Roll No. ..... Total Pages : 3

BT-3/D-18 **33097**

STRUCTURAL ANALYSIS–I

Paper : CE-201N

Time : Three Hours] [Maximum Marks : 75

Note : (i) All questions carry equal marks.

(ii) Attempt *five* questions by selecting at least *one* question from each unit.

(iii) If necessary, assume suitable data and specify the same.

UNIT–I

1. (a) Enlist the assumptions of simple bending theory.

(b) With suitable example explain the Mohr's circle construction.

(c) Compare the torsional resistance of Circular Solid Shaft with that of Hollow shaft of same material and same cross-sectional area.

2. Differentiate between short column and long column. Also, derive the Euler's Buckling load for the column having both ends fixed.

UNIT–II

3. Draw Shear Force Diagram and Bending Moment Diagram for the beam shown in Figure 1.

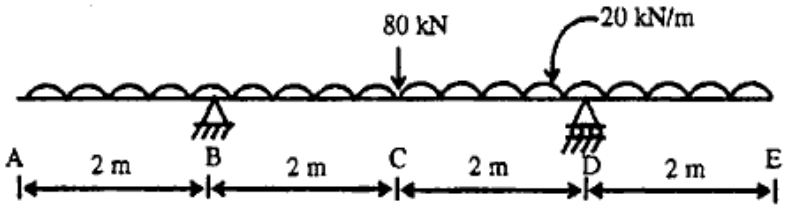

Figure 1.

4. A parabolic three hinge arch having span 40 m and central rise 5 m carries UDL of intensity 20 kN/m over left of the span. Both the supports considered to be at same level. Analyses the arch for the support reactions and determine the normal thrust and radial shear at a section 30 m from the left support.

UNIT–III

5. Determine the rotation at B and deflection at C for the beam shown in Figure 1.

6. Determine the rotation at the support A and calculate the deflection at B of the beam shown in Figure 2 by using conjugate beam method. Assume EI constant for the beam length.

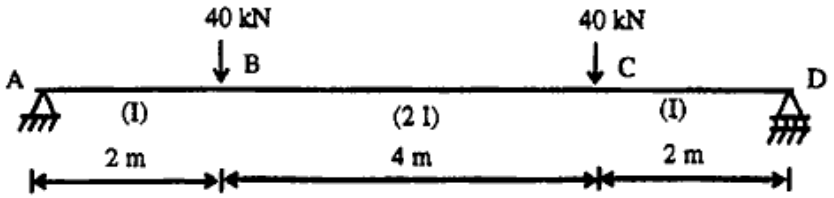

Figure 2

UNIT–IV

7. Analyse the truss shown in Figure 3 for member forces in members BC, DF, CH and GF.

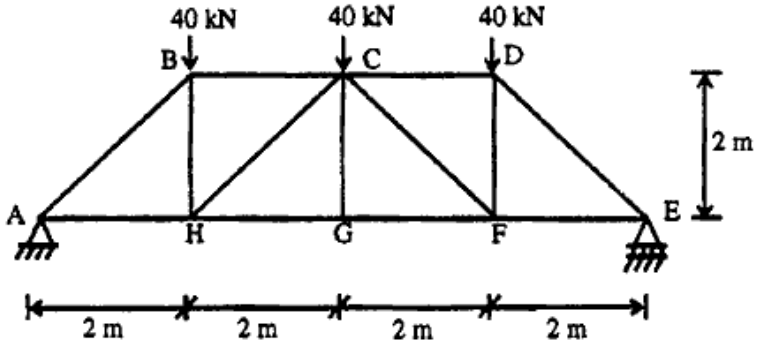

Figure 3

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.