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Total No. of Questions : 8] *[Total No. of Printed Pages : 3*

Roll No .....

MVSE-103

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

Examination, December 2016

Advance Structural Analysis

Time : Three Hours

Maximum Marks : 70

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

1. Generate the flexibility matrix for the structure shown in figure 1.

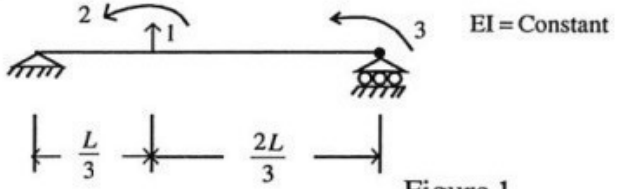

Figure 1

2. Analyse the beam by flexibility method. Also draw SFD and BMD. Assume EI constant.

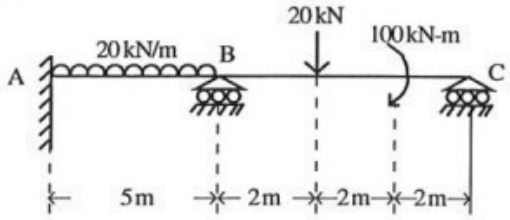

Figure 2

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3. Develop the stiffness matrix for the portal frame with reference to the coordinates shown in figure 3.

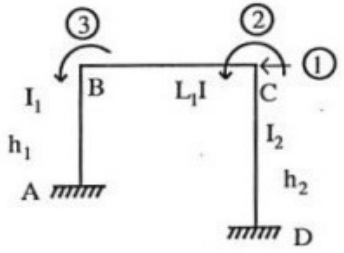

Figure 3

4. Analyse the pin jointed frame shown in figure 4. The axial stiffness of each member is 5kN/mm.

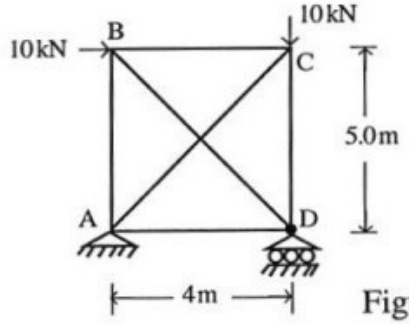

Figure 4

5. Explain the member coordinate and global coordinate system. Analyse the frame by stiffness method.

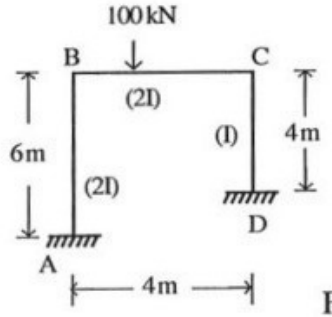

Figure 5

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6. Analyse the portal frame with inclined leg shown in figure 6.

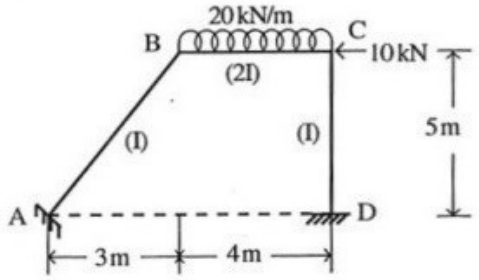

Figure 6

7. a) Develop the stiffness matrix for grid structure.
   b) Develop the stiffness matrix for space truss structure.

8. Analyse the continuous beam shown in figure 7 by the force method. The beam rests on elastic supports at B and C. The flexibilities of supports B and C in kN-m units are $\frac{15}{EI}$ and $\frac{30}{EI}$ respectively.

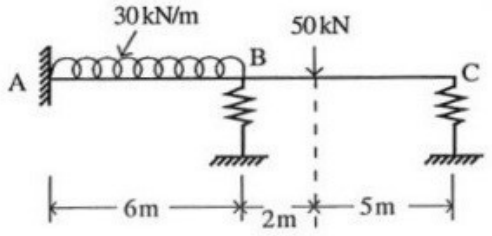

Figure 7

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