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Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
 (AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations July-2022
STRUCTURAL ANALYSIS-I
 (Civil Engineering)

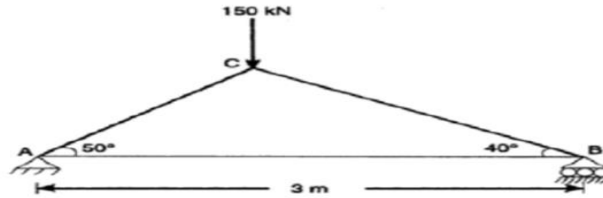
Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

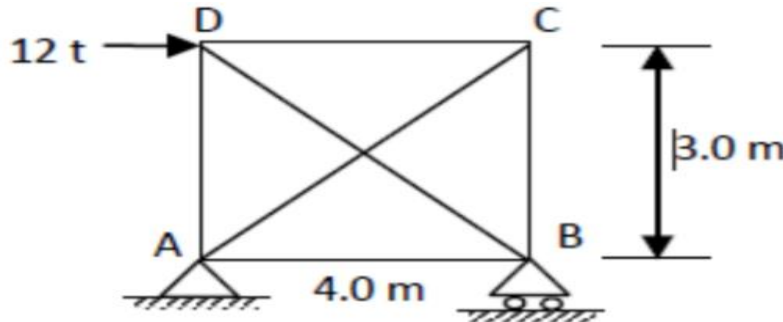
UNIT-I

- 1 Determine the horizontal and vertical deflection components of joint C of the truss shown in figure below by energy method. Take $E = 200 \text{ GPa}$ and cross sectional area of each member is $1500 \times 10^{-6} \text{ m}^2$ **12M**



OR

- 2 A pin jointed framed structure is loaded as shown in figure below. Calculate the forces in all members. Take area for horizontal members as 20 cm^2 , vertical members as 30 cm^2 , inclined members as 50 cm^2 and $E = 2000 \text{ t/cm}^2$. **12M**



UNIT-II

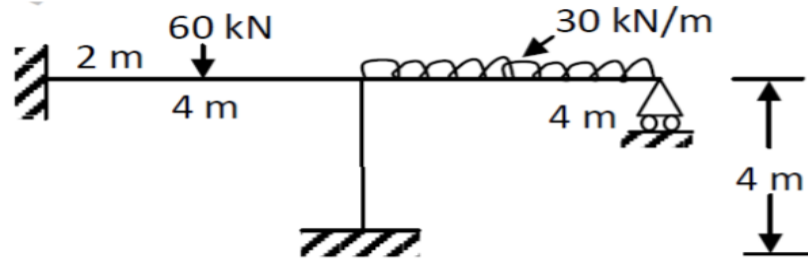
- 3 Determine the fixed end moments for the fixed beam with applied clockwise moment 'M' of distance 'a' from left end. The total length of beam is 'L'. Sketch the bending moment and shear force diagram. **12M**

OR

- 4 A continuous beam ABC of constant moment of Inertia carries a load of 10 kN in mid span AB and a central clockwise moment of 30 kN-min span BC. Span AB = 10 m and span BC = 15 m . Find the support moments and plot the shear force and bending moment diagram. **12M**

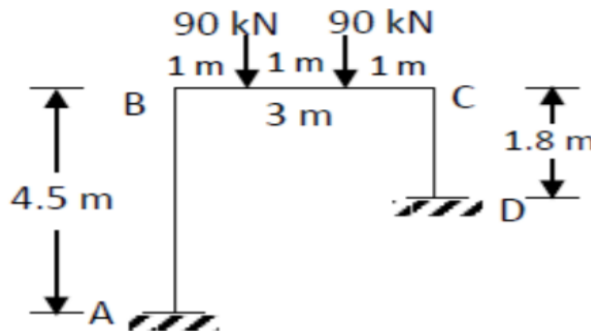
UNIT-III

- 5 Analyze the frame shown in figure by slope deflection method. Draw BMD flexural rigidity is same for all members **12M**



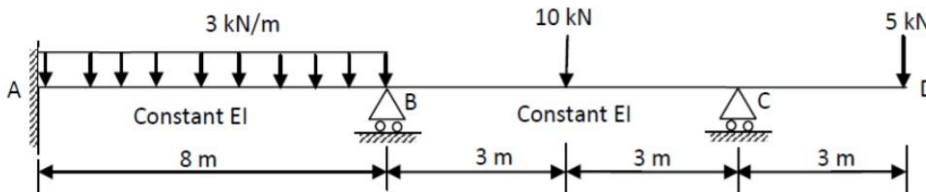
OR

- 6 Analyze the portal frame shown in figure below using slope deflection method **12M**



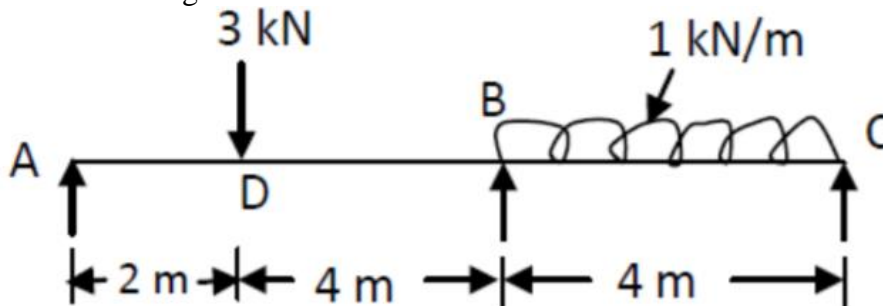
UNIT-IV

- 7 Analyze the continuous beam shown in figure below, using moment distribution method. Draw shear force and bending moment diagram for the continuous beam. **12M**



OR

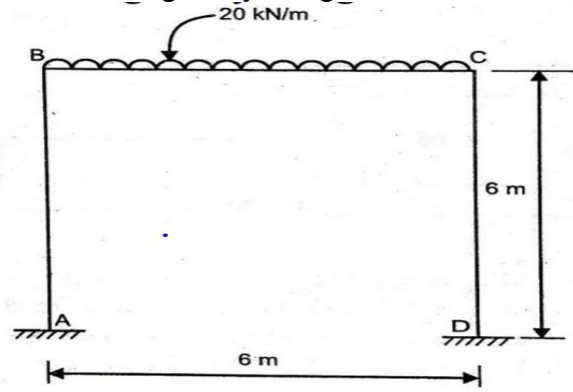
- 8 Analyze the continuous beam shown in figure below using moment distribution method. Draw the SF and BM diagrams. **12M**



UNIT-V

9 Analyze the portal frame shown in figure by using Kani's method

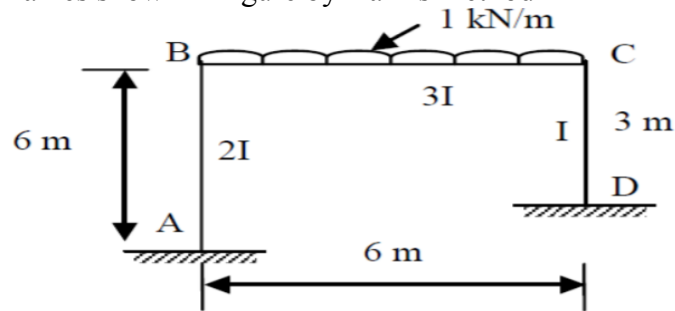
12M



OR

10 Analyze the portal frames shown in figure by Kani's method

12M



*** END ***