No. of Printed Pages : 4

BICE-016

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

December, 2018

00193

BICE-016 : STRUCTURAL ANALYSIS – III

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Assume missing data, if any. Use of scientific calculator is permitted.*

1. Analyse the frame as shown in figure 1 by moment distribution method. Draw the bending moment diagram also. *14*

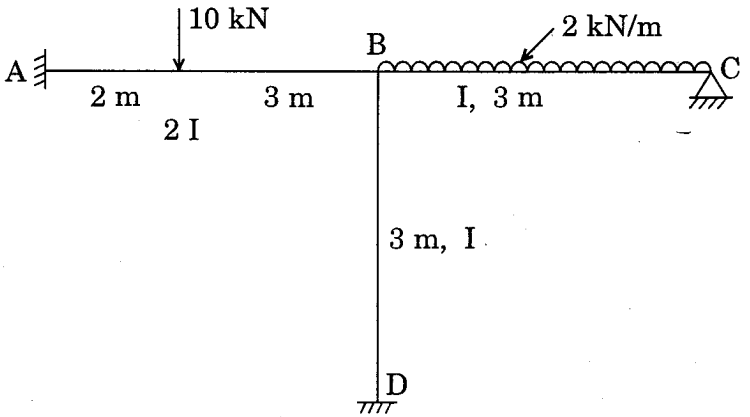


Figure 1

2. (a) A fixed parabolic symmetric arch of span 30 m and central rise of 6 m has Moment of Inertia at any section $I = I_0 \sec \theta$, where I_0 is moment of inertia at crown and θ is inclination of tangent with horizontal. Find the reactions at support when arch is loaded with 240 kN acting at 6 m from left support. *10*

(b) Determine the static indeterminacy of the truss shown in Figure 2. *4*

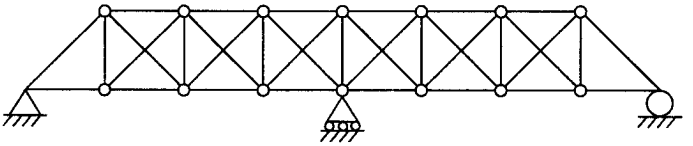
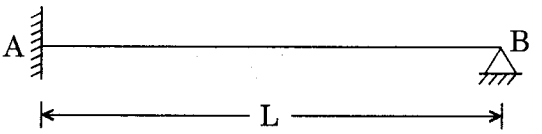


Figure 2

3. (a) Discuss the Muller Breslau principle for influence lines. *4*

(b) Draw the influence line diagram for reaction at B for the propped beam of length L as shown in Figure 3. *10*



L = 10 m

Figure 3

4. Analyse the continuous beam shown in Figure 4 by Kani's method. *14*

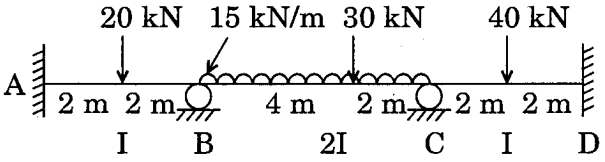


Figure 4

5. (a) What are the basic assumptions in plastic theory ? *4*

(b) Prove that shape factor of a triangle is 2·343. *10*

6. Determine the collapse load in a fixed beam as shown in Figure 5, by plastic method of analysis. *14*

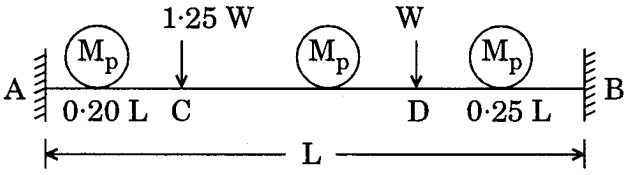


Figure 5

7. (a) Differentiate between stiffness and flexibility method. 7

(b) Prove that the stiffness matrix and flexibility matrix are inverse of each other for the beam shown in Figure 6. 7

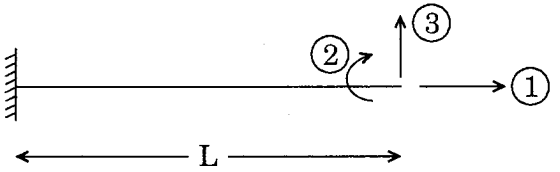


Figure 6