M.E. First Semester (Civil (Structural Engg.)) (New-CGS)
13086 : Matrix Methods of Structural Analysis : 1 SFSE 3

Notes : 1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.

SECTION - A

1.   A continuous beam ABCD is hinged at A and roller support at B, C and D. Span AB = 2m,   13
Span BC = 3m and Span CD = 3m. Entire beam is loaded with UDL of 15 kN/m. Find
support reaction using flexibility method.

2.   Analyse the Indeterminate truss as shown below using flexibility method. Assume EA   14
constant?
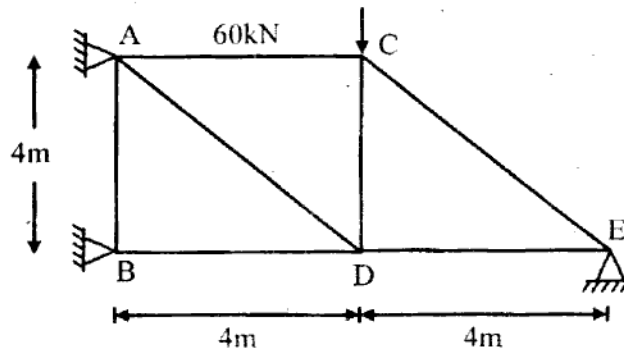
3.   a)   Explain concept of flexibility analysis method using example of continuous beam step by   9
step?

b)   Differentiate between flexibility coefficient and stiffness coefficient method?   4

4.   Derive element stiffness matrix for plane truss member?   13

5.   Derive element stiffness matrix for plane frame neatly?   13

SECTION - B

6.   Generate element stiffness matrix of a typical grid member?   13

7. Analyse simple tripod with support ABC spherical hinge support. Joint D is subjected to   **13**
two external loads. For all members, section area is 1000mm². Young's modulus is
200kN/mm². Analyse the truss using stiffness method?
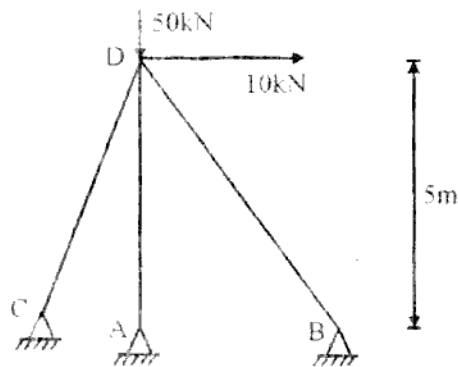
8. Generate element stiffness matrix of space truss?   **13**

9. Explain Any one In core & one out of core method with help of example?   **14**

10. a) Explain methods of data coading?   **4**

     b) Prepare Data file for generating an input file for frame shown below:-   **9**

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