

STRUCTURAL ANALYSIS-II

(2015 Pattern) (Semester - I) (End Sem.)

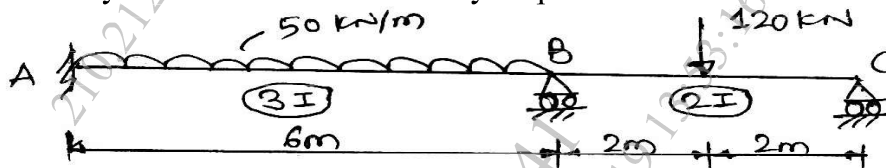
Time : 2½ Hours]

[Max. Marks : 70

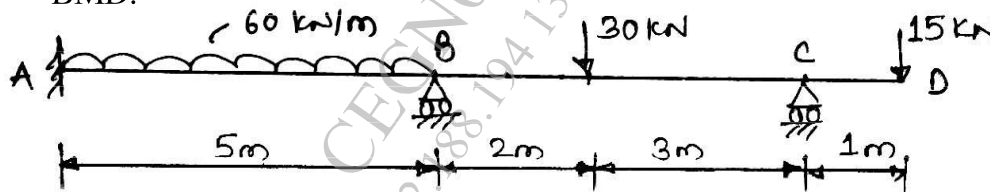
Instructions to the candidates:

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

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

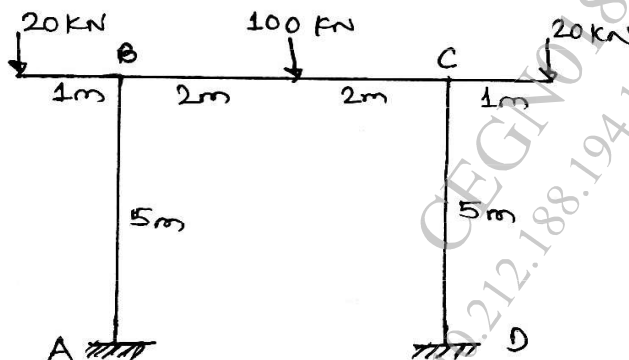


b) Analyze the continuous beam by moment distribution method. Draw BMD. [10]

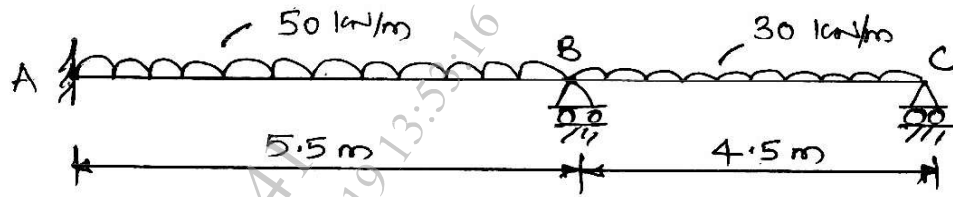


OR

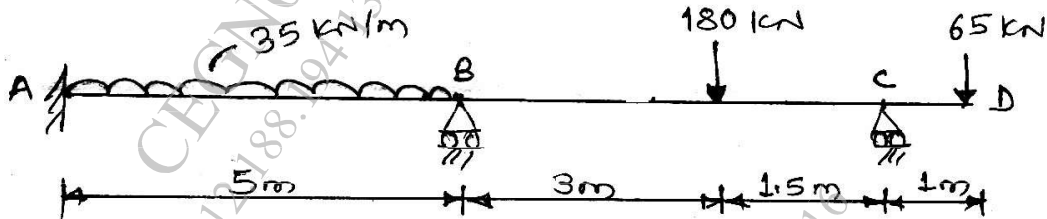
Q2) a) Analyze the frame by Slope deflection method draw BMD [10]



- b) Analyze the continuous beam by Flexibility matrix method. Draw BMD. Take EI constant. [10]

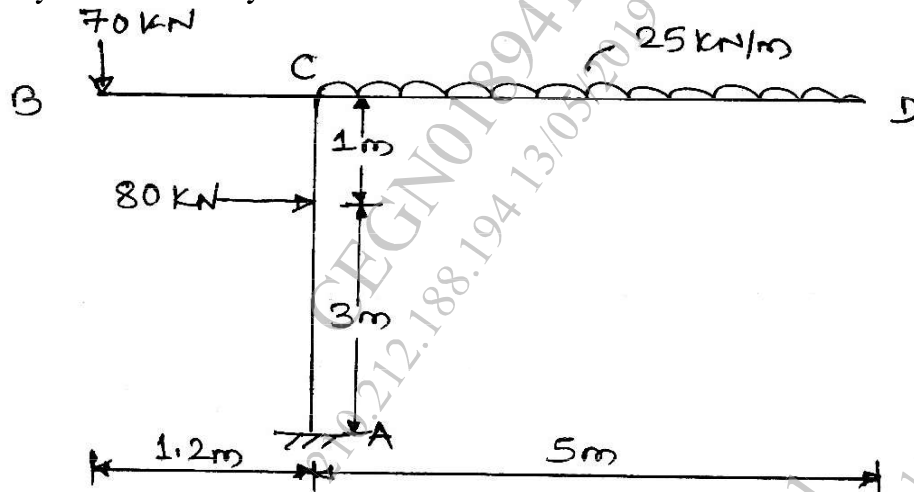


- Q3) Analyze the beam by Stiffness Matrix method Draw BMD. [16]

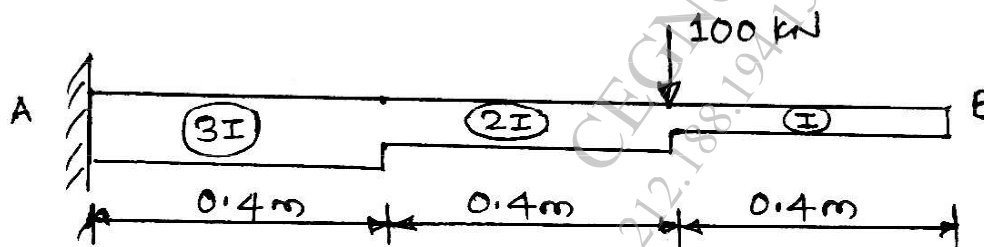


OR

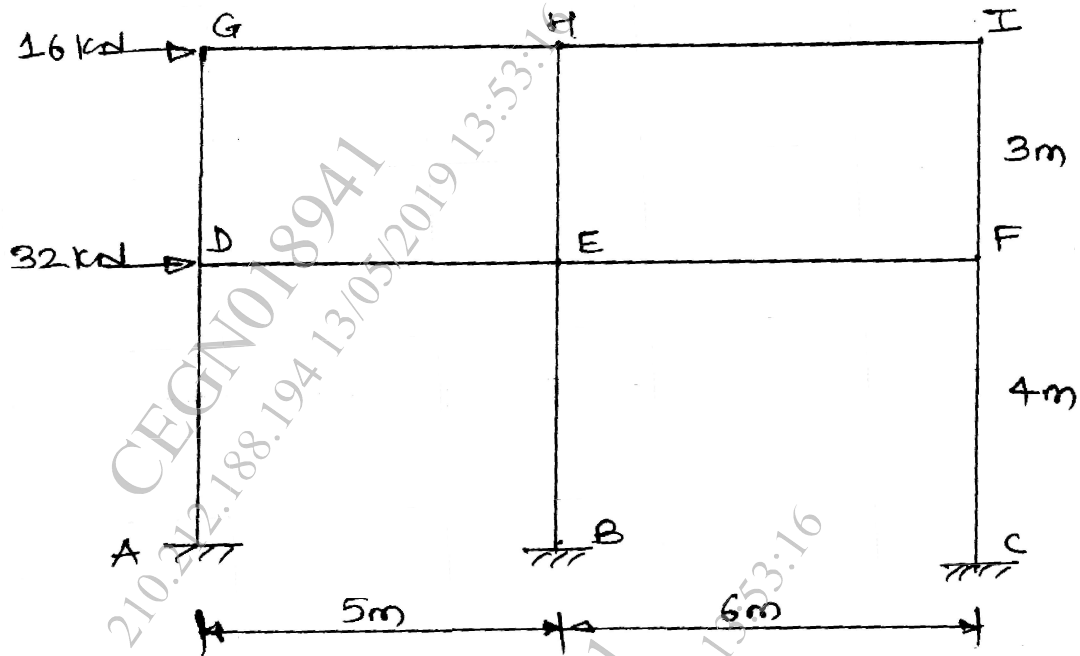
- Q4) Analyze the frame by stiffness matrix method. Draw BMD. [16]



- Q5) A cantilever beam of span 1.2m with varying moment of inertia, carries a concentrated load as shown. Determine deflection at free end. Take 4 nodal points. [8]



- b) Analyze frame by portal frame method. Determine approximate values of moment. Shear force and axial force in each member. [10]



OR

- Q6)** a) A simply supported beam of span 10m is carrying udl of 6 kN/m over the entire span. Determine deflection at nodal points, take fine nodes. Take $EI = \text{constant}$. [8]
 b) Determine the approximate values of moment, shear and axial forces in members of frame as given in Q5b), using cantilever method. [10]
- Q7)** a) Explain plain stress and plain strain problem with example. [8]
 b) Explain the principle of minimum potential energy. [8]

OR

- Q8)** a) Determine the shape functions for four noded rectangular element using Lagrange polynomial. [7]
 b) Explain the terms [9]
 i) Nodes
 ii) Discretization
 iii) 2D Pascal Triangle

