8. a) What decides the sizes of flexibility and stiffness matrices for a structure.

   b) Discuss why the released structure which minimizes the magnitudes of redundants generally leads to the maximum accuracy.

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

Roll No .....

MVSE - 103

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

Examination, June 2016

Advance Structural Analysis

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) Each questions carry equal marks.
iii) Assume missing data suitable.

1. a) What is meant by degree of freedom. Give some examples.

   b) Compute the flexibility matrix considering axial and flexural deformations for the beam shown in figure 1.

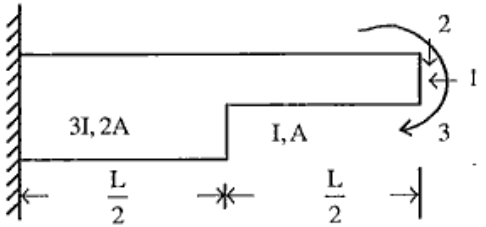

Figure 1

2. Analyse the frame as shown in figure 2 by the force method.

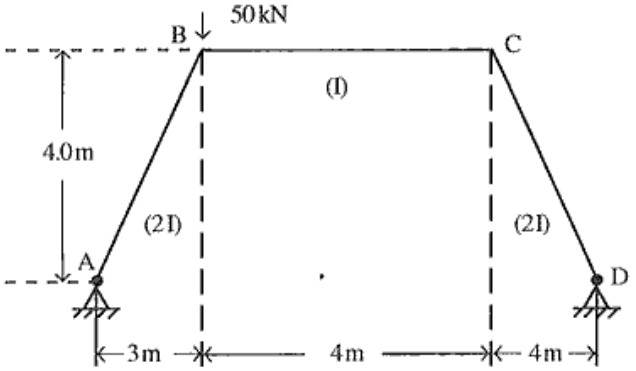

Figure 2

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3. Analyse the pin-jointed frame of figure 3 by the force method.

The axial flexibility. $\frac{1}{AE}$ is the same for all the members.

The numbers in parentheses are the cross sectional areas of the members in cm^2.

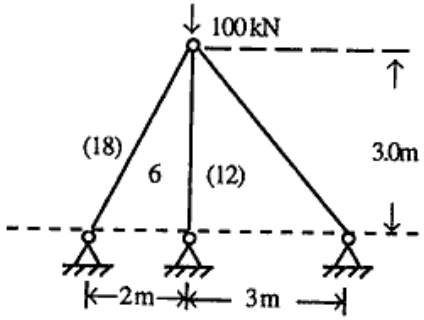

Figure 3

4. Using the displacement method, analyse the frame shown in figure 4.

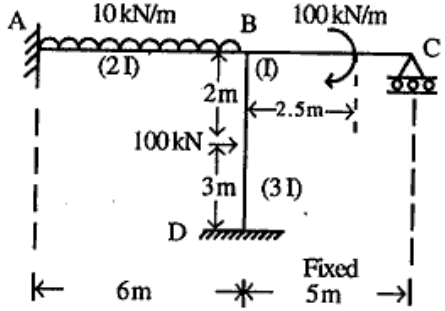

Figure 4

5. Analyse the conditions beam of figure 5 by displacement method. The beam rests on elastic supports at B and C. The flexibilities of supports B and C in KN-m are $\frac{100}{EI}$ and $\frac{300}{EI}$ respectively.

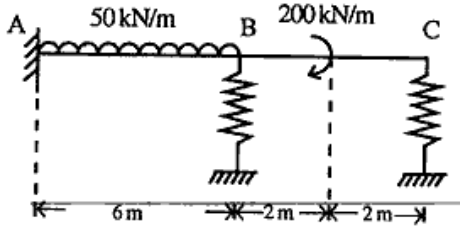

Figure 5

6. Analyse the space frame shown in figure 6 by the displacement method. EI is the same for all the members and GK = 0.6 EI.

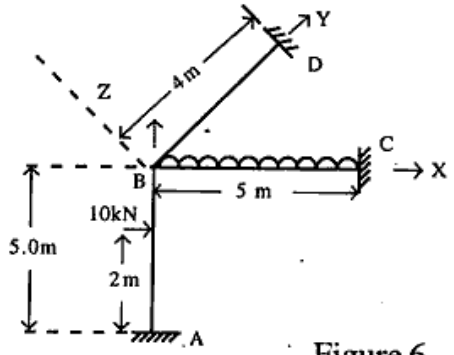

Figure 6

7. Analyse the structure shown in figure 7 using stiffness method. The members are 350 mm in width and 700 mm in depth. Take E = 1200 kN/cm^2 and G = 600 kN/cm^2.

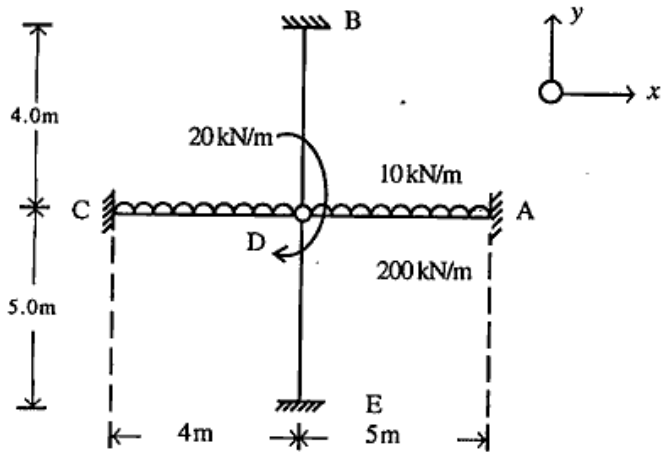

Figure 7