Q.P. Code: 16CE125 **R16**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Supplementary Examinations July-2021

STRUCTURAL ANALYSIS-II

(Civil Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

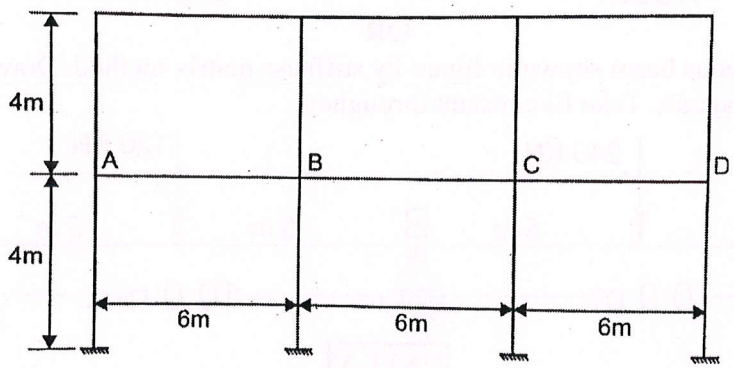
1 Two hinged parabola arch of span 30 m and rise 6 m carries two point loads each 60 KN, acting at 7.5 m and 15 m from left support. The moment of inertia varies as the secant at slope. Determine the horizontal thrust and max positive and negative moments in the arch rib. **12M**

OR

2 Determine the horizontal thrust developed in a semi circular arch of radius R subjected to a concentrated load W at the crown. **12 M**

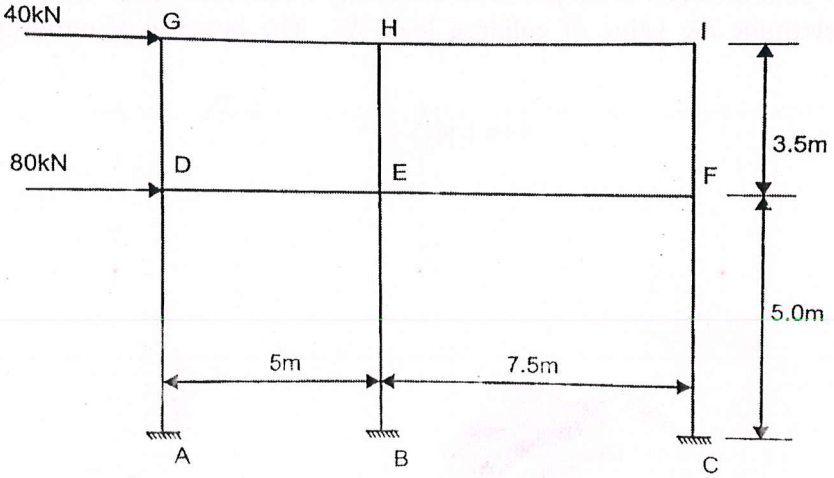
UNIT-II

3 In a multistoried building, the frame shown in Figure. is spaced at 4 m intervals. Dead load from the slab is 3 KN/m^2 and the live load is 5 KN/m^2. Analyse the beam BC for mid span positive bending moment. Self weight of the beams may be ignored. Use Substitute Frame method. **12 M**



OR

4 Using the portal method, analyses the building frame subjected to horizontal force (due to wind) as shown in Figure. Sketch the bending moment diagram. **12 M**

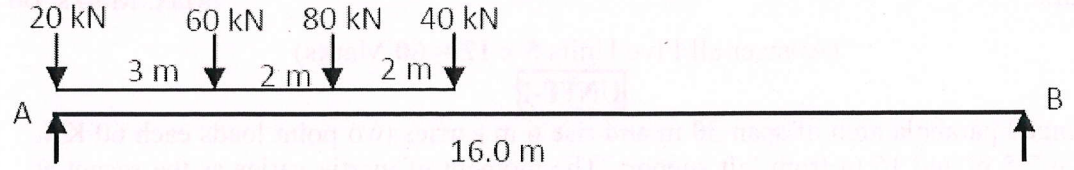


UNIT-III

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

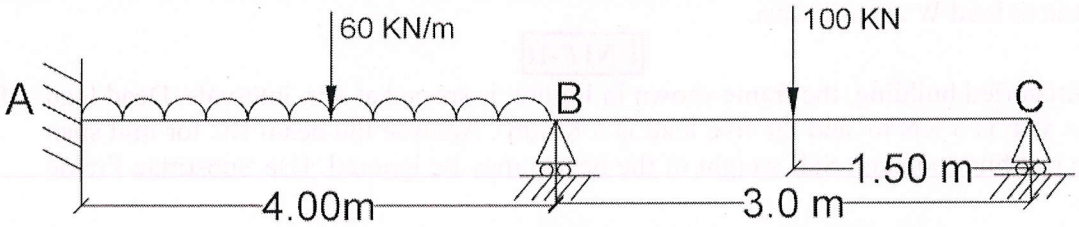
OR

6 A train of concentrated loads shown in Figure. The loads move from left to right on a simply supported girder of span 16.0 m. Determine absolute maximum bending moment. **12 M**



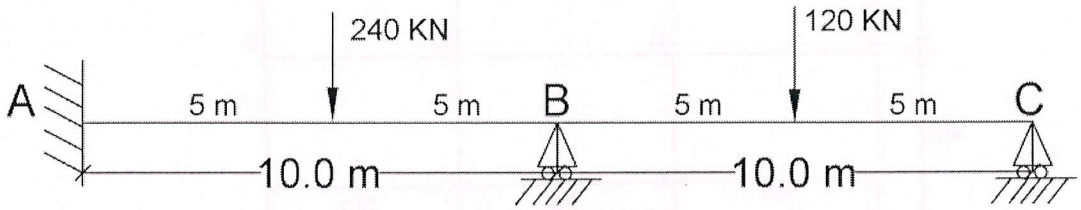
UNIT-IV

7 Analyze the continuous beam shown in figure by flexibility matrix method. Draw the bending moment diagram. Take EI is constant throughout. **12 M**



OR

8 Analyze the continuous beam shown in figure by stiffness matrix method. Draw the bending moment diagram. Take EI constant throughout. **12 M**



UNIT-V

9 A mild steel I-section 200 mm wide and 250 mm deep has mean flange thickness of 20 mm and web thickness of 10 mm. Calculate the shape factor and also find fully plastic moment if $\sigma_y = 252$ N/mm^2. **12 M**

OR

10 A beam fixed at both the ends is subjected to uniformly distributed load 'W' on the right half portion. Determine the value of collapse load W_C. The beam is of uniform plastic moment M_P. **12 M**

*** END ***