

3082

B.Tech. (Civil) 4th Semester (G-Scheme)
Examination, July-2022
STRUCTURAL ANALYSIS
Paper- PCC-CE-206-G

Time allowed : 3 hours]

[Maximum marks : 75

Note : Question No. 1 is compulsory.

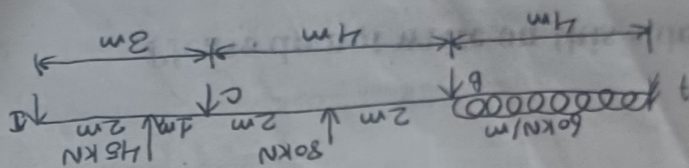
1. (a) Explain moment-area method. $3 \times 5 = 15$
- (b) Describe Shear force and Bending moment diagrams of moving loads.
- (c) A three-hinged arch has a span of 30m and a rise of 10m. The arch carries a udl of 60kN/m on the left half of its span. It also carries two concentrated loads of 160 kN and 100 kN at 5m and 10m from the right end. Determine the horizontal thrust at each support.
- (d) Differentiate between statically determinate and statically indeterminate structures.
- (e) Describe the principle of Virtual work.

Section - A

2. Derive the 1st and 2nd theorems of Castigliano. 15

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[P. T. O.]



8. Find the support moments at A, B, C, D for the continuous beam using Kanit's method. 15

Section - D

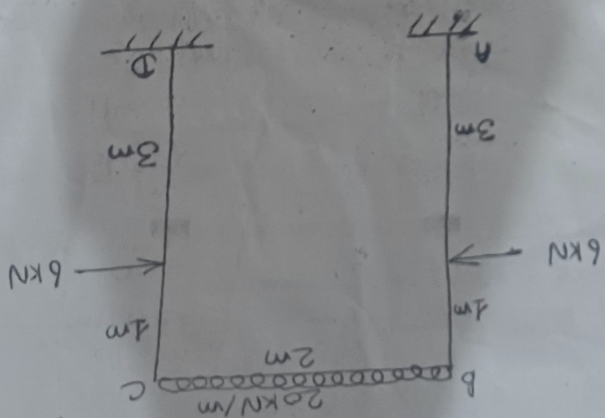
7. Describe the column analogy method in detail. 15
 the horizontal thrust, at each support. 15
 U.D.L. of w per unit run over the whole span. Determine the horizontal thrust, at each support. 15
 6. A 3-hinged parabolic arch of span l has its abutments at depths h_1 and h_2 below the crown. The arch carries a U.D.L. of w per unit run over the whole span. Determine the horizontal thrust, at each support. 15

Section - C

5. Describe the Muller Breslau's Principle in detail. 15
 diagram. 15
 4. Two wheel loads 20kN and 10kN, 3meters apart cross a girder of 8m span with the 10kN load leading, from left to right. Draw the max. Shear and max. bending moment diagram. 15

Section - B

3. A beam AB of span 6m carries a point load of 45 kN at a distance of 4m from the left end A. Find, (i) Slope at A, (ii) deflection under the load, (iii) section where the deflection is maximum & (iv) maximum deflection. 15



9. Analyse the portal frame shown

15