

Roll No.

Total Pages : 03

BT-3/D-19

33017

STRUCTURAL ANALYSIS-I

CE-201-E

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. If necessary, assume suitable data and specify the same. Figures to the right indicate full marks.

Unit I

1. Derive the formula for principle stresses. Also, draw the shear stress distribution diagram for symmetric I-section having flange dimension as 400 mm × 50 mm and web dimensions as 50 mm × 200 mm.
2. Differentiate between short column and long column. Also, derive the Euler's Buckling load for the column having one end fixed and other end hinge.

Unit II

3. Draw Shear Force Diagram and Bending Moment diagram for the beam shown in Fig. 1 :

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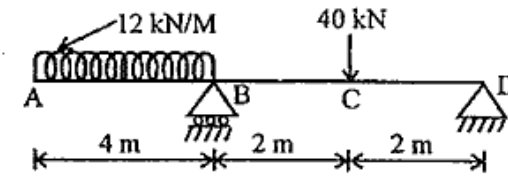


Fig. 1

4. A parabolic three hinge arch having span 20 m and central rise 4 m carries UDL of intensity 20 kN/m throughout its span. Both the supports considered to be at same level. Analyse the arch for the support reactions and determine the normal thrust and radial shear at a section 4 m from the left support.

Unit III

5. Determine the rotation at B and deflection at C for the beam shown in Fig. 1.
6. Determine the rotation at the support A and calculate the deflection at B of the beam shown in Fig. No. 2 by using conjugate beam method. Assume EI constant for the beam length.

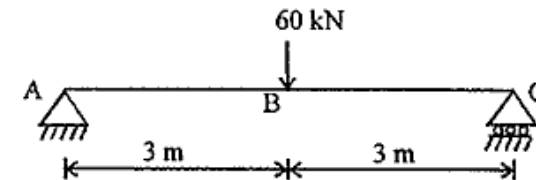


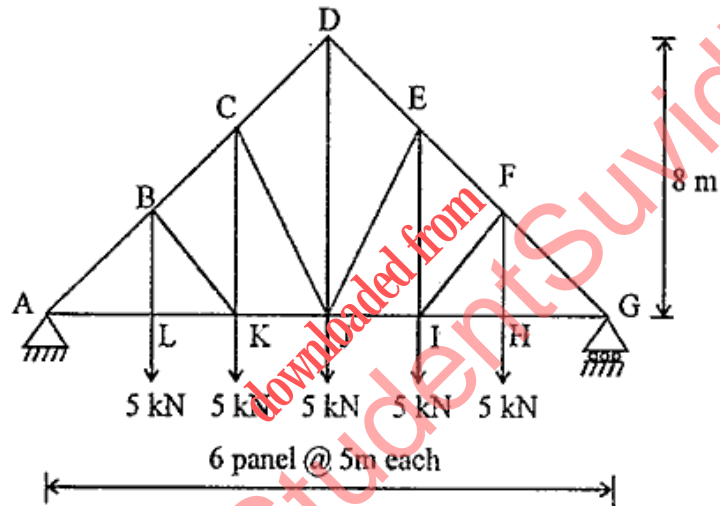
Fig. 2

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Unit IV

7. Analyze the truss shown in Fig. 3 for member forces in members BL, CJ, CD and KJ.



8. Differentiate between Joint Method and section method with the help of suitable examples. Explain types of indeterminacies observed in truss structures with suitable examples.