

Roll No. 

Total No. of Pages : 03

Total No. of Questions : 09

**B.Tech.(CE) (Sem.-6)**  
**STRUCTURAL ANALYSIS – III**

Subject Code : CE-312

Paper ID : [A0623]

Time : 3 Hrs.

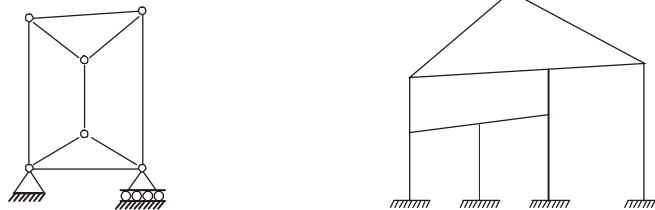
Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

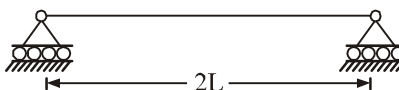
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A****1. Write briefly :**

- (a) Define action and displacement.
- (b) Write the slope deflection equation.
- (c) Describe various types of matrices.
- (d) Find the static indeterminacy of the structure given below in fig.1

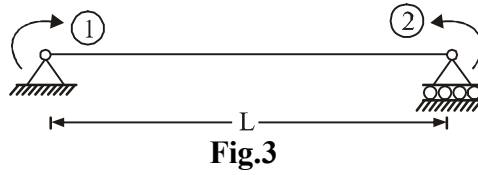
**fig.1**

- (e) Evaluate the kinematic indeterminacy of the structure given in fig.1
- (f) Write the difference between flexibility and stiffness method.
- (g) Write the stiffness matrix for the beam shown in fig.2.

**Fig.2**

- (h) Find the inverse of matrix found in ques1(g)

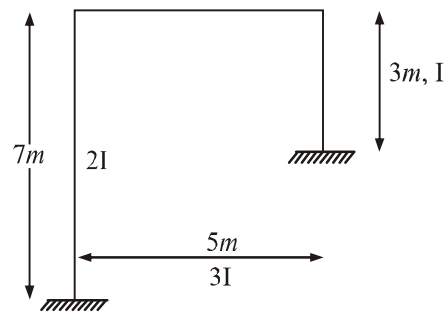
- (i) Show the flexibility matrix for the simply supported beam, with reference to the coordinates shown in **fig.3**



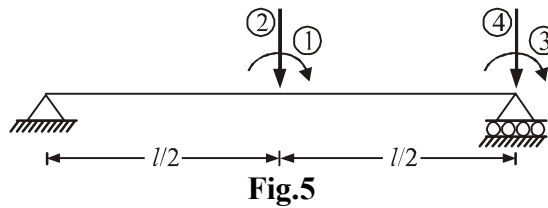
- (j) Develop the stiffness matrix for the beam shown in **fig.3**.

**SECTION-B**

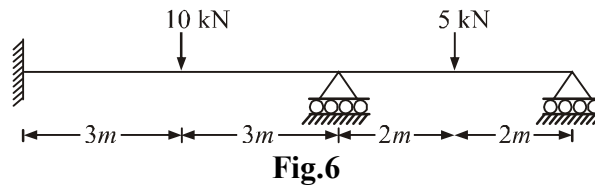
2. Derive the rotation matrix.
3. Develop the stiffness matrix for the portal frame shown in **fig.4**.



4. Write the stepwise procedure of finite element method.
5. Write the flexibility matrix for beam shown in **fig.5**.



6. Analyse the continuous beam.



## SECTION-C

7. Write the stiffness matrix for plane frame member on both member axes and structure axes.

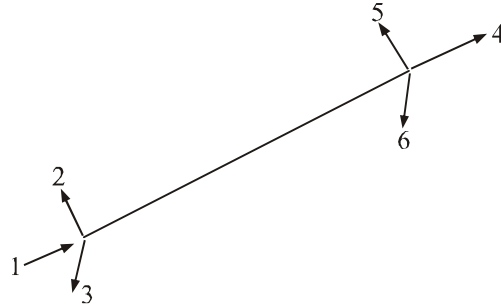


Fig.7

8. Analyse the beam

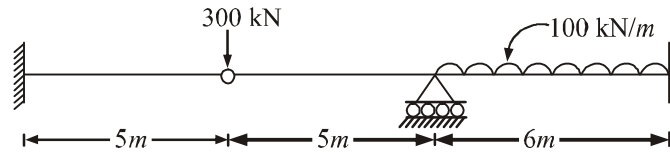


Fig.8

9. Analyse the frame using element approach.

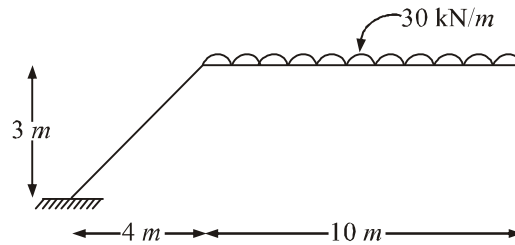


Fig.9