

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Civil) (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) How are indeterminate structures identified?
 - b) Differentiate between rigid jointed plane frames and pin jointed plane frames.
 - c) Describe the concept of FEM.
 - d) Write action and displacement equations.
 - e) What is the need of matrix method of analysis?
 - f) Mention the various coordinates in FEM.
 - g) Why is stiffness matrix method also called equilibrium method or displacement method?
 - h) List out the advantages of FEM.
 - i) What do you mean by discretization?
 - j) Define Lateral stiffness matrix.

SECTION-B

2. Compare flexibility method with stiffness method for analyzing structures.
3. Point out the situations in which finite element method is preferred over other method.
4. Develop the flexibility matrix for the beam shown in fig. 1 with references to specified coordinates.



Fig.1

5. Write short note on types of coordinates.

6. What are the different types of elements used in FEM?

SECTION-C

7. Analyse the portal frame shown in fig.2 by stiffness method.

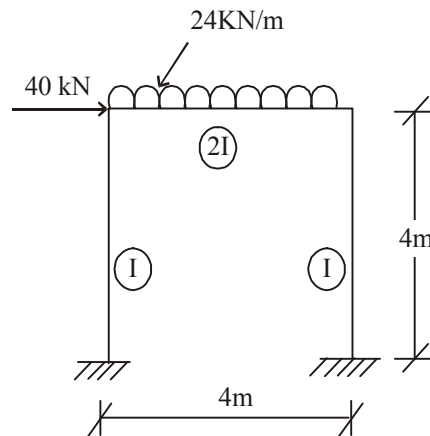


Fig. 2

8. Analyse the structure shown in fig. 3 by flexibility method and draw BMD.

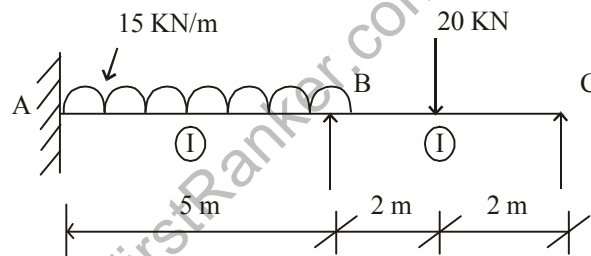


Fig. 3

9. **Write short notes on :**
- Differentiate between force transformation matrix and displacement transformation matrix.
 - Temperature stresses.