Code No: 155DC

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2021
STRUCTURAL ANALYSIS – II
(Civil Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1. A two-hinged parabolic arch of span 24 m has central rise of 6 m and the moment of inertia of the cross-section of the arch varies as the secant of the slope of the arch axis. The arch is subjected to a concentrated load of 60 kN at a distance of 8 m from the right support. Find the support reactions and the maximum bending moment in the arch.[15]

2. Using the moment-distribution method, analyse the continuous beam supported and loaded as shown in Figure 1. Also draw the shear force and bending moment diagrams. [15]

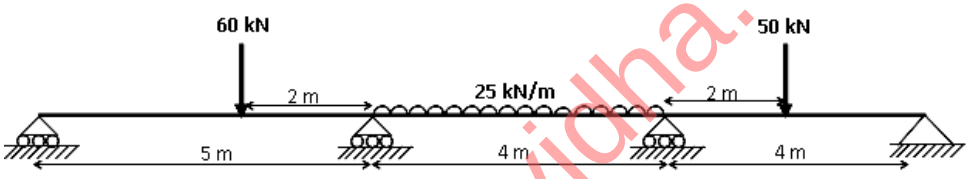

Figure 1

3. Using Kani's method, analyse the frame shown in Figure 2 and draw the bending moment diagram. [15]

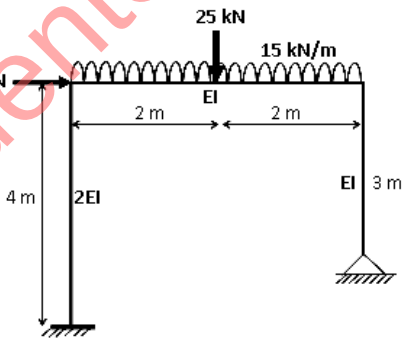

Figure 2

4. Analyse the frame shown in Figure 3, using portal method. Also draw the bending moment diagram. Assume the geometrical and material properties are the same for the elements of the frame. [15]

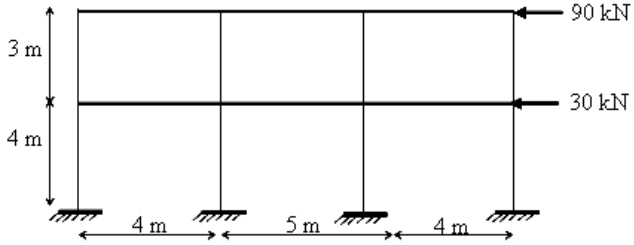

Figure 3

5. Using cantilever method, analyse the frame shown in figure 4. Draw the BM diagram. Assume the geometrical and material properties are the same for the elements of the frame. [15]

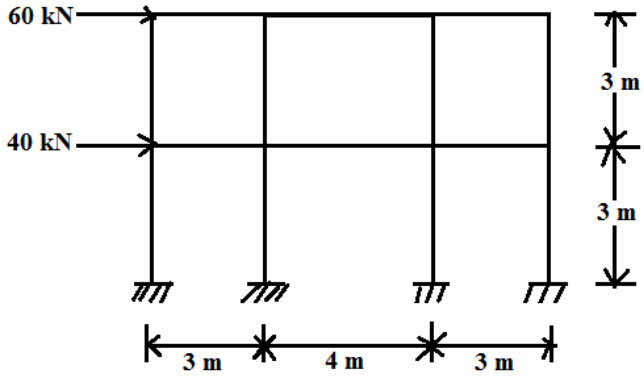

Figure 4

6. Using stiffness method, analyse the beam supported and loaded as shown in Figure 5. Assume ***EI*** is constant. [15]

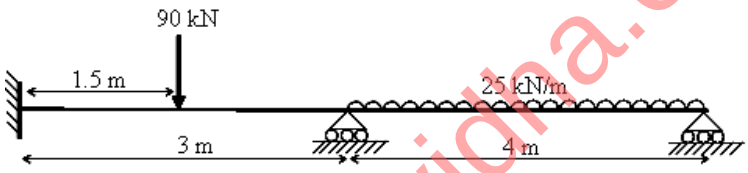

Figure 5

7. Analyse the pin-jointed plane frame supported and loaded as shown in Figure 6. Use stiffness method. [15]

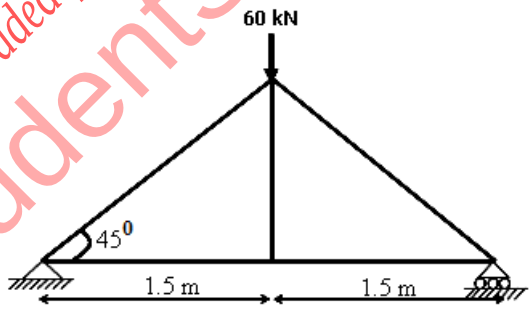

Figure 6

8. Draw the influence line diagrams for the reaction at the right support and the bending moment at the mid-point of the left span of a two-span continuous beam supported as shown in Figure 7. [15]

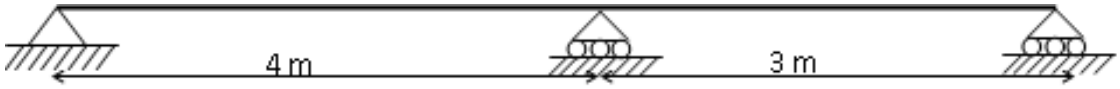

Figure 7

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