

Reg. No:

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**

**B.Tech III Year I Semester Regular & Supplementary Examinations Nov/Dec 2019
STRUCTURAL ANALYSIS-I**

(CE)

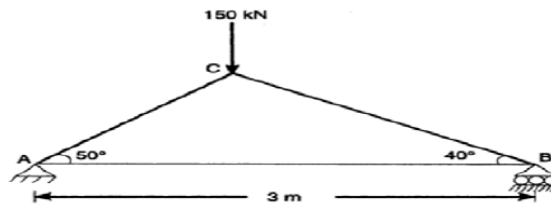
Time: 3 hours

Max. Marks: 60

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

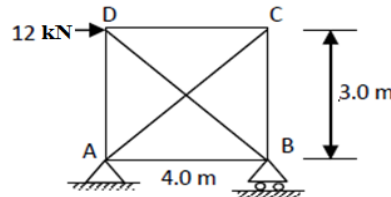
UNIT-I

- 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 $1500 \times 10^{-6} \text{ m}^2$. **12 M**



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 $E = 200 \text{ kN/mm}^2$. **12 M**

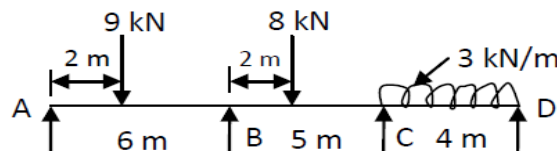


UNIT-II

- 3 A Fixed beam of span 6 m is subjected a UDL of 5 kN/m on the left half of the span and a point load of 15 kN at the middle of the right half of the span. Draw the SFD and BMD. **12 M**

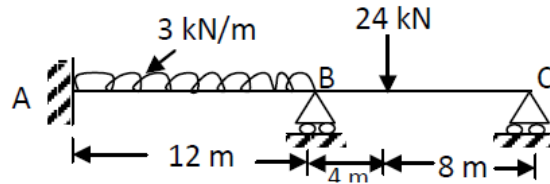
OR

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



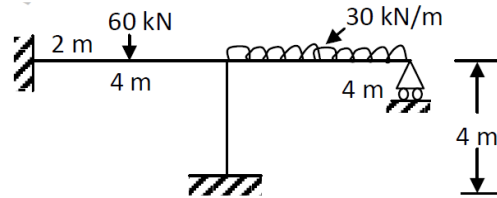
UNIT-III

- 5 Analyze the continuous beam shown in figure below using slope deflection method. The support B sinks by 0.03 m . Values of E and I are 200 GPa and $0.2 \times 10^{-3} \text{ m}^4$ respectively uniform throughout. Draw SF and BM diagrams. **12 M**



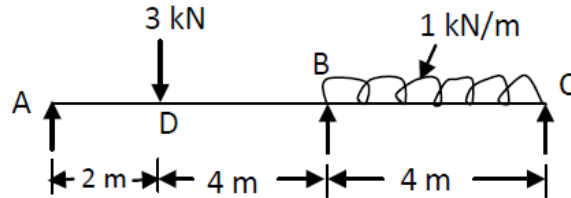
OR

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



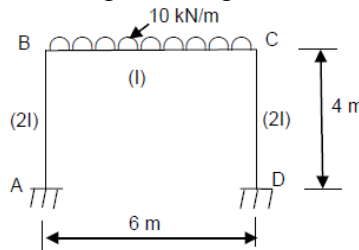
UNIT-IV

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



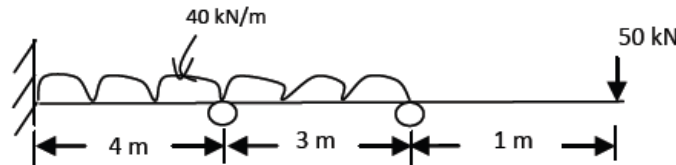
OR

- 8 Analyze the portal frame shown in figure using moment distribution method. **12 M**



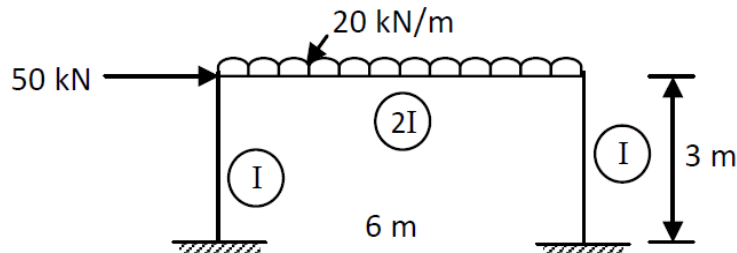
UNIT-V

- 9 Determine the moments at supports if support B yield by 10 mm under the given loading for the beam as show in figure below by Kani's method. Take $E=2.05 \times 10^5$ N/mm², $I=30 \times 10^8$ mm⁴. **12 M**



OR

- 10 Analyze the portal frames shown in figure by Kani's method. **12 M**



***** END *****