Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. SEMESTER I (old course)–EXAMINATION (Remedial) – WINTER 2015

Subject code: 711501N **Date: 08/12/2015**

Subject Name: Matrix Analysis of Framed Structures

Time: 10:30 AM to 1:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Find the member stiffness matrix for beam.	**07**
	(b)	Explain the concept of non-linear analysis of structures with illustration.	**07**
Q.2	**(a)**	State and explain member end actions for following cases: (1) Support rotation and (2) Uniform temperature increase.	**07**
	(b)	Write down assumptions made and principles used in matrix analysis of framed structures.	**07**
		OR	
	(b)	Compute the member stiffness matrix for portal frame.	**07**
Q.3		Find the member end actions for the portal frame shown in figure 1 by stiffness matrix method and draw bending moment diagram. Consider Axial deformation.	**14**

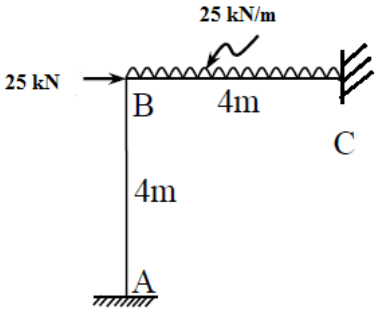

Figure 1

OR

Q.3		Find the reactions at supports for the portal frame shown in figure 1 by flexibility matrix method and draw bending moment diagram.	**14**
Q.4		Compute the support reactions by stiffness matrix method for beam shown in figure 2 and draw shear force and bending moment diagram.	**14**

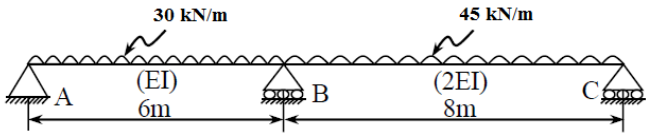

Figure 2

OR

Q.4 Determine the forces in the member of truss shown in figure 3 by stiffness matrix method. **14**

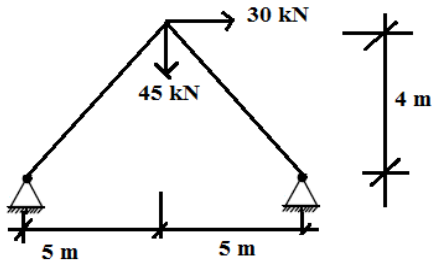

Figure 3

Q.5 Compute the support reactions by flexibility matrix method for beam shown in figure 4 and draw shear force and bending moment diagram. **14**

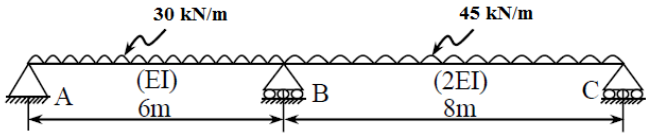

Figure 4

OR

Q.5 Analyze the grid shown in figure 5 by any matrix method. Find the unknowns. **14**

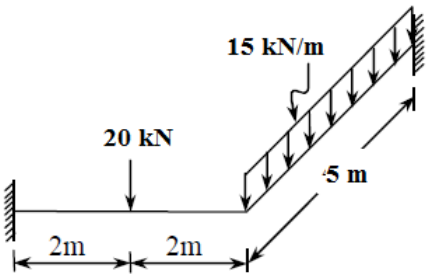

Figure 5

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