Q.P. Code: 19CE0111 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Regular Examinations July-2021

STRUCTURAL ANALYSIS

(Civil Engineering)

Time: 3 hours Max. Marks: 60

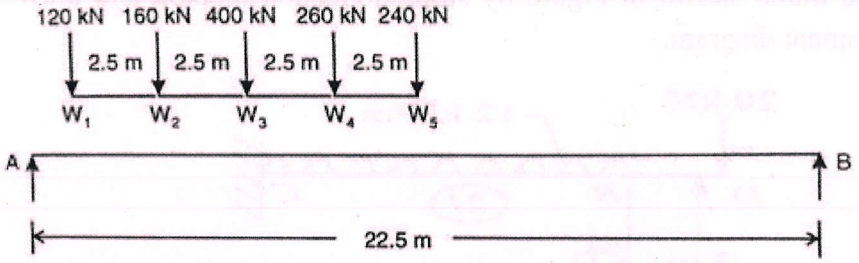
(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	A simply supported beam has a span of 15 m. UDL of40 kN/m and 5 m long crosses the girder from left to right. Draw the influence line diagram for shear force and bending moment at a section 6 m from left end. Use these diagrams to calculate the maximum shear force and bending moment at this section.	L4	**12M**

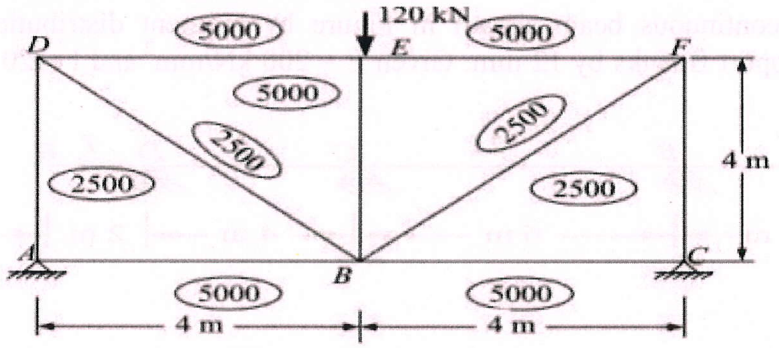
OR

2	A train of 5 wheel loads crosses a simply supported beam of span 22.5 m as shown in Figure .Using influence lines, calculate the maximum positive and negative shear forces at mid span and absolute maximum bending moment anywhere in the span.	L4	**12M**



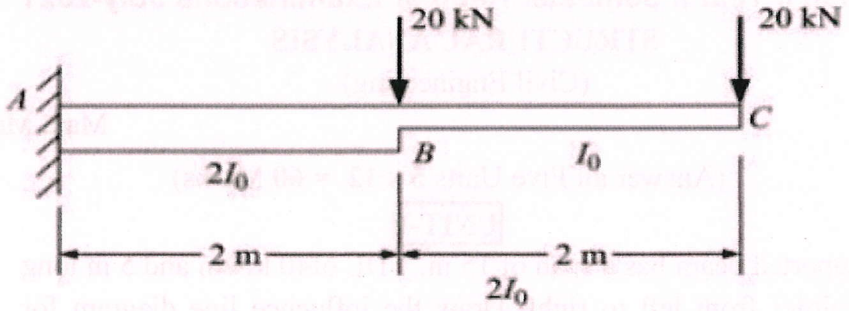
UNIT-II

3	Find the vertical deflection of the joint B in the truss loaded as shown in Figure The cross-sectional area of the members in mm are shown in brackets. TakeE - 200 kN/mm2.	L2	**12M**



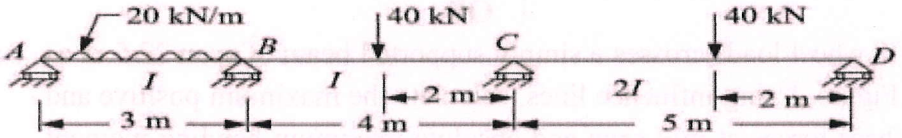
OR

4 Determine the deflection and rotation at the free end of the cantilever beam shown in Figure. Use unit load method. Given E = 2 x 10^5 N/mm2 and I = 12 * 10^6mm4 . L1 **12M**



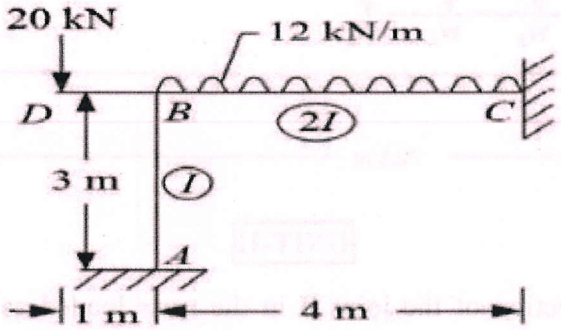
UNIT-III

5 Formulate the required equilibrium equations for analyzing continuous beam shown in figure given below by slope deflection method. L3 **12M**



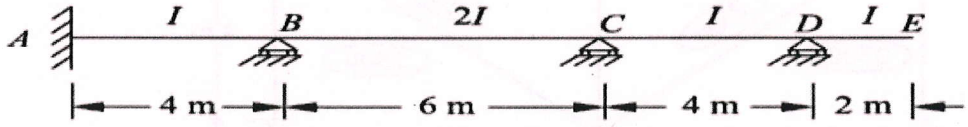
OR

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



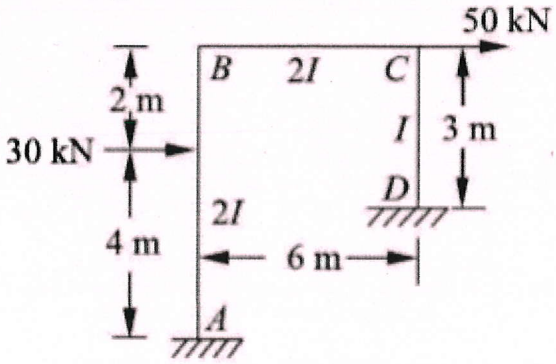
UNIT-IV

7 Analyse the continuous beam shown in Figure by moment distribution method, if support B sinks by 12 mm. Given E = 200 kN/mm^2 and I = 20 x 10^6 mm4. L3 **12M**



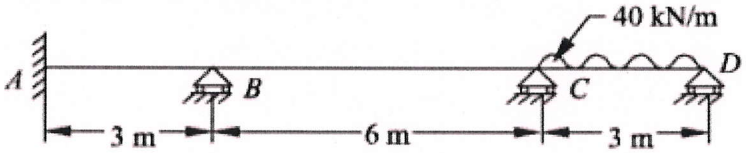
OR

8 Analyse the rigid jointed frame shown in Figure by moment distribution method and draw bending moment diagram. L3 **12M**



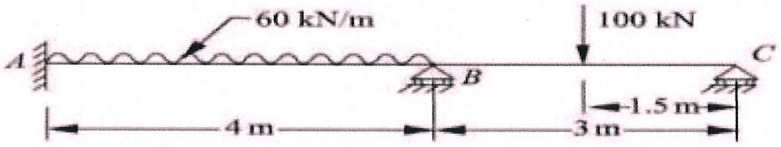
UNIT-V

9 Support B of the continuous beam shown in Figure has a downward settlement of 30 mm. Calculate the support reactions at D by the flexibility matrix method. Take EI = 5600 kN m^2 L2 **12M**



OR

10 Analyse the continuous beam shown in Figure by stiffness matrix method. L2 **12M**



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