Q.P. Code: 20CE0115 **R20**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Regular Examinations October-2022

STRUCTURAL ANALYSIS

(Civil Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	Four point loads of 120kN, 160kN, 160kN and 80kN spaced 2m between consecutive loads move on a girder of 25m span from left to right with 120kN load leading. Calculate the maximum bending moment, maximum +ve & –ve shear force at a point of 10m from the left support. Also calculate the position & value of absolute maximum bending moment.	**L3**	**12M**

OR

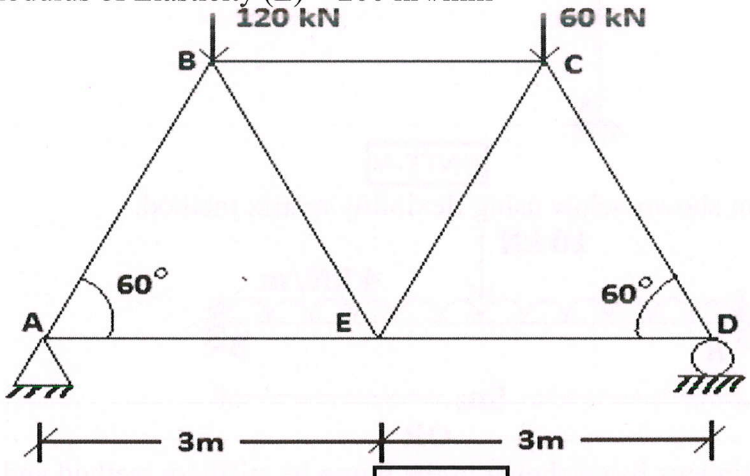
2	A simple girder of 20m span is traversed by a moving UDL of 6m length with an intensity of 20 kN/m from left to right. Analyse for maximum bending moment, maximum +ve/ –ve shear force at a section of 4m from left support. Also find the absolute maximum bending moment that occur anywhere in the girder.	**L3**	**12M**

UNIT-II

3	State and derive Castigliano's first theorem.	**L2**	**12M**

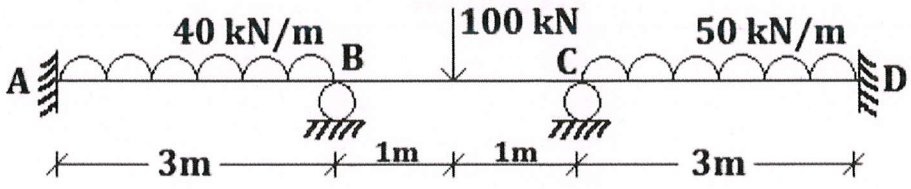
OR

4	Find the vertical deflection of the joint 'E' of the truss shown in the figure. Area of each horizontal member = 1200mm^2; Area of other members = 1500mm^2; Modulus of Elasticity (E) = 200 kN/mm^2	**L3**	**12M**



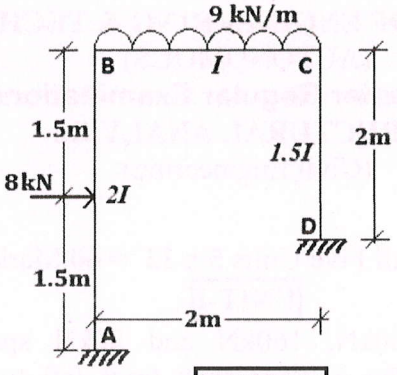
UNIT-III

5	Determine the support moments for the continuous girder as shown in the figure, if the support B sinks by 2.50mm. For all members, I = 3.50 x 10^7 mm^4 and E = 200 kN/mm^2	**L3**	**12M**



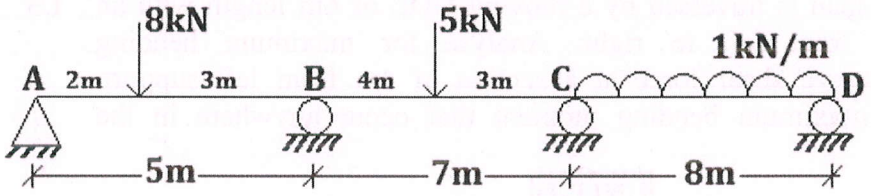
OR

6 Analyse the frame shown in the figure using slope deflection method and draw the bending moment diagram. **L3 12M**



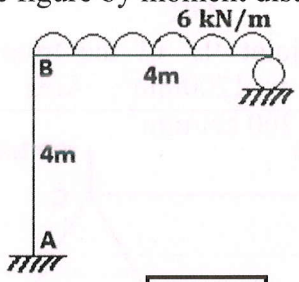
UNIT-IV

7 A continuous beam ABCD, 20m long is simply supported at its ends and is loaded as shown in the figure. If support 'B' sinks by 10mm, analyse the beam by moment distribution method and sketch the bending moment diagram. Take $E = 2.1 \times 10^5$ N/mm^2 and $I = 85 \times 105$ mm^4 **L3 12M**



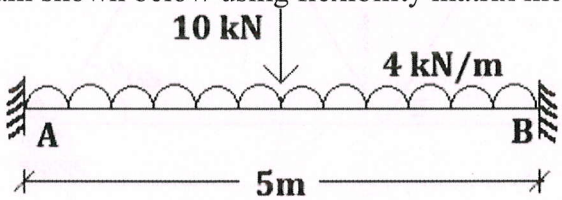
OR

8 Analyse the frame shown in the figure by moment distribution method. **L3 12M**



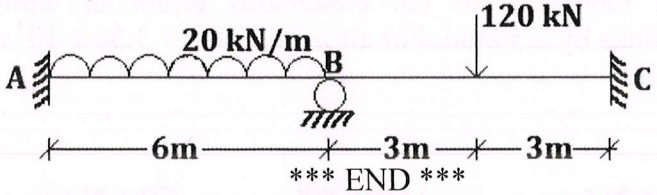
UNIT-V

9 Analyse the fixed beam shown below using flexibility matrix method. **L3 12M**



OR

10 Analyse the fixed continuous beam shown in the figure by stiffness method and draw the bending moment diagrams. **L3 12M**



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