

M. Tech. Structural Engineering & Construction (CBCS Pattern) Semester-I  
**PSES11 - Matrix Analysis of Structures**

P. Pages : 2

Time : Three Hours



**GUG/W/24/10961**

Max. Marks : 70

- Notes :
1. All questions carry equal marks.
  2. Solve **any five** question.
  3. Assume suitable data wherever necessary.

1. a) Distinguish between the stiffness matrix and flexibility method. 7
- b) Find the stresses in the two-bar assembly which is loaded with force P, and constrained at two ends, as shown in figure 1. 7

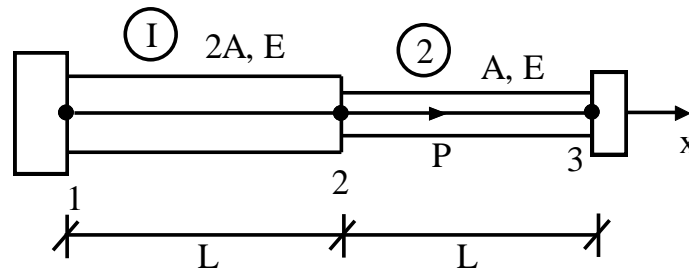
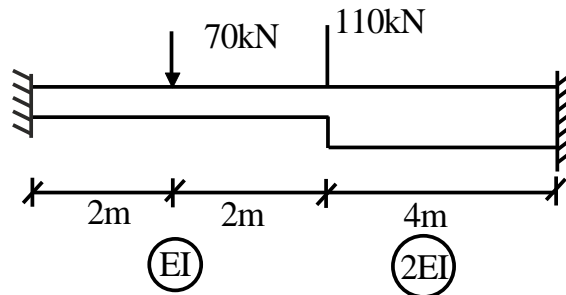


Figure 1

2. Analyze the beam shown below by using flexibility method. 14



3. Analyze the plane frame as shown in figure by direct stiffness method. Assume that the flexural rigidity for all members are the same. Neglect axial displacement. 14

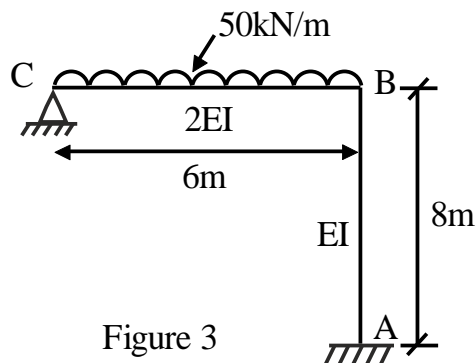
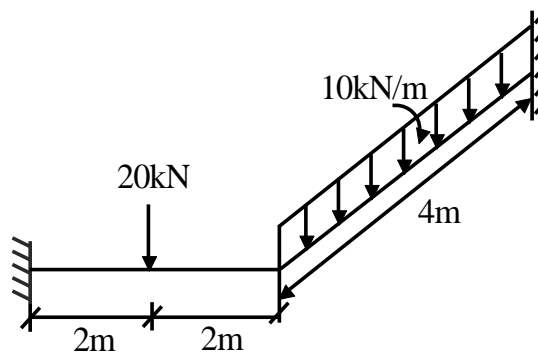


Figure 3

4. a) Explain the concept of inclined supports. 7
- b) Explain the effect of Sheard deformation 7
5. Find out displacements for the grid shown in figure using stiffness member approach. 14  
Take  $GJ = 0.8EI$



Figure

6. Derive stiffness matrix for truss element. 14

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