

Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025

Analysis of Indeterminate Structures

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.**Module-1**

- 1 Analyze the continuous beam shown in Fig.Q1 by slope deflection method. Draw BMD, SFD and elastic curve. (20 Marks)

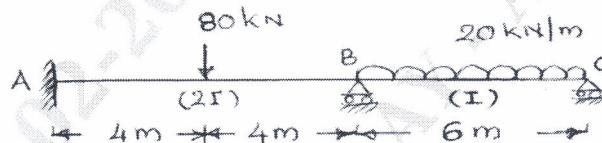


Fig. Q1.

OR

- 2 Analyze the portal frame shown in Fig.Q2 by slope deflection method. Draw BMD and elastic curve. (20 Marks)

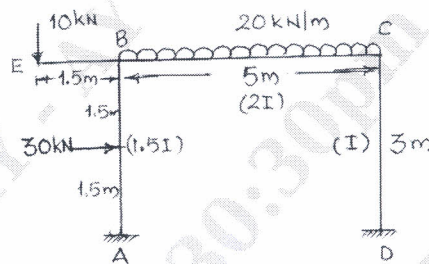


Fig. Q2

Module-2

- 3 Analyze the continuous beam ABCD loaded as shown in Fig.Q3 if settlement in support B and C are 5 mm and 10 mm respectively. Use moment distribution method. Take $EI = 2.7 \times 10^5 \text{ kN-m}^2$. Draw BMD. (20 Marks)

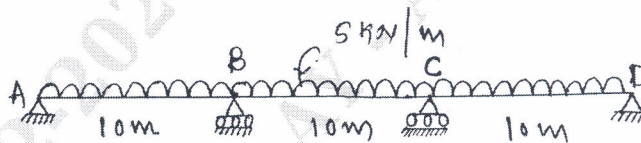


Fig. Q3

OR

- 4 Analyze the frame loaded as shown in Fig.Q4. Use moment distribution method. (20 Marks)

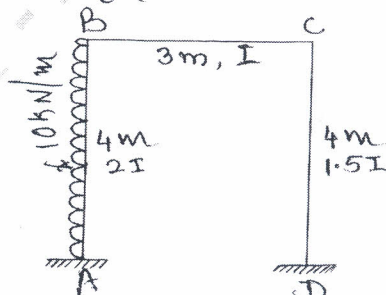
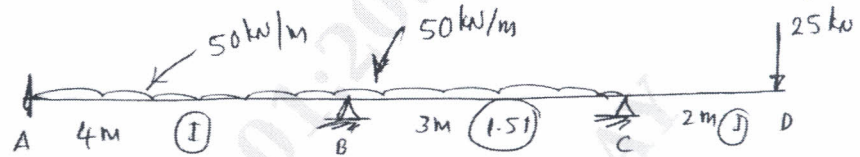


Fig. Q4

Module-3

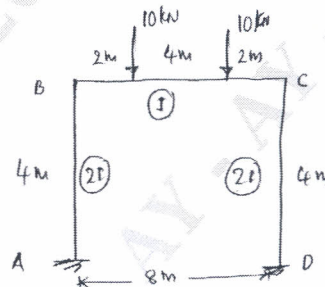
- 5 Analyze the continuous beam loaded shown in Fig.Q.5 by Kani's rotation method. Draw BMD. (20 Marks)

Fig. Q5

**OR**

- 6 Analyze the frame shown in Fig.Q.6 by Kani's method. Take the advantage of symmetry. (20 Marks)

Fig. Q6

**Module-4**

- 7 Analyze the continuous beam by using flexibility matrix method. Draw BMD, SFD and elastic curve. Refer Fig.Q7. (20 Marks)

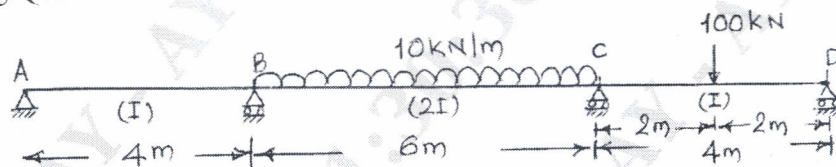


Fig. Q7

OR

- 8 Analyze the truss shown in Fig.Q8 by flexibility matrix method choosing force in the member AD as redundant. Assume constant EI for all the members. (20 Marks)

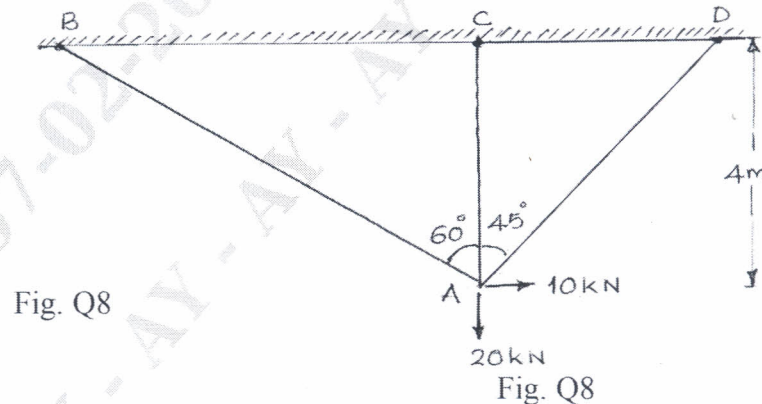


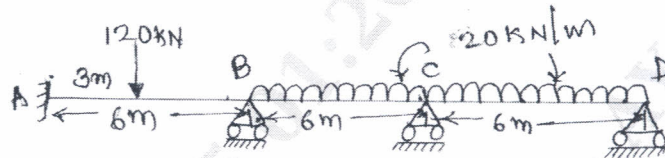
Fig. Q8

Fig. Q8

Module-5

- 9 Analyze the continuous beam shown in Fig.Q9 by stiffness matrix method. Take EI constant. (20 Marks)

Fig. Q9

**OR**

- 10 Analyze the pin-jointed truss shown in Fig.Q10 by stiffness matrix method. Take cross-sectional area for all members = 1000 mm^2 and $E = 200 \text{ kN/mm}^2$. (20 Marks)

Fig. Q10

