7. a) Explain the steps followed in the stiffness method of analysis.

b) Analyze the frame shown in the Figure 6 using the displacement method and draw the B.M. Diagram.

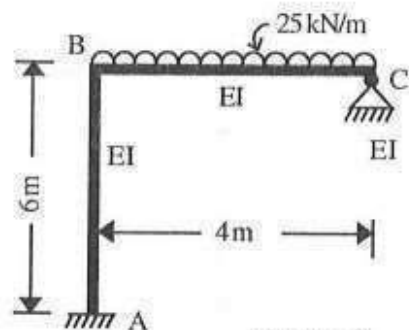

Figure 6

Write short notes (Any Four) :

a) Similarities and dissimilarities of the force and displacement methods.

b) Relationship between flexibility matrix and stiffness matrix.

c) Properties of stiffness matrix and its uses in computer application

d) Code No. approach for global stiffness matrix

e) Applications of flexibility matrix method

f) Effect of support displacement and temperature changes

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Roll No ....

MVSE - 103

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

Examination, December 2015

Advance Structural Analysis

Time : Three Hours

Maximum Marks : 70

Note: i) There are eight questions.

ii) Attempt any five questions out of eight.

iii) Assume suitable missing/misprint data if necessary and state it clearly.

1. a) State and explain various properties of stiffness matrix used in the structural analysis.

b) Analyse the continuous beam shown in the Figure 1 by Flexibility Matrix Method. Draw the deflected shape and bending moment diagram.
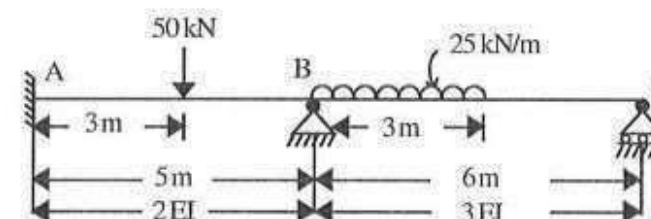

Figure 1

2. a) Explain the basic concept of Stiffness Method of structural analysis.

b) Analyse the portal frame shown in the Figure 2 by Flexibility Matrix Method. Draw the deflected shape and bending moment diagram.
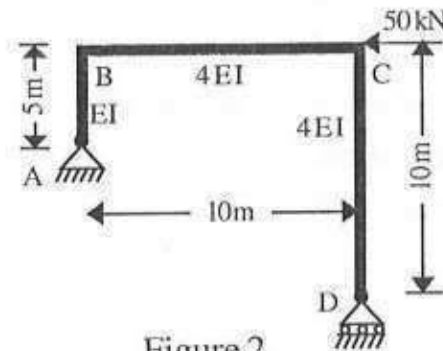

Figure 2

3. a) What do you understand by the transformation in the flexibility analysis of a member? Explain in brief.

b) Analyse the continuous beam shown in the Figure 1 by Stiffness Matrix approach, when the downward settlement of support B and C are 2000/EI and 4000/EI kN-m units. Draw the deflected shape and bending moment diagram.

4. a) Define and explain in brief Flexibility and Flexibility Matrix.

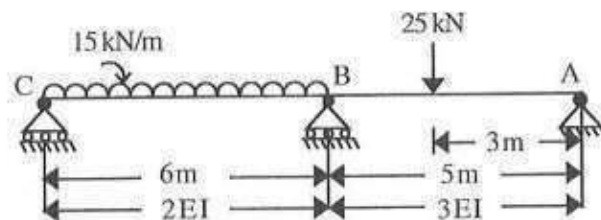b) Using Stiffness Method analyze the beam shown in Figure 3. EI is constant.

Figure 3

5. a) Explain the energy approach in flexibility method.

b) Analyse the portal frame shown in the Figure 4 by Stiffness Matrix Method. Draw the deflected shape and bending moment diagram.

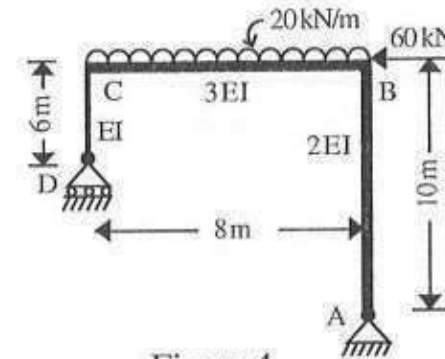
Figure 4

6. a) Explain the steps followed in the stiffness method of analysis.

b) Analyze the frame shown in the Figure 5 and draw the B.M. Diagram. Consider only flexural deformations and take EI constant.
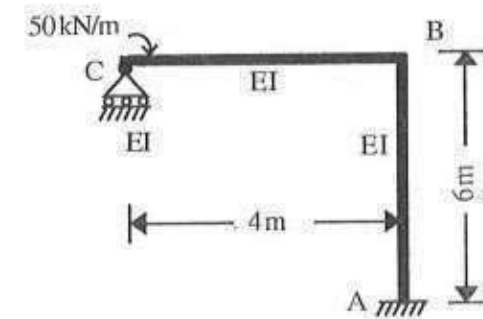

Figure 5