U.S.N.										

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

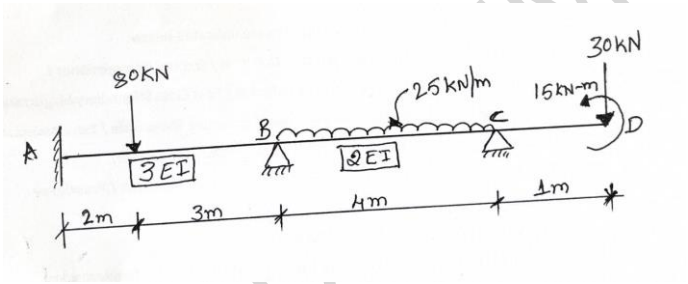
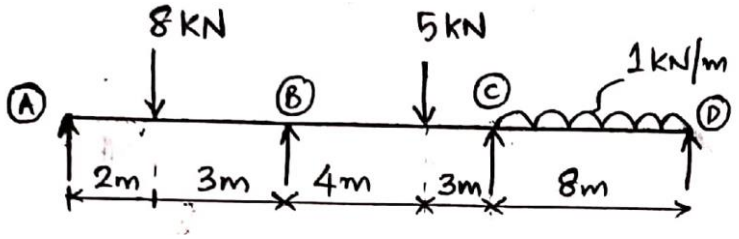
Autonomous Institute Affiliated to VTU

July 2024 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 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.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	CO	PO	Marks
1	a)		Analyze the continuous beam shown in fig 1, by slope defection method. Sketch the bending moment diagram and elastic curve.  Fig-1	CO1	PO2	14
	b)		Derive the slope deflection equations.	CO1	PO1	06
			UNIT - II			
2	a)		A continuous beam ABCD, 20 m long is simply supported as shown in Fig. 2. If support 'B' sinks by 5 mm, analyze the beam by moment distribution method. Sketch bending moment diagram and elastic curve .Take EI =8000 kN-m^2.  Fig 2	CO1	PO2	16
	b)		Explain the terms i) Distribution factor ii) Carry over factor.	CO1	PO1	04

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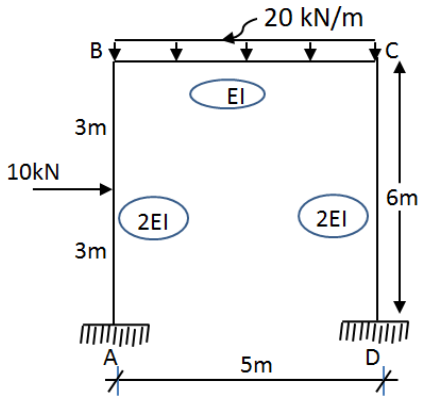
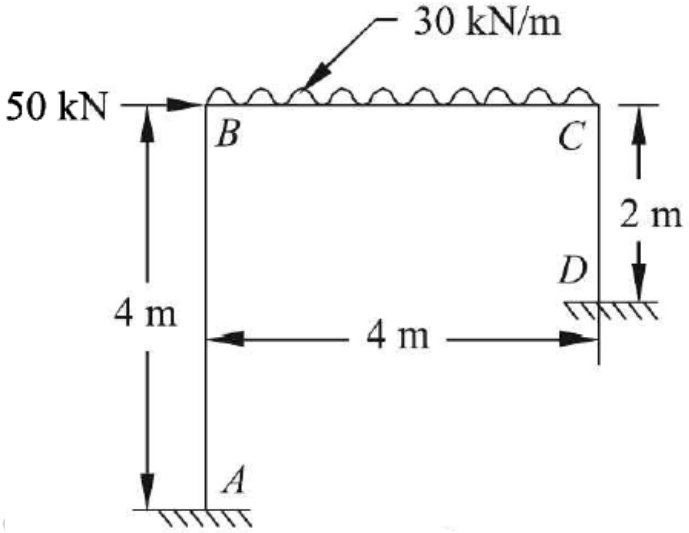
			UNIT - III			
	3		Analyze the given frame as shown in Fig. 3 by slope deflection method. Sketch BMD and Elastic curve. Assume EI is constant.  Fig. 3	*CO1*	*PO2*	**20**
			OR			
	4		Analyze the rigid portal frame shown in Fig.4 moment distribution method.Take EI as constant. Also draw Bending Moment Diagram and elastic curve.  **Fig 4**	*Co1*	*PO1* *PO2*	**20**
			UNIT - IV			
	5		Analyze the given beam as shown in fig 5 by using Direct Stiffness matrix method EI is constant for all the span. Draw BMD and elastic curve.	*CO2*	*PO2*	**20**

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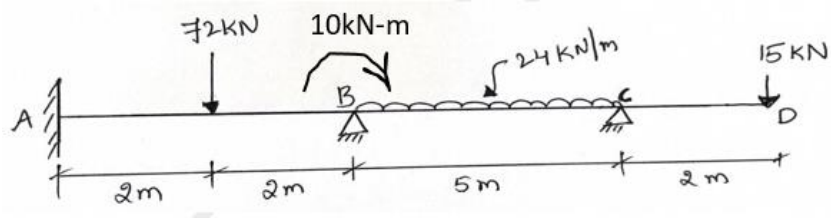
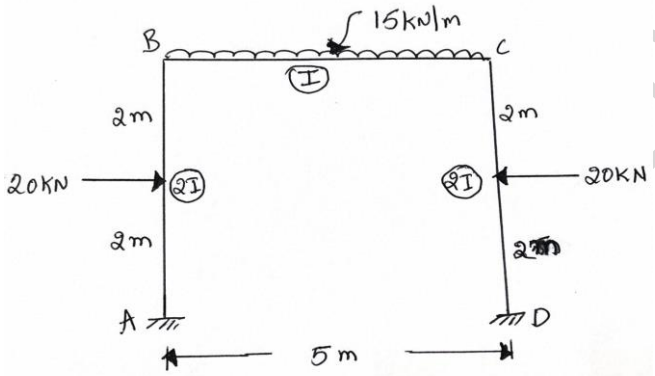
			 Fig 5			
			OR			
	6		Analyze the given frame as shown in fig 6 by using Direct Stiffness matric method. Draw BMD and elastic curve.  Fig 6	*CO2*	*PO2*	**20**
			UNIT - V			
	7	a)	Two-wheel loads of 160kN and 400kN spaced 2m apart move from left to right on a simply supported beam girder of span 16m with 400kN load leading. Determine (i). Absolute maximum SF (ii). Max SF and BM at a section 4m from left support (iii). Absolute max BM (iv). Equivalent UDL.	*CO3*	*PO2*	**12**
		b)	Draw the ILD for shear force and bending moment for a section at 5m from left support of a simply supported beam, 20m long. Hence, calculate the maximum bending moment and shear force at the section, due to a uniformly distributed rolling load of length 8m and intensity 10kN/m run	*CO3*	*PO2*	**08**

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