

Roll No.
Printed Pages : 3

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BT-4 / M-18

STRUCTURAL ANALYSIS-II

Paper-CE-202E Opt.-(ii)

Time allowed : 3 hours]

[Maximum marks : 100

Note :- (i) Attempt total five questions selecting at least one from each unit.

(ii) All questions carry equal marks

(iii) Assume any data suitably, if missing and data clearly.

Unit-I

- Differentiate between static and kinematic indeterminacy of the structures. Illustrate with suitable examples. 10
 - What do you understand by the Strain Energy Method? How this method can be used for the analysis of the structures? Explain. 10
- Analyse the redundant frame as shown in Fig.1 20

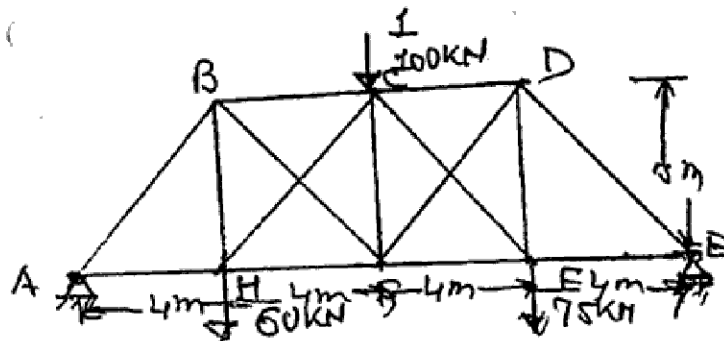


Fig.1

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[Turn over

(2)

Unit-II

- Analyse the continuous beam as shown in Fig 2. by the Moment Distribution Method. The support 'B' sinks by, 1 cm with respect to support 'C'. Take EI equal to 4000 KN-m². 20

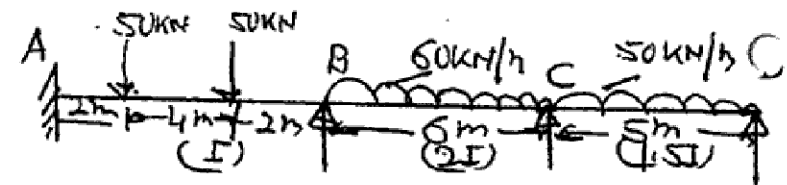


Fig. 2

- Analyse the Portal frame as shown in Fig 3 using slope Deflection Method. 20

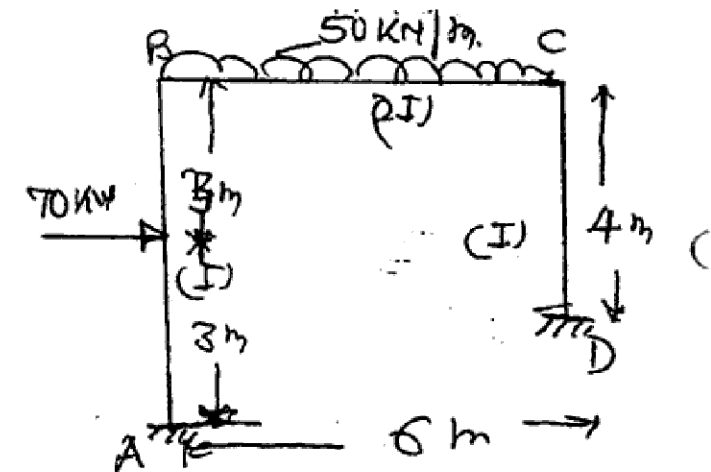


Fig. 3

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(3)

Unit-III

5. Calculate the fixed end moment in the Portal frame loaded as shown in Fig 4, using Column Analogy Method. 20

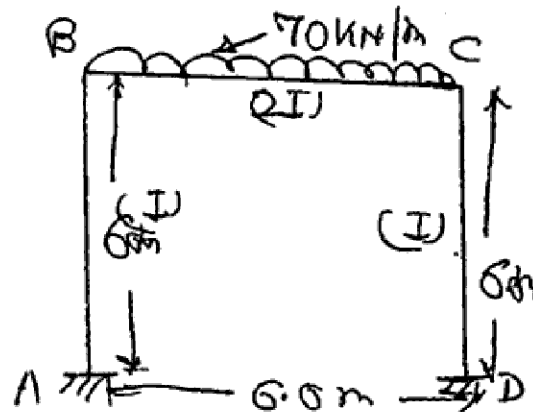


Fig. 4

6. A two hinged parabolic Arch of span 36m and central rise of 9.0 m is subjected to U.d.l of intensity 50 kN/m covering the whole span. In addition to it also carries two points loads of 750 kN each acting at 9.0 m from each support. Calculate the reactions at the supports. Also calculate the magnitude of B.M. and N.T. under the points loads. 20

Unit-IV

7. Define shear centre. Calculate the shear centre for.
 (i) ISA 150 × 125 × 12^{mm}.
 (ii) ISMC 150

2+9+9=20

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8. A suspension bridge of 100m span has two 2-hinged stiffening girders supported by two cables having central dip of 10 m. The roadway has a width of 6.0 m. The dead load on the bridge is 5 kN / m² & a live load of 15 kN / m² covering the left half of the span. Calculate the magnitude of B.M. and S.F. at a distance of 40m. for the girder. Also calculate the maxi. tension in the cable for this portion of load. 20