

[6582]-4

S.E. (Civil Engineering)

STRUCTURAL ANALYSIS

(2019 Pattern) (Semester - IV) (201011)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.
- 2) Neat sketches must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.
- 5) Use of electronic pocket calculator is allowed.
- 6) Use of cell phone is prohibited in the examination hall.

- Q1) a) Analyze the continuous beam by slope deflection method as shown in Fig. 1a. [8]

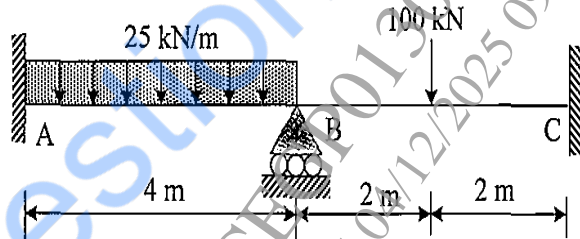


Fig. 1 a

- b) Analyze the portal frame by slope deflection method as shown in Fig. 1b. [10]

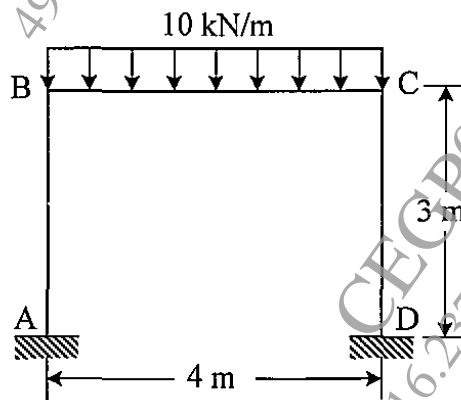


Fig. 1 b

OR

- Q2) a) Analyze the propped cantilever by slope deflection method as shown in Fig. 2 a. [8]

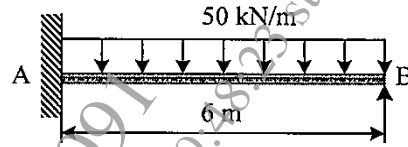


Fig. 2a

- b) Analyze the portal frame by slope deflection method as shown in Fig. 2 b. [10]

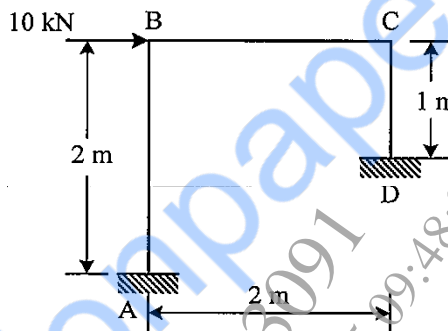


Fig. 2 b

- Q3) a) Analyze the continuous beam by moment distribution method as shown in Fig. 3 a. [8]

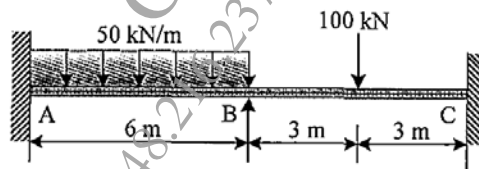


Fig. 3 a

- b) Analyze the portal frame by moment distribution method as shown in Fig. 3 b. [10]

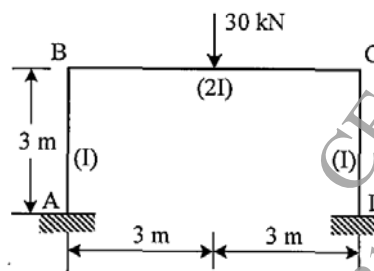


Fig. 3 b

OR

- Q4) a) Analyze the propped cantilever by moment distribution method as shown in Fig. 4 a and draw bending moment diagram. [8]

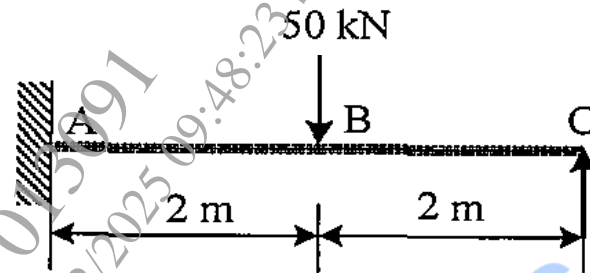


Fig. 4a

- b) Analyze the portal frame by moment distribution method as shown in Fig. 4 b. [10]

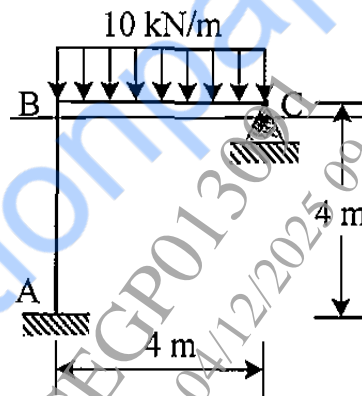


Fig. 4 b

- Q5) a) Analyze the continuous beam by stiffness method as shown in Fig. 5a. [12]

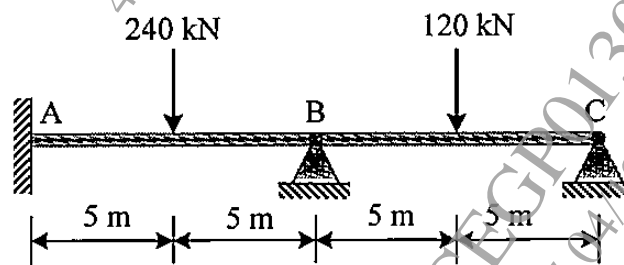


Fig. 5 a

- b) Generate the stiffness matrix for the bent as shown in Fig. 5 b. [5]

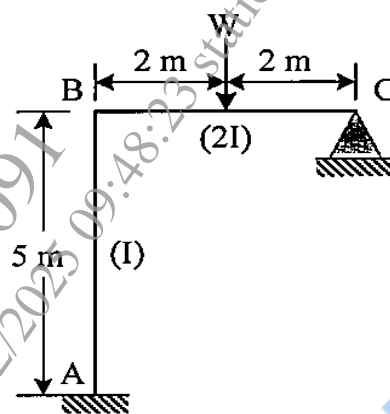


Fig. 5 b

OR

- Q6) a) Analyze the continuous beam by stiffness method as shown in Fig. 6 a. [12]

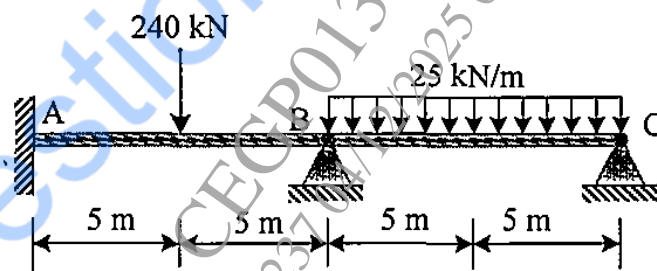


Fig. 6 a

- b) Generate the stiffness matrix for the frame as shown in Fig. 6 b. [5]

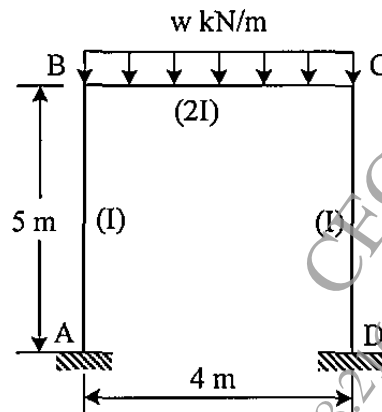


Fig. 6 b

- Q7) a) Explain in details idealized stress strain curve. [5]
- b) A propped cantilever is loaded with ultimate load as shown in Fig. 7 b. Find the collapse load and draw B M diagram. [12]

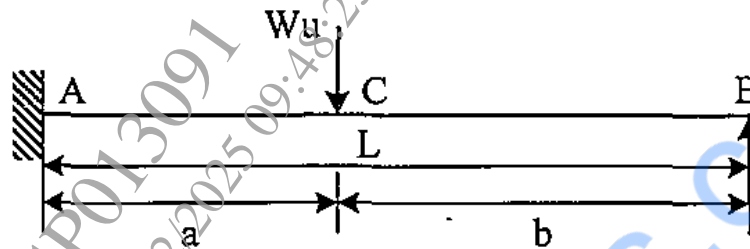


Fig. 7 b

OR

- Q8) a) State and explain classification of cross section with stress distribution. [5]
- b) Calculate shape factor of I- section as per following dimension. Top and bottom flange: 150 mm wide and 10 mm thick Web : 280 mm deep and 10 mm thick [12]