PRN:		Course Code:	PSE101

First Year M. Tech End Semester Examination Winter 2024

Advanced Structural Analysis 000412

Day and Date: Mon F 2 DEC 2024 Max Marks: **100**

Time: 10:30AM To 02:30PM Duration: **04** hrs

Instructions: 1) All Questions are compulsory.

			Marks	Bloom's Level	CO
Q.1	**Solve the following (any One)**				
	a)	A semicircular beam of radius R supported on three symmetrical loaded placed columns. It carries udl w per unit length. Determine reaction at support and also draw BMD and TMD.	16	L_4	CO1
		OR			
	b)	A semicircular beam of radius R supported at the ends. It carries point load W at centre. Draw BMD and TMD.	16	L_4	CO1
Q.2	**Solve the following (any One)**				
	a)	Construct ILD for reactions at support, S.F. & B.M.at section C which 0.6m from support A for Propped cantilever beam. Obtain ordinates of ILD at every quarter point	18	L_4	CO2
		OR			
	b)	Construct ILD for reaction at A, bending moment at B for a two span continuous beam ABC is fixed at A and simply supported at B and C. Span AB = 6m and span BC = 8m. Obtain ordinates of ILD at every quarter point.	18	L_4	CO2
Q.3	**Solve the following (any One)**				
	a)	Derive expression for deflection, pressure, slope, moment and shear for a semi finite beam on elastic foundation subjected to UDL w/m over entire length. Also draw their corresponding diagram.	16	L_3	CO3
		OR			
	b)	Derive expression for deflection, pressure, slope, B.M. and S.F. for a long beam on elastic foundation subjected to concentrated moment at its centre. Also draw their corresponding diagram	16	L_3	CO3

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Q.4 **Solve the following**

a) Determine maximum deflection and maximum bending moment for beam column subjected UDL w/m over entire length and axial load P. Also find magnification factor for deflection and moment. — 16 — L_3 — CO3

Q.5 **Solve the following (any One)**

a) Analyze the continuous beam shown in fig.1 by flexibility matrix Method — 16 — L_3 — CO4

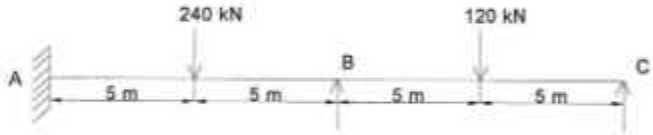


fig.1

OR

b) Analyze the beam shown in fig.2. by flexibility method. Draw SFD & BMD. — 16 — L_3 — CO4

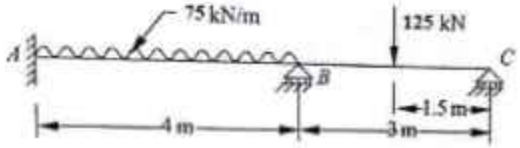


fig.2

Q.6 **Solve the following (any One)**

a) Analyze the continuous beam shown in fig.3 by stiffness matrix method — 18 — L_3 — CO4

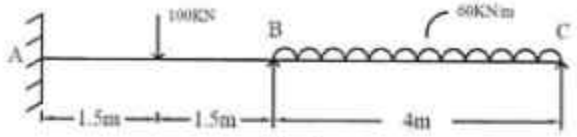


Fig.3.

OR

b) Analyze the portal frame shown in fig.4 by stiffness matrix method — 18 — L_3 — CO4

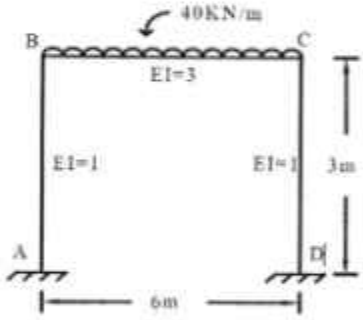


Fig.4.

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