Reg. No:

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

B.Tech III Year I Semester Supplementary Examinations December-2021 STRUCTURAL ANALYSIS-I

(Civil Engineering)

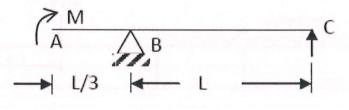
Time: 3 hours

Max. Marks: 60

R16

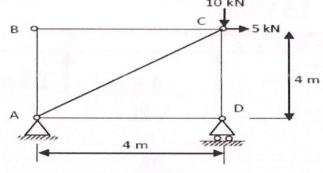
(Answer all Five Units 5 x 12 = 60 Marks) UNIT-I

Using Castigliano's theorem, determine the deflection and rotation of the overhanging end
A of the beam loaded as shown in figure below.



OR

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

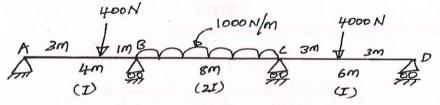


UNIT-II

3 A continuous beam ABC of uniform section with span AB and BC as 4 m each, is fixed at 12M A and simply supported at B and C. The beam is carrying a uniformly distributed load of 6 kN/m run throughout its length. Find the support moments and the reactions using theorem of three moments. Also draw SFD and BMD.

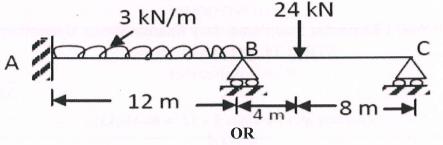
OR

4 A continuous beam ABCD 18 m long is loaded as shown in figure below. During loading support 'B' sinks by 10 mm Find support moments and plot shear force and bending moment diagrams for the beam. Take E= 20 kN/mm2, I = 8 X 106 mm4

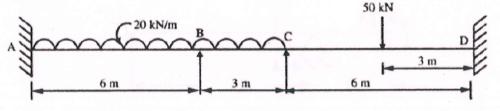


UNIT-III

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 x 10-3 m4 respectively uniform throughout. Draw SF and BM diagrams.

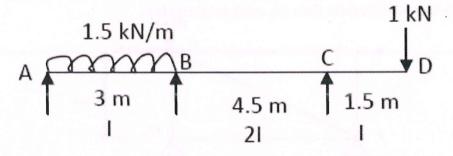


6 Analyze the continuous beam as shown in figure below by slope deflection method. Support B sinks by 10 mm. Take E = 200 GPa and $I = 16 \times 107$ mm4. Draw the bending moment diagram



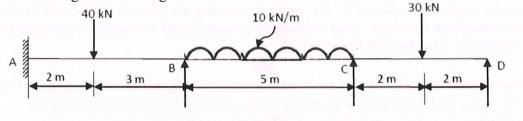
UNIT-IV

7 Analyze the continuous beam shown in figure below using moment distribution method.12MDraw B.M and S.F diagrams.



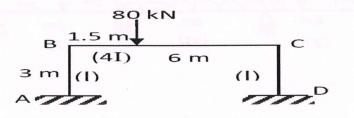
OR

8 Analyze the continuous beam as shown in figure below by moment distribution method. 12MDraw the bending moment diagram





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



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R16

12M

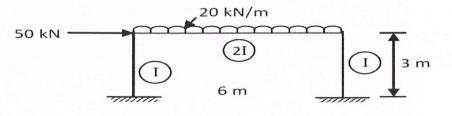
12M

12M

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OR

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



*** END ***

R16

12M

