

Code No: 136AA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, November/December - 2020

ADVANCED STRUCTURAL ANALYSIS

(Civil Engineering)

Time: 2 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

1. Analyse the pin jointed plane frame shown in figure 1. Assume $A = 600 \text{ mm}^2$ and $E = 200 \text{ kN/mm}^2$. [15]

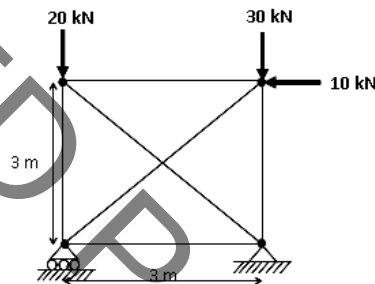


Figure 1

2. A two hinged parabolic arch has 32 m span and 6 m central rise. The arch is subjected to a concentrated load of 75 kN at a distance of 10 m from the left hinge. The second moment of inertia of the arch rib varies as the secant of the slope of the rib axis. Determine the support reactions. Also find the bending moment, normal thrust, and radial shear at a section 8 m from the right hinge. [15]
3. Analyse the plane frame shown in figure 2, using slope-deflection method. Draw the shear force and bending moment diagrams. [15]

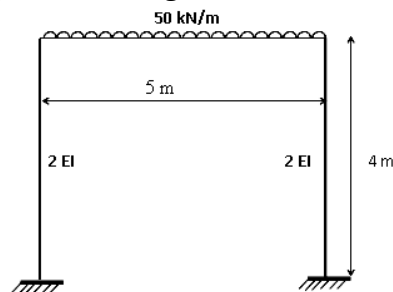


Figure 2

4. Analyse the plane frame shown in figure 3, using moment distribution method. Draw the shear force and bending moment diagrams. [15]

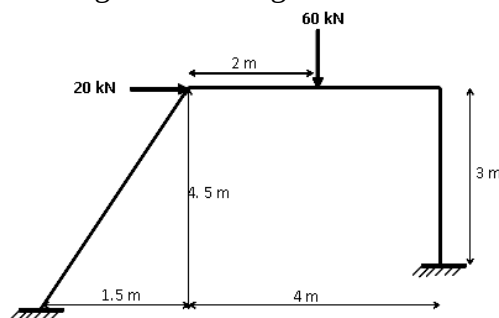


Figure 3

5. Using Kani's method, analyse the continuous beam shown in figure 4. Draw the shear force and bending moment diagrams. [15]

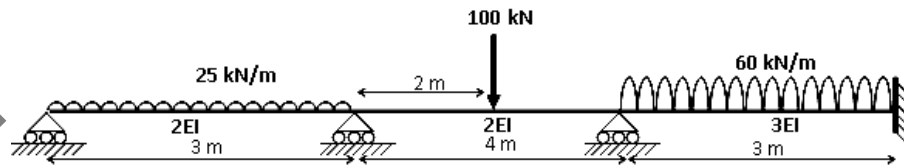


Figure 4

6. Analyse the frame shown in figure 5, by Kani's method. [15]

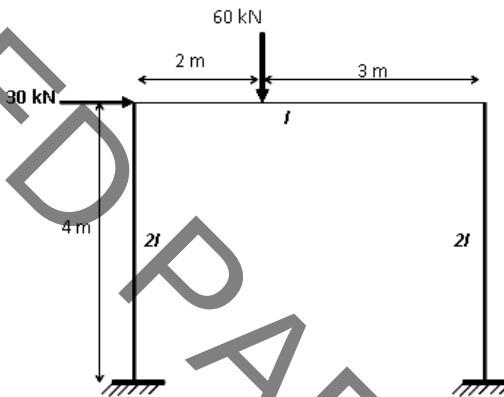


Figure 5

7. Using flexibility method, analyse the continuous beam shown in figure 6. Also draw the bending moment and shear force diagrams. [15]

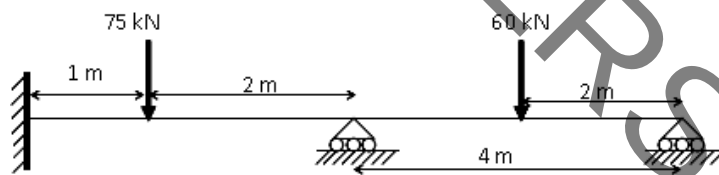


Figure 6

8. Analyse the plane frame shown in figure 7, using cantilever method. [15]

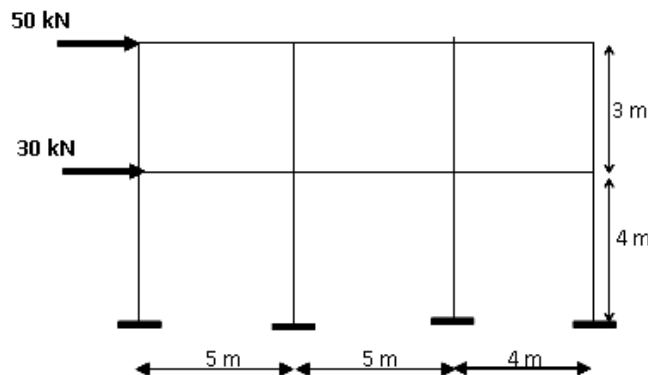


Figure 7