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

B.Tech III Year II Semester Supplementary Examinations Dec-2019

STRUCTURAL ANALYSIS-II

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 A three hinged parabolic arch of span 40 m and rise 4m carries a UDL of 30kN/m over the left half of the span. Dra the bending moment diagram. **12M**

OR

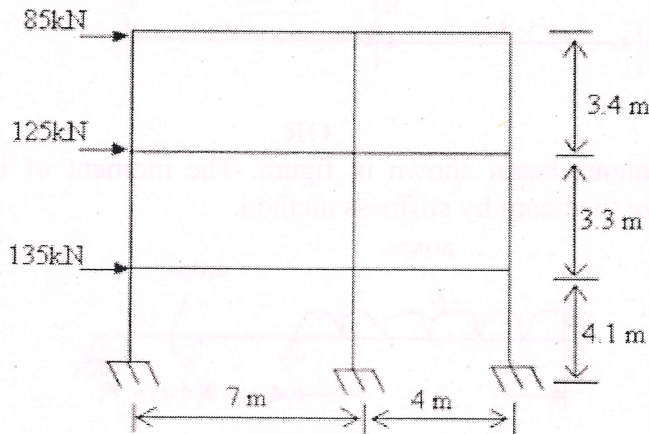
- 2 Derive an expression for the horizontal thrust of two hinged semi circular arch with a point load W at crown. **12M**

UNIT-II

- 3 In a multistoriced building consists of 4 Storied 3 bay frames spaced at 3 m c/c. Live load on floor slab is 3 kN/m² and dead load is 3.5 kN/m². The spans of the beams from left to right are 6 m, 3.5 m and 3.5m respectively. Storey height is 3.5 m. Moment of inertia of the beams is 1.5 times that of columns. Self weight of the beams is 3.2 kN/m. Determine the maximum moment in the beam at the junction of first span and second span of an intermediate floor Use Substitute Frame method. **12M**

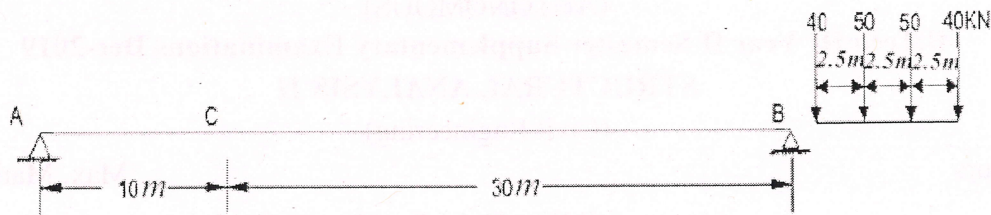
OR

- 4 Analyse the frame shown in Figure by Cantilever method. Draw the bending moment diagram and Cross-sectional area of all columns is equal. **12M**



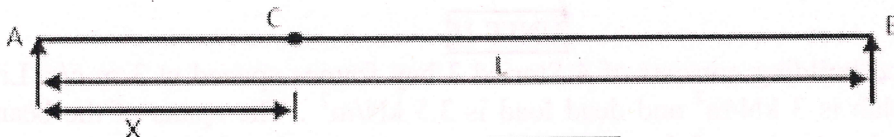
UNIT-III

- 5 The beam is loaded with concentrated loads, which are moving from right to left as shown in Figure. Compute the maximum moment at the section C and also calculate absolute maximum bending moment. 12M



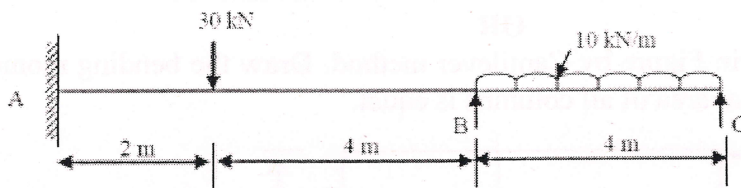
OR

- 6 For a simply supported beam of span 'L' as shown in Figure. Draw: (a) Influence line for RA. (b) Influence line diagram for RB. (c) Influence line diagram for shear force at 'C'. (d) Influence line diagram for B.M at 'C'. 12M



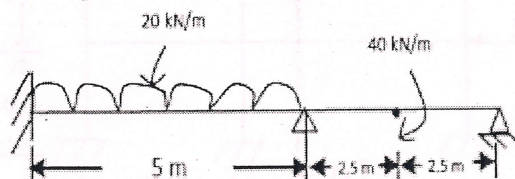
UNIT-IV

- 7 Analyze the continuous beam shown in figure below by matrix flexibility method. Draw the bending moment diagram. 12M



OR

- 8 A two span continuous beam shown in figure. The moment of inertia is constant throughout. Analyze the beam by stiffness method. 12M



UNIT-V

- 9 A two span continuous beam ABC has span lengths AB = 8 m and BC = 6 m and carries a U.D.L. of 30 kN/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 250 N/mm² 12M

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 WC. The beam is of uniform plastic moment M_p. 12M

*** END ***