 Total No. of Questions :8] *[Total No. of Printed Pages :4*

8. Analyse the pin jointed frame shown below. The axial stiffness of each member is 4 kN/mm.

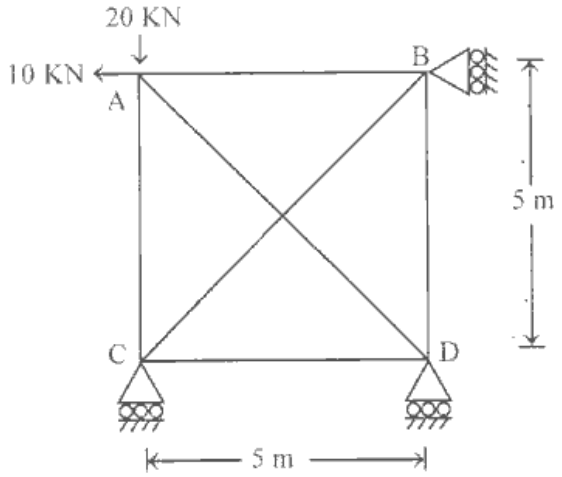

Fig.6

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Roll No .....

MVSE - 103

M.E./M.Tech., I Semester

Examination, December 2014

Advanced Structural Analysis

Time : Three Hours

Maximum Marks : 70

Note: Attempt any five questions. All questions carry equal marks. Internal Choices have been given. Assume suitable value for missing data if any.

1. a) Describe Kinematics indeterminacy.

   b) Three Spring A, B and C are connected in series. The stiffness of the springs are 22, 12 and 6 N/mm respectively. Developed the flexibility matrix for the system shown below.

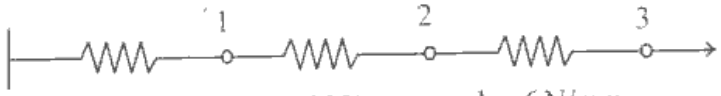

Fig.1

2. a) Analyse the continuous beam shown in Fig.1 by flexibility method also draw SF and BM diagram. Assume EI is constant. The downward settlement of support B and C in Kn-m units are 200/EI and 100/Ei respectively.

   Assume EI constant

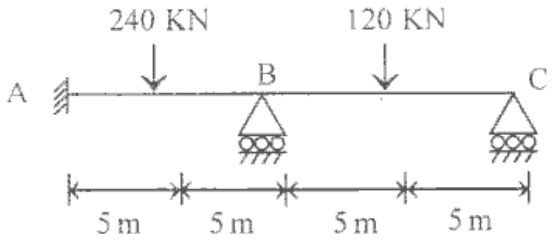

Fig.2

b) Describe the basic concept of flexibility method.

3. Analyse the rigid plane frame shown in Fig.3 by flexibility matrix method. Draw bending moment diagram. Take EI as Constant.

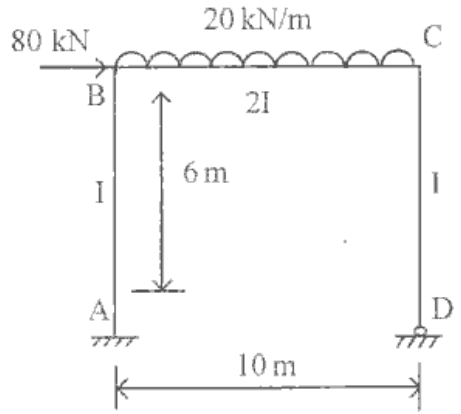

Fig.3

4. a) Analyse the continuous beam shown in Fig.4 by Stiffness method. Support C is guided support also draw SF and BM diagram. Assume EI is Constant.

AB = 12m, BC = 8m, DB = 6m and BE = 3m.

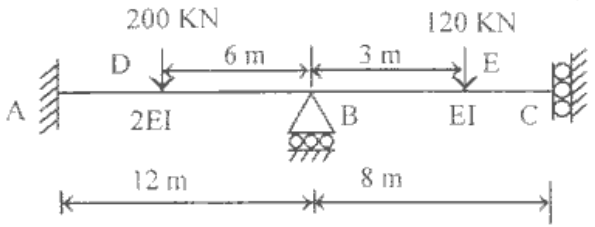

Fig.4

b) Comparison force and displacement method.

5. Analyse the truss Shown in Fig.5 by stiffness matrix method. Area of bar = 30 cm^2.

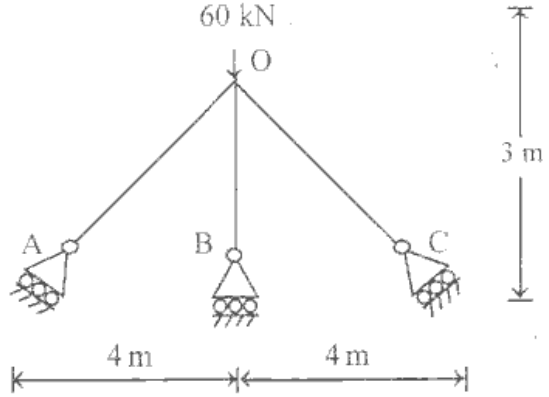

Fig.5

6. a) Explain the member co-ordinate and global co-ordinate system.

b) Developed the stiffness matrix for space truss structure.

7. Explain

a) Boundary conditions

b) Rotational stiffness coefficient

c) Equivalent joint load