

[5253]-104

T.E. (Civil Engineering)

STRUCTURAL ANALYSIS - II
(2012 Pattern) (End Semester)

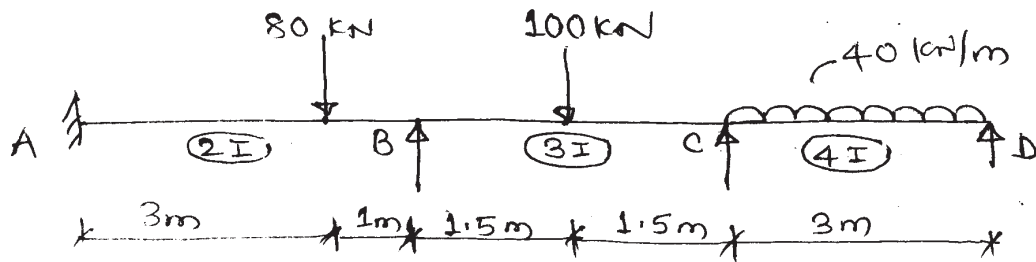
Time : 2½ Hours]

[Max. Marks : 70

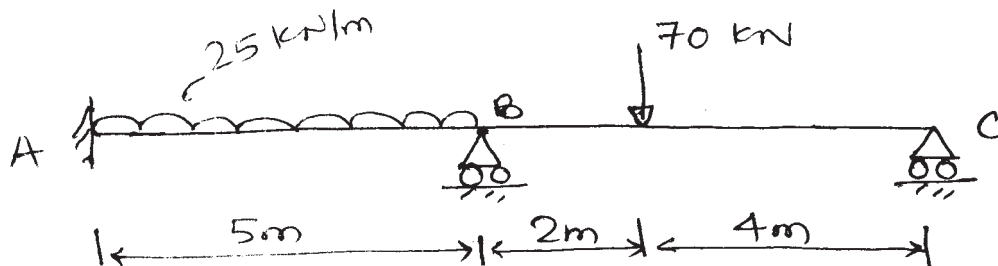
Instructions to the candidates:

- 1) Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data, if necessary and indicate clearly.
- 4) Use of electronic, non-programmable calculator is allowed.

Q1) a) Analyse the beam by slope deflection method. Draw BMD. [10]



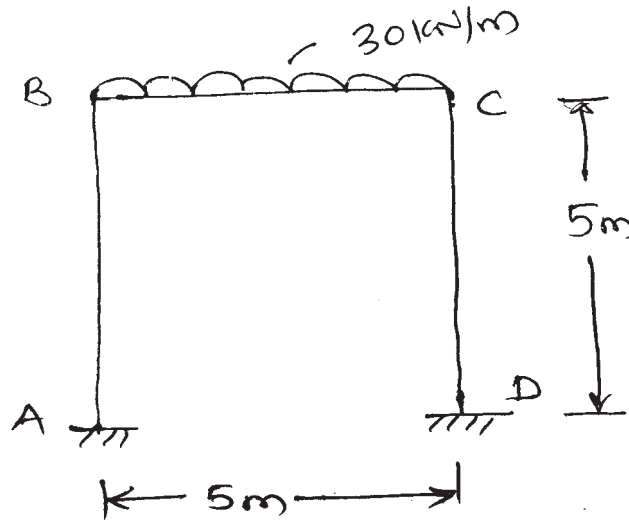
b) Analyse the beam by Flexibility Matrix method. Support 'B' sinks by 15 mm. Draw BMD. [10]



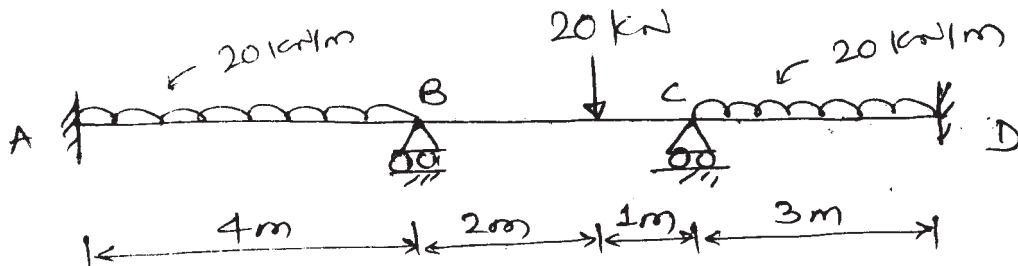
P.T.O.

OR

Q2) a) Analyse the frame by Slope Deflection method. Draw BMD. [10]

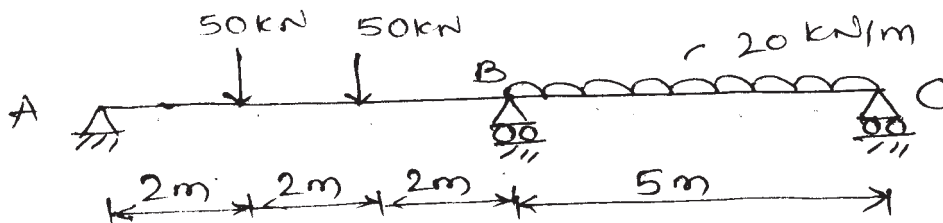


b) Determine the support moments for continuous beam by Moment Distribution method. Draw BMD. [10]



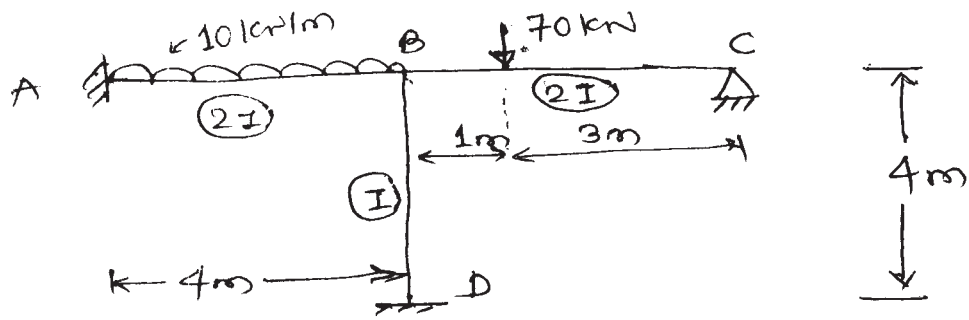
Q3) Analyse the beam by 'Stiffness Matrix method. Draw SFD & BMD. Take $EI = \text{constant}$.

[16]

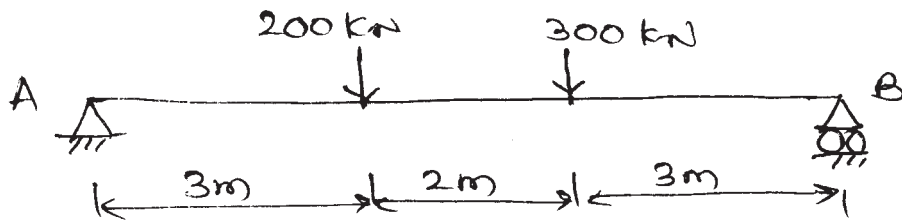


OR

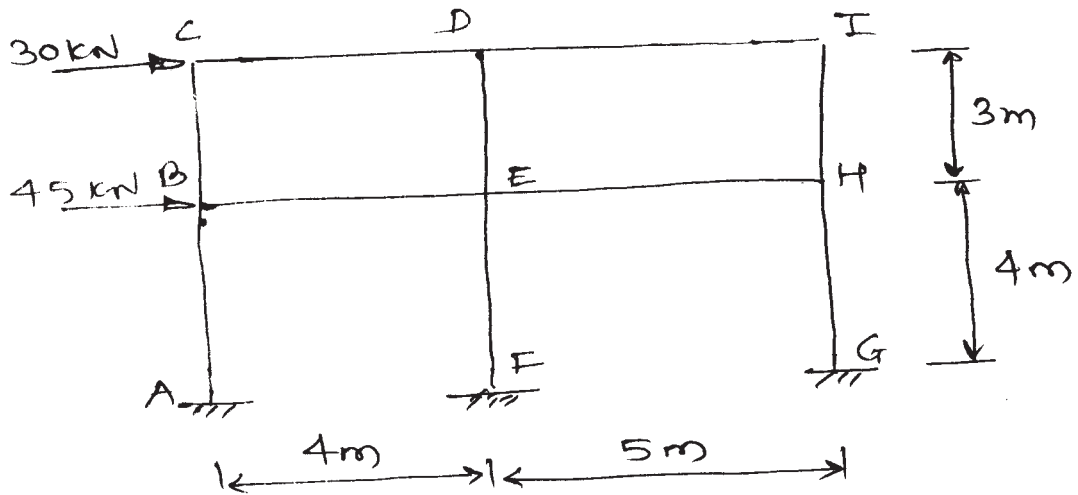
- Q4) a) Analyse Portal Frame by Stiffness Matrix. Draw BMD. Take EI constant. [16]



- Q5) a) Determine deflection under the loads using Finite Difference method. [8]



- b) Analyse the Portal Frame by cantilever method. Consider cross-sectional area of all columns equal. Draw BMD. [10]



OR

- Q6) a) Determine maximum deflection for the cantilever beam of span 1.5m carrying udl of 35 kN/m on entire span. Take 3 nodes. [8]
- b) Analyse portal frame of Q5 (b) by using Portal method. Draw BMD. [10]

- Q7)** a) Discuss in detail. [8]
i) Axisymmetric elements
ii) Isoparametric elements
- b) Derive shape function for 2 noded Bar element, using natural co-ordinate system. [8]

OR

- Q8)** a) Discuss plain stress and plain strain problem. [8]
b) Explain convergence requirements for FEM. [8]

