Assignment No: 01

Date: 04-08-2022

Energy Principles [Professional Elective]

Sub Code 3150614 **Title of Subject** STRUCTURAL ANALYSIS - II

#	Questions
1	Determine the vertical deflection at free end in the overhanging beam as shown in **Figure - 1**. Assume constant EI. Use Castigliano's method.
2	Find the displacement at C, as shown in **Figure – 2** by using Castigliano's theorem. $E = 2 \times 10^4$ N/mm^2.
3	Find the displacement of B, for **Figure – 3**, by Castigliano's theorem. Sectional area varies linearly from A to B.
4	Determine the vertical and horizontal deflection at free end for **Figure – 4**, by using unit load method. EI is constant.
5	State and explain Castigliano's first theorem.
6	Using Castigliano's first theorem, find horizontal and vertical displacement at R of frame as shown in **Figure – 5**. Take $E = 2 \times 10^5$ N/mm^2 and $I = 2 \times 10^8$ mm^4
7	Using Castigliano's First (1st) theorem, find the slope and the deflection at the free end of a cantilever beam of span 6m and subjected to a UDL of 30 kN/m throughout the span.
8	Determine the deflection at point C of an overhanging beam as shown in **Figure – 6**. Adopt $E = 2 \times 10^5$ N/mm^2 and $I = 2 \times 10^8$ mm^4.
9	Determine the rotation at the free end of the beam shown in **Figure – 7** by Castiglione's theorem. $EI = 2 \times 10^{13}$ Nmm^2.
10	Determine horizontal and vertical displacements of point C for the frame loaded as shown in **Figure – 8** using unit load method. Take EI = Constant
11	Calculate the vertical displacement at free end C for the cantilever bent as shown in the **Figure – 9**.

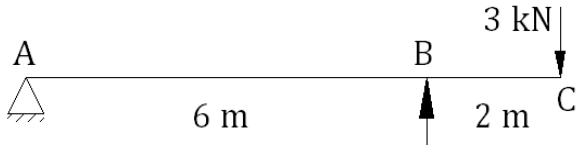

Figure- 1

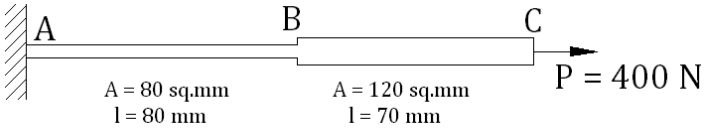

Figure- 2

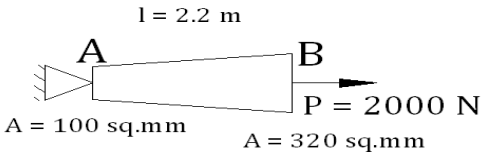

Figure- 3

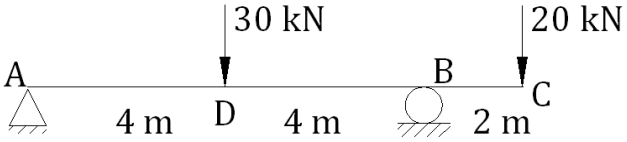

Figure- 6

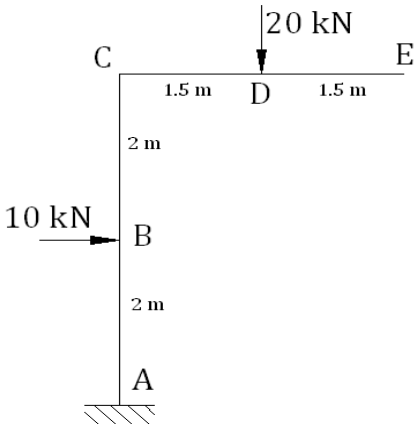

Figure- 4

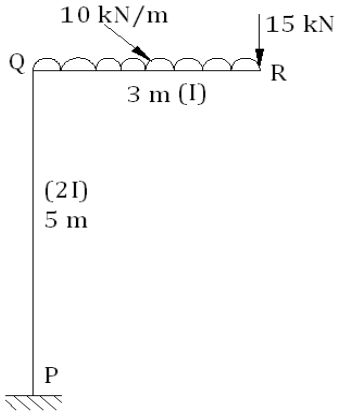

Figure- 5

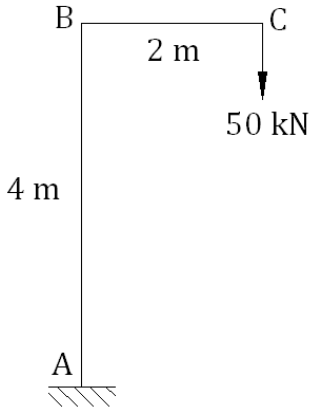

Figure- 8

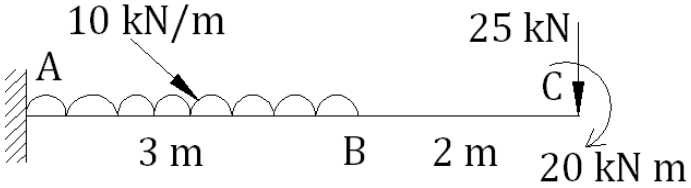

Figure- 7

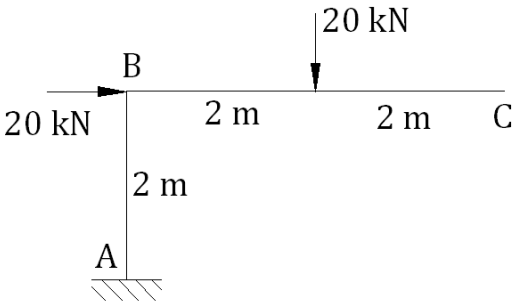

Figure- 9

Assignment No: 02

Date: 04-08-2022

MOMENT DISTRIBUTION METHOD

[Professional Elective]

Sub Code 3150614 **Title of Subject** STRUCTURAL ANALYSIS - II

#	Questions
1	Determine the support moments using moment distribution method for the frame as shown in **Figure - 1**. Also draw Bending Moment diagram.
2	Analyse the Portal frame shown in **Figure – 2** by Moment Distribution Method and draw Bending Moment Diagram and Shear Force Diagram.
3	Define the term 'sway'. Enlist the situation wherein say occur in portal frames.
4	Determine the support moments and draw BMD for the beam shown in **Figure – 3** by Moment Distribution Method.
5	Determine end moments for frame loaded as shown in **Figure – 4** using Moment Distribution Method. Take EI = constant for all members
6	Analyse the two-story portal frame shown in **Figure – 5.**

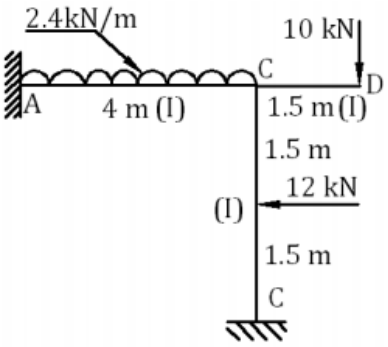

Figure- 1

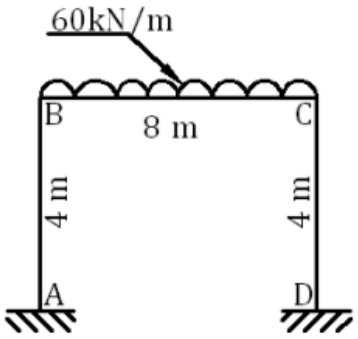

Figure- 2

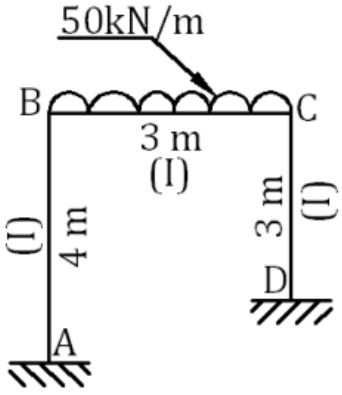

Figure- 3

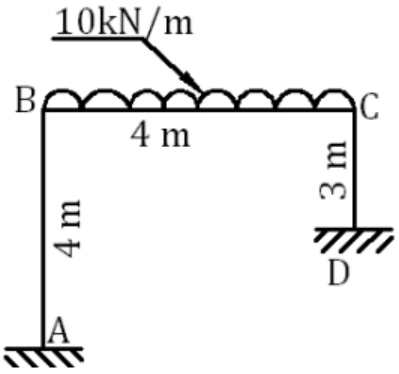

Figure- 4

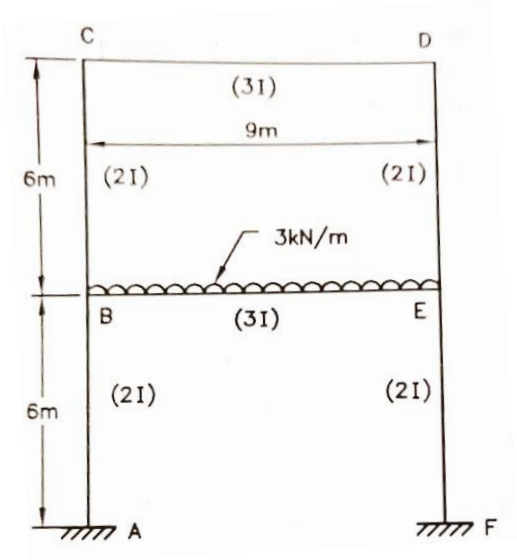

Figure- 5