*1,2*	**10**
		b)	Derive the value of equivalent uniformly distributed load in the case of a single concentrated load moving across a girder and then draw enveloping parabola.	*3*	*1,2*	**10**

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