

Total Pages—6

(Set-2)

B.Tech. - 6th
Structural Analysis - II

Full Marks : 70

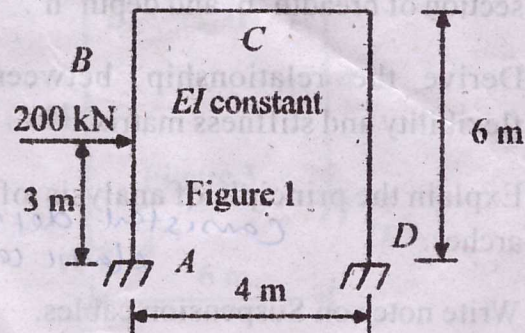
Time : 3 hours

Q. No. 1 is compulsory and answer any five from the rest

The figures in the right-hand margin indicate marks

1. Answer the following questions : 2×10

(a) Find the shear equation for the frame in Fig.1.



(Turn Over)

(b) Find the storey moment only for analysis of frame in Fig. 1 using Kani's method.

(c) Find the distribution factors of different joints of the frame in Fig. 1 if ends A and D are replaced by hinged ends.

(d) Compare the kinematic indeterminacy of a cantilever and fixed beam. $\rightarrow 3 - 2 \text{ i.e. } 1$

(e) Is theorem of three moments a force method or displacement method of analysis. *Force method*

(f) Explain briefly the meaning of partially plastic and plastic moment of resistance. *Consistent det. method*

(g) Find the shape factor of a triangular section of breadth 'b' and depth 'h'.

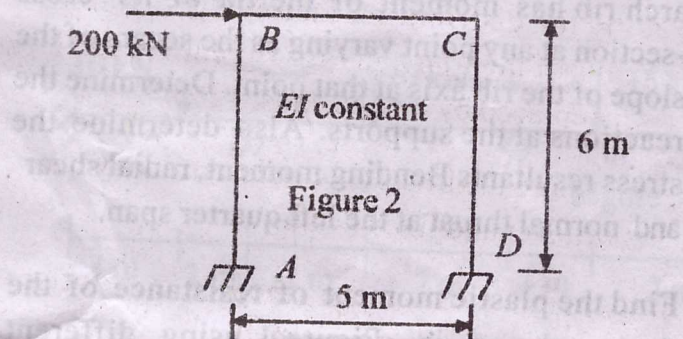
(h) Derive the relationship between the flexibility and stiffness matrix.

(i) Explain the principle of analysis of fixed arches. *Consistent det. method*

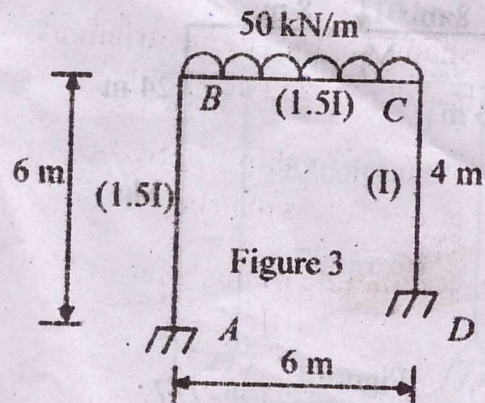
(j) Write notes on Suspension cables. *elastic center method*

(3)

2. Analyze the frame shown in Figure 2 by Moment distribution method. Draw the bending moment and shear force diagram. 10



3. Analyze the frame shown in Figure 3 by Slope deflection method. Draw BMD. 10



(4)

4. A two hinged parabolic arch of span 20 m and central rise 4 m carries an uniformly distributed load of 100 kN/m on the left half of the span. The arch rib has moment of inertia of its cross-section at any point varying as the secant of the slope of the rib axis at that point. Determine the reactions at the supports. Also determine the stress resultants Bending moment, radial shear and normal thrust at the left quarter span. 10
5. Find the plastic moment of resistance of the frame shown in Figure 4 using different mechanisms. 10

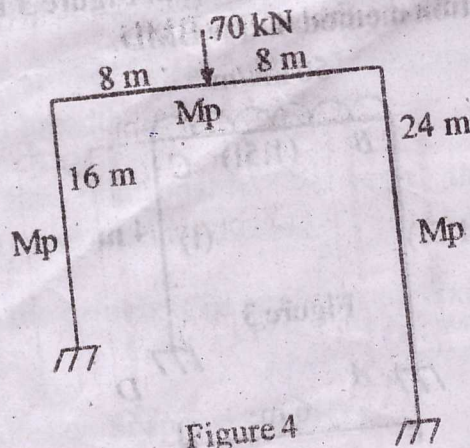
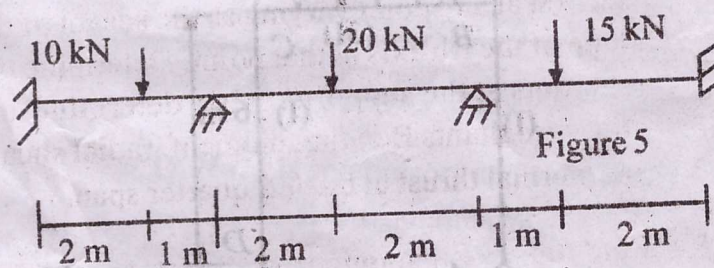


Figure 4

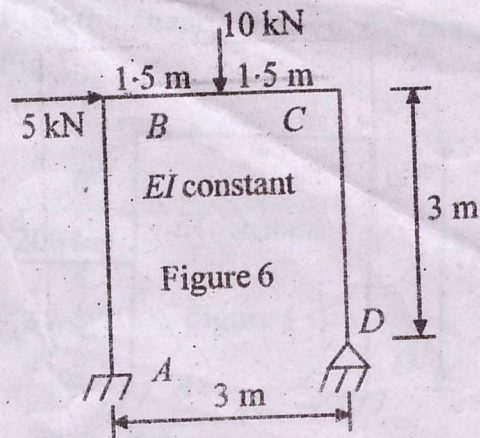
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(5)

6. Analyze the continuous beam shown in Figure 5 using flexibility matrix methods of analysis. Draw BM diagram. 10



7. Analyze the frame shown in Figure 6 by Kani's method. Draw the bending moment diagram. 10



(6)

8. Analyze the frame shown below by stiffness method. Draw the bending moment diagram. 10

