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

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Regular & Supplementary Examinations October- 2020

STRUCTURAL ANALYSIS-II

(CIVIL ENGINEERING)

Time: 3 hours Max. Marks: 60

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

UNIT-I

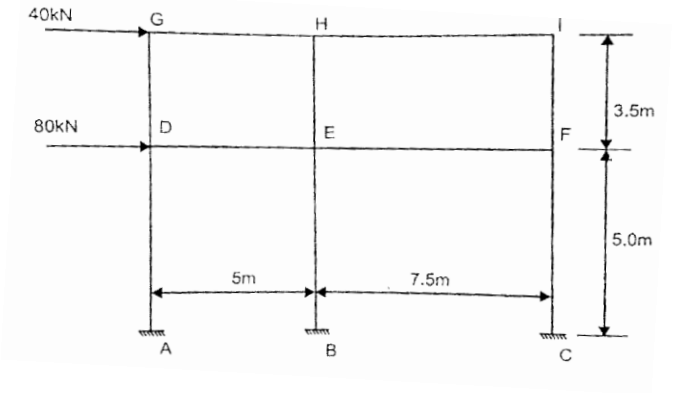
1. A symmetrical three hinged parabolic arch of span 40m and rise 8m carries a u.d.l. of 30KN/m over the left half of the span. The hinges are provided at the supports and at the centre of the arch. Calculate the reactions at the supports? Calculate also the bending moment, radial shear and normal thrust at a distance of 10m from the left support. 12M

OR

2. A two hinged parabolic arch of span 30m and rise 6m carries two point loads each 60KN, acting at 7.5m and 15m from the left support. The moment of inertia varies as the secant of the slope. Find the horizontal thrust and maximum positive and negative moments in the arch rib. 12M

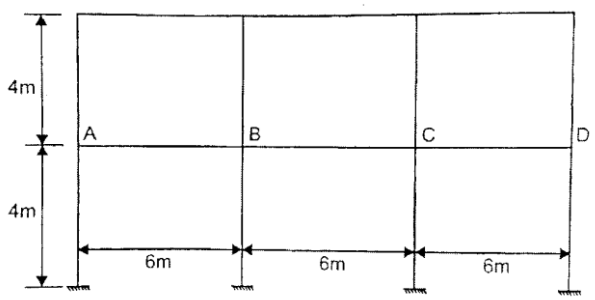
UNIT-II

3. Using the portal method, analyze the building frame shown below subjected to horizontal force (due to wind). Sketch the BMD. 12M



OR

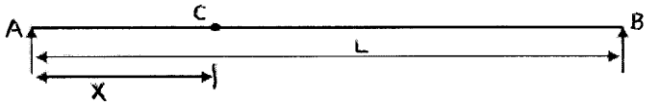
4. In a multistoried building, the frame shown in figure below is spaced at 4m intervals. Dead load from the slab is 3KN/m^2 and the live load is 5 KN/m^2. Analyze the beam BC for mid span positive bending moment. Self-weight of the beams may be ignored. Use substitute frame method. 12M



UNIT-III

5. For a simply supported beam of span 'L' shown in figure below, draw: 12M

(a) Influence line diagram for the reaction at A,
(b) Influence line diagram for the reaction at B,
(c) Influence line diagram for the shear force at C,
(d) Influence line diagram for the bending moment at C.

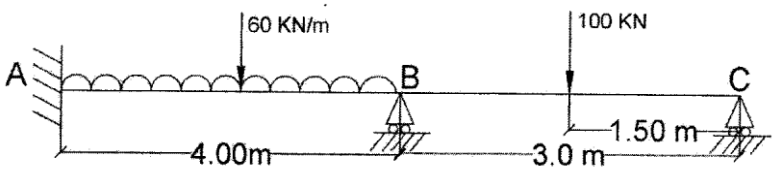


OR

6. An u.d.l. of length 6m and intensity 20 KN/m moves across a simple beam of span 20m. Determine the maximum negative and positive shear force at sections 4m from left support and 5m from right support? Also find the absolute maximum bending moment that may occur anywhere in the girder. 12M

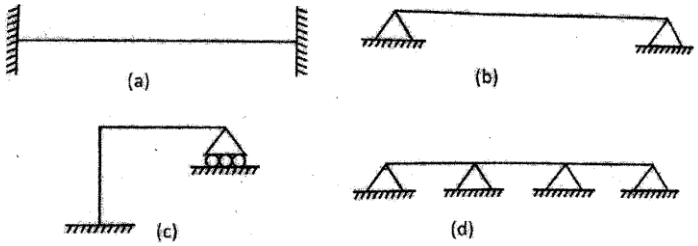
UNIT-IV

7. Analyze the continuous beam shown in figure below by flexibility matrix method. Draw the BMD. EI is constant throughout. 12M



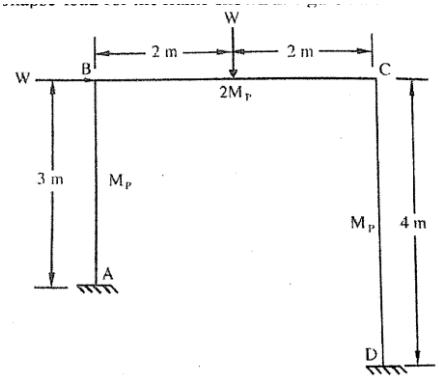
OR

8. Determine the degree of static indeterminacy and degree of kinematic indeterminacy of the beams shown below. 12M



UNIT-V

9. Determine the collapse load for the frame shown below? 12M



OR

10. A two span continuous beam ABC has span lengths AB=6m and BC=6m carries a u.d.l. of 30KN/m completely covering the spans AB and BC. A and C are simple supports. If the load factor is 1.80 and the shape factor is 1.15 for the I-section, find the section modulus needed? Assume yield stress for the material as 250MPa. 12M

*** END ***