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B.E./B.Tech. 4th Semester (Civil Engg.) Examination—
May-2014

STRUCTURAL ANALYSIS-I

Paper-CE-202-E

Time allowed : 3 hours] [Maximum marks : 100

Note : Attempt any five questions.

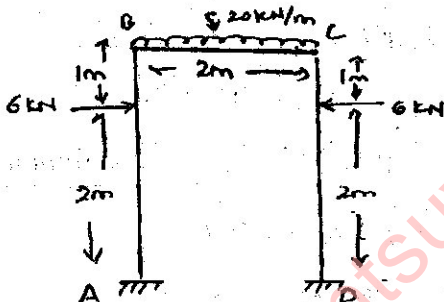
- (a) Find the deflection at the free end of a cantilever of length l carrying a uniformly distributed load of w per unit run over the whole span. Assume flexural rigidity. 10

(b) A beam AB 4m long is fixed at A and simply supported at B. It carries a point load of 16 KN at a distance of 1m from B. Determine the reactions at the support and draw BM and SF diagrams. 10
- A continuous beam ABC consists of spans AB = 6m and BC = 8m, the ends A and C being fixed. AB and BC carry uniformly distributed loads of intensity 8KN/m and 10KN/m respectively. Find the support moments

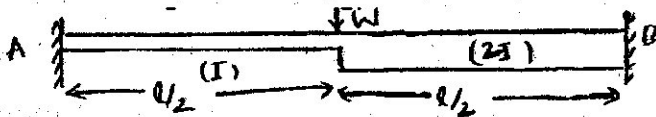
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3. Analyse the portal frame using Moment Distribution method and draw BM and SF diagram. 20



4. A fixed beam of span l carries a point load W at mid span. The moment of inertia of the section is I for the left half of the span and $2I$ for right half of the span. Find fixed moments using Column analogy method.



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5. A two hinged semi circular arch of radius R carries a concentrated load W at the crown. Show that the horizontal thrust at each support is W/π . 20

6. A cord supported at its ends 40m apart carries a load of 20 kN, 10kN and 12 kN at distances 10m, 20m

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- (i) reactions at the supports
- (ii) the tension in different parts of chord and total length of chord.

7. Write short notes on following : 20

- (a) Static Indeterminacy
- (b) Kinematic Indeterminacy
- (c) Strain energy method

8. Differentiate between Statically determinate and Statically indeterminate structures. State and prove Castilligano's second theorem. 20