

SCHOOL OF CIVIL ENGINEERING

Continuous Assessment Test - II, April 2024

B. Tech. (Civil Engineering), Winter Semester 2023-24

Class Nbr. : VL2023240500855
Course Code : BCLE208L
Course Name : Structural Analysis
Faculty-In-Charge: Dr. J. Visuvasam

Duration : 90 Minutes
Max. Marks : 50
Slot : D1+TD1

General instruction(s):

Answer all questions

All questions carry equal marks

Section - A ($5 \times 10 = 50$ Marks)

S.No.

Question

1. Using slope-deflection method, apply equilibrium conditions and form the end moment equations for the frame shown in Figure 1.

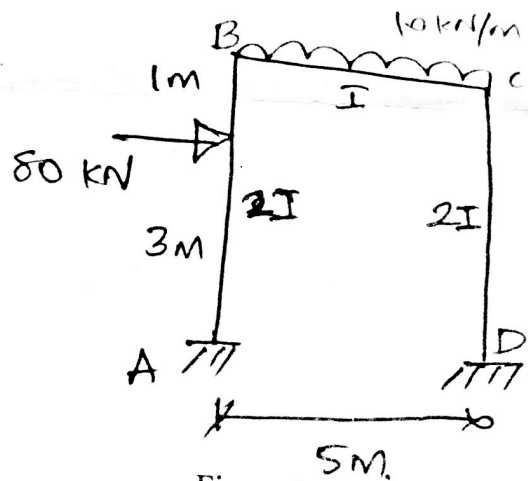


Figure 1

2. For the frame shown in Figure 1, determine the end moments using slope-deflection method.
3. Analyse the continuous beam shown in Figure 2 using moment distribution method and draw the bending moment diagram.

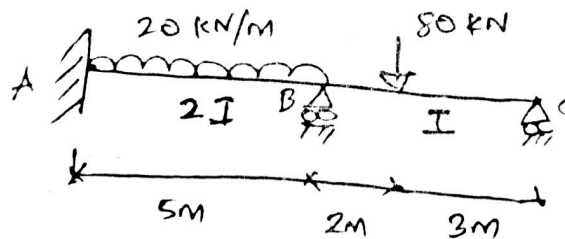


Figure 2

4. Analyse the portal frame shown in Figure 3 using moment distribution method. Assume EI is constant for all members.

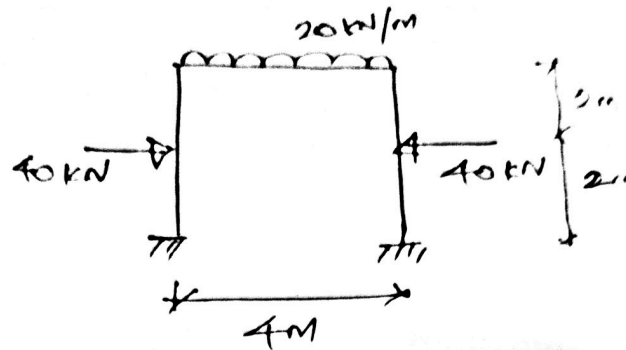


Figure 3

5. A parabolic arch hinged at the springings and crown has a span of 16 m. The central rise of the arch is 4 m. It is loaded with a uniformly distributed load of 10 kN/m on the left 6 m length. Calculate (a) the direction and magnitude of reactions at the hinges, (b) the bending moment, normal thrust and shear at 4 m from left support and (c) Maximum positive bending moment.