

Reg. No:

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations August-2021

STRUCTURAL ANALYSIS-I

(Civil Engineering)

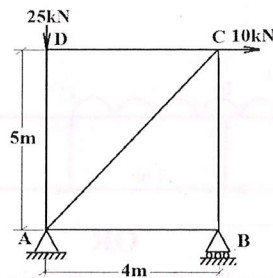
Time: 3 hours

Max. Marks: 60

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

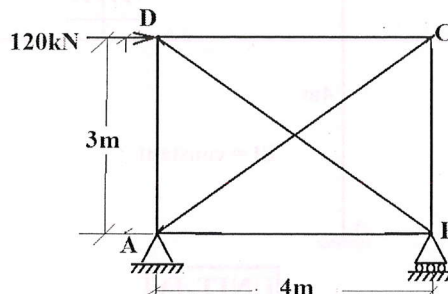
UNIT-I

- 1 Find horizontal and vertical deflection of joint C of truss ABCD loaded as shown in figure below. Assume that, all members have the same axial rigidity. **12M**



OR

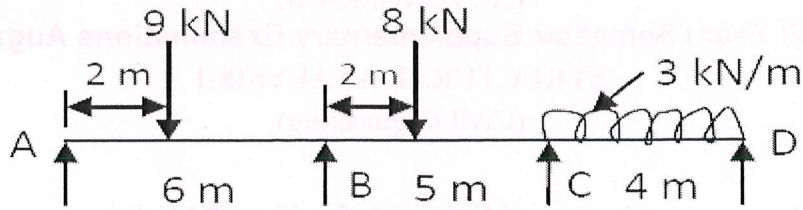
- 2 A pin jointed framed structure is loaded as shown in figure below. Calculate the forces in all members. Take area for horizontal members as 2000 mm^2 , vertical members as 3000 mm^2 , inclined members as 5000 mm^2 and $E = 2 \times 10^5 \text{ N/mm}^2$. **12M**

**UNIT-II**

- 3 a A load of 3 kN is placed at the centre of fixed beam of length 4m. If $E=2 \times 10^6 \text{ N/cm}^2$ and $I = 20000 \text{ cm}^4$, determine the end moments and BM at centre as simply supported beam and deflection under load. **4M**
- b Calculate the fixed end moments for a fixed beam AB of length 'L', if the right support sinks down by ' δ '. **8M**

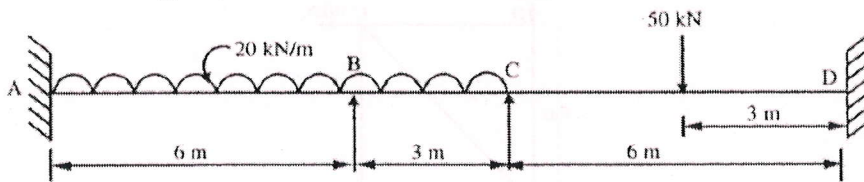
OR

- 4 Analyze the continuous beam ABCD shown in the figure below using theorem of three moments. Draw SFD and BMD. 12M



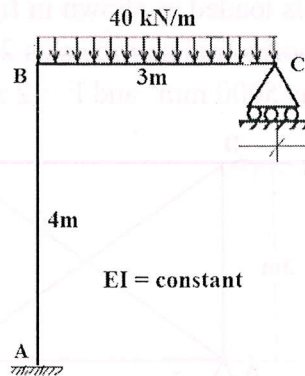
UNIT-III

- 5 Analyze the continuous beam as shown in figure below by slope deflection method. Support B sinks by 10 mm. Take $E = 200 \text{ GPa}$ and $I = 16 \times 10^7 \text{ mm}^4$. Draw the bending moment diagram. 12M



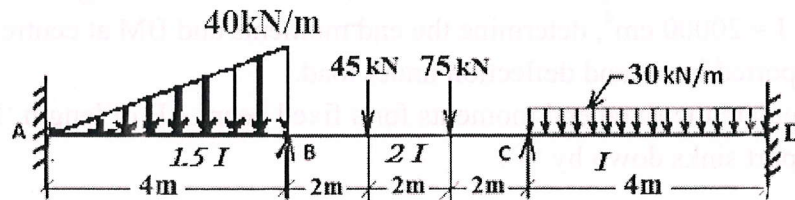
OR

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



UNIT-IV

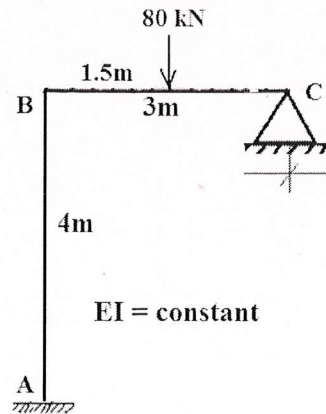
- 7 Analyze the continuous beam as shown in figure below by moment distribution method. Draw the bending moment diagram. 12M



OR

8 Analyze the portal frame shown in figure using moment distribution method.

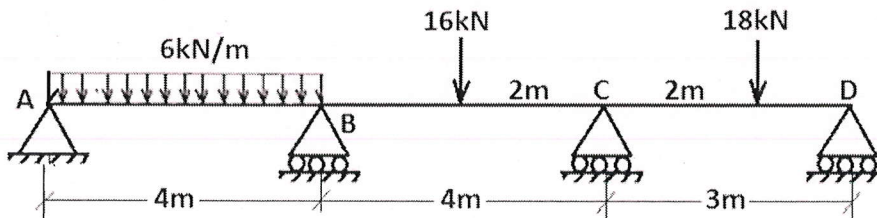
12M



UNIT-V

9 Analyze the continuous beam shown in the figure by Kani's method. Draw the bending moment diagram.

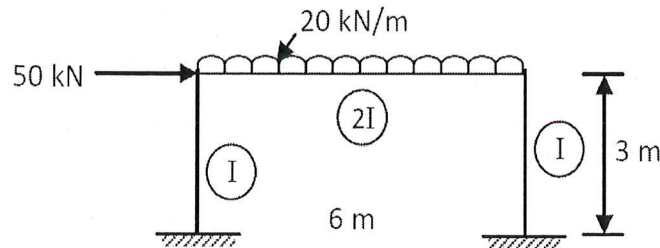
12M



OR

10 Analyze the frame shown in figure using Kani's method. Draw the bending moment diagram.

12M



*** END ***