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EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institution Affiliated to Visvesvaraya Technological University (VTU) Belagavi

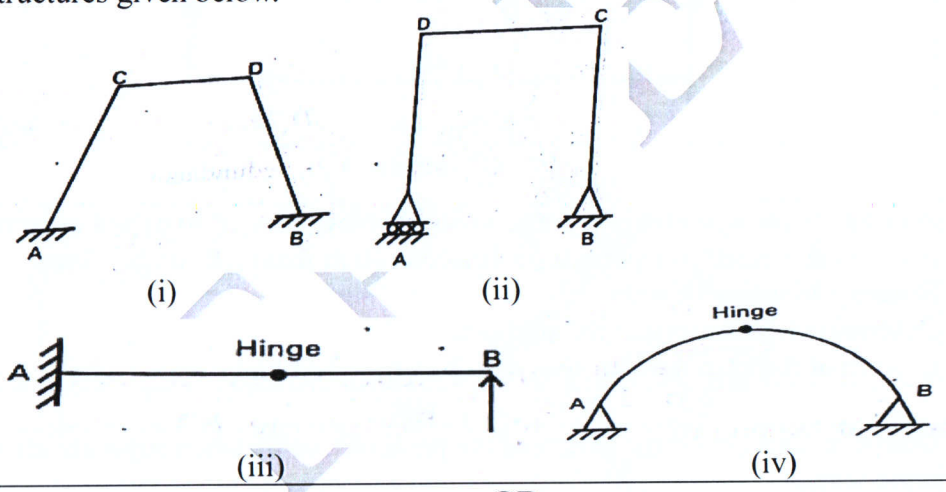
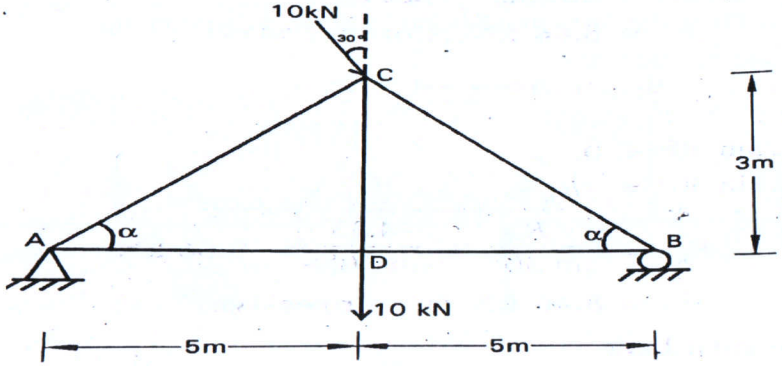
USN | | | | | | | | | | |

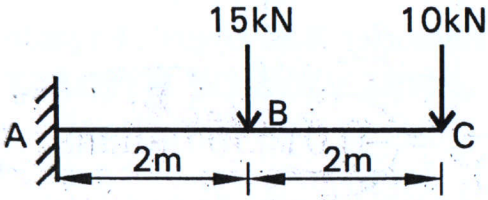
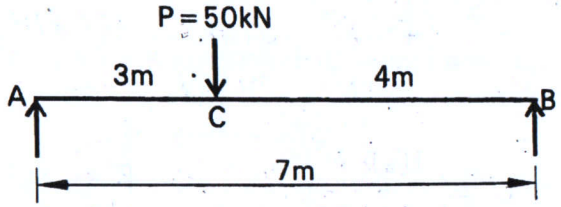
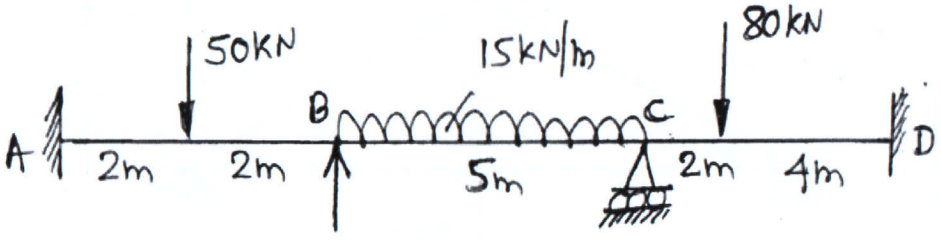
24CV42

Fourth Semester B.E. Degree Examination, May 2026
ANALYSIS OF STRUCTURES

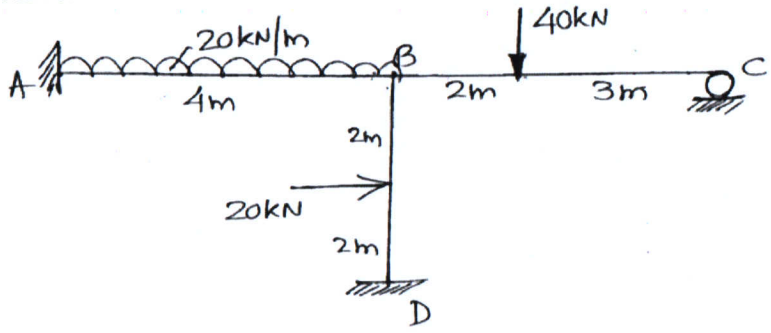
TIME:3 hrs. Max.Marks:100

Note: 1. Answer **any FIVE** full questions, choosing **ONE** question from **each MODULE.**
2. M: Marks, L: Bloom's level,C: Course outcomes.
3. Assume missing data suitably

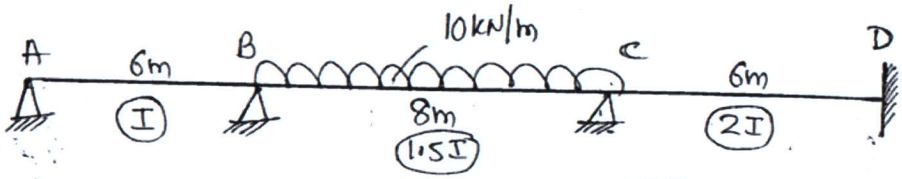
		Module-1	M	L	C
Q.1	a	Explain briefly the forms of structures.	6	L2	CO1
	b	Define Degree Of Freedom. Mention the DOF for different types of supports.	6	L1	CO1
	c	Calculate the static and kinematic indeterminacy for the following structures given below. 	8	L2	CO1
		OR			
Q.2	a	Explain briefly types of trusses.	6	L2	CO1
	b	Write the assumptions made in the analysis of a pin jointed plane truss.	6	L4	CO1
	c	Determine the forces in each member of the truss shown in Fig Q.2.c  QFig.2.c	8	L2	CO1

		Module–2			
Q.3	**a**	State and prove Mohr's Slope and deflection theorems.	**6**	**L2**	**CO2**
	b	Calculate the slope and deflection at B and C of the cantilever beam shown in FigQ.3.b.Use moment area method. Take EI = 5.5 x10^3 kNm^2.  QFig.3.b	**14**	**L2**	**CO2**
		OR			
Q.4	**a**	Derive the expression for strain energy stored in a member due to bending and axial force.	**6**	**L2**	**CO2**
	b	Determine the deflection under concentrated load for the beam shown in FigQ.4.b. Use castigliano's theorem. Take E = 2 x 10^8kN/$m^2$and I = 14 x10-^{6} m^4  QFig.4.b	**14**	**L2**	**CO2**
		Module–3			
Q.5	**a**	A three hinged symmetrical parabolic arch has a span of 30 m and central rise 5 m subjected to a point load 40 kN at 10 m from left hinge. Draw Bending Moment Digram. Determine i. Reactions at the supports. ii. Normal thrust and radial shear at 12 m from left hinge.	**20**	**L2**	**CO3**
		OR			
Q.6	**a**	Derive an expression for length of the parabolic cable when supports are at same level.	**10**	**L2**	**CO3**
	b	A cable is suspended between two points A and B, 40 m apart horizontally and a central dip of 6 m. It supports a uniformly distributed load of 10 kN/m. Compute maximum and minimum tension in the cable.	**10**	**L2**	**CO3**
		Module–4			
Q.7	**a**	Analyse the given continuous beam by slope deflection method. Draw BMD and Elastic curve.  QFig.7.a	**20**	**L3**	**CO4**

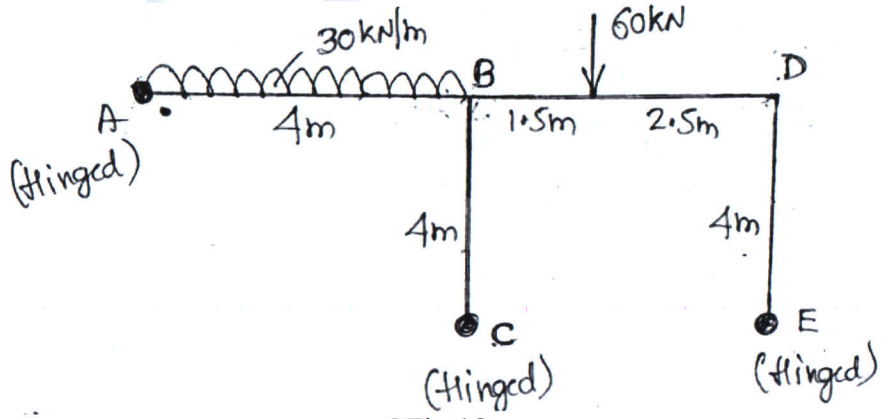
OR

Q.8	**a**	Analyse the given frame by slope deflection method. Draw BMD and Elastic curve.  QFig.8.a	**20**	**L3**	**CO4**

Module–5

Q.9	**a**	Analyse the given continuous beam by moment distribution method. Support B and C sinks by 8 mm and 3 mm respectively. Draw BMD and Elastic curve. Take EI = 2 x 10^4 kN-m^2  QFig.9.a	**20**	**L3**	**CO5**

OR

Q.10	**a**	Analyse the given frame by moment distribution method. Draw BMD and Elastic curve. Take EI constant.  QFig.10.a	**20**	**L3**	**CO5**

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