

B.Tech. CIVIL ENGINEERING (BTCLEVI)**Term-End Examination**

00535

June, 2019

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. (a) What are the basic theorems of plastic analysis? 7
- (b) Prove that the shape factor of a rectangular section is 1.5. 7
2. Calculate the plastic moment capacity for the continuous beam as shown in Figure 1. Take load factor = 1.5. 14

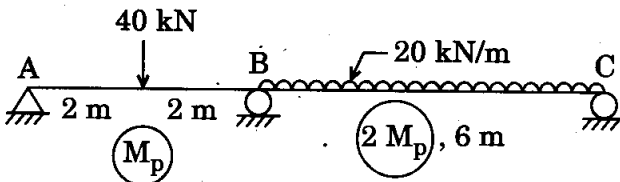


Figure 1

3. (a) Prove that stiffness matrix and flexibility matrix are inverse of each other, with suitable example. 7

- (b) Draw the influence line diagram for moment at A for propped cantilever beam as shown in Figure 2.

7

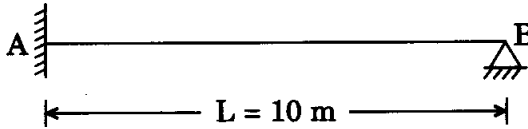


Figure 2

4. Analyse the continuous beam as shown in Figure 3 by flexibility method.

14

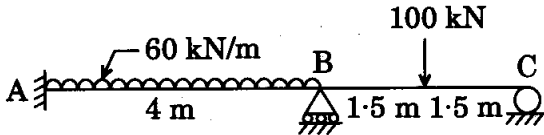


Figure 3

5. Analyse the frame as shown in Figure 4 by moment distribution method.

14

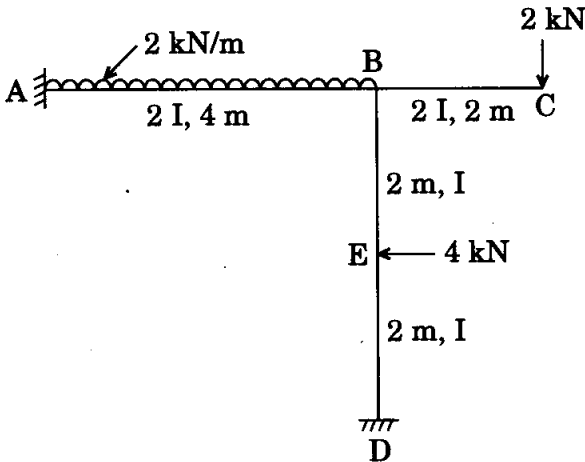


Figure 4

6. Analyse the continuous beam shown in Figure 5 by Kani's method.

14'

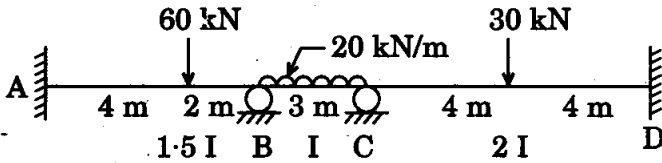


Figure 5

7. A fixed parabolic arch of span 20 m and central rise of 4 m has moment of inertia $I = I_0 \sec \theta$, I_0 is moment of inertia at crown and θ is the inclination of the tangent with the horizontal. The left hand half span of the arch carries a udl of 30 kN/m of horizontal span of arch. Determine the reactions at the supports.

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