**BICE-011**

B.Tech. CIVIL ENGINEERING (BTCLEVI)
Term-End Examination
June, 2017

00034

BICE-011 : STRUCTURAL ANALYSIS – II

Time : 3 hours   *Maximum Marks : 70*

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

1. (a) What are determinate structures ? Explain with an example.   6

    (b) A continuous beam is loaded as shown in Figure 1. Analyse the beam by the method of moment distribution and draw its bending moment.   8
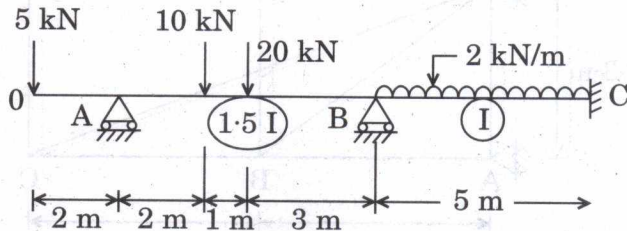
Figure 1

2. Analyse the beam shown in Figure 2 by slope deflection method. Sketch the bending moment diagram showing all the salient values. *14*
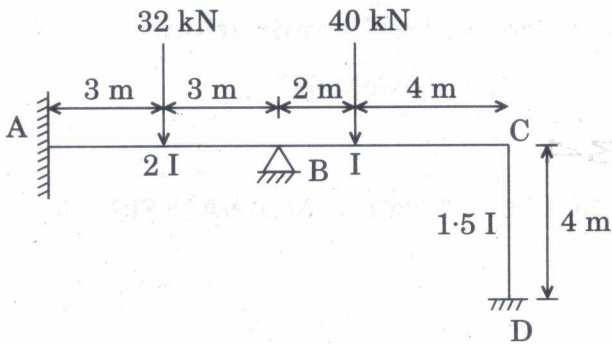

Figure 2

3. (a) Discuss how a fixed support is different from a roller support. *6*

(b) What do you understand by strain energy ? Explain with an example. *8*

4. Compute the forces in the member of the pin-jointed truss shown in Figure 3 by the method of joints. *14*
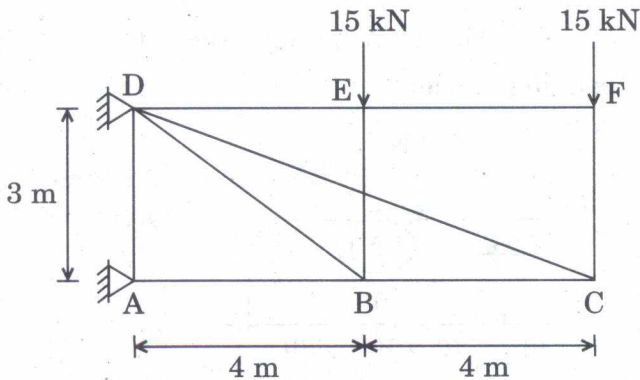

Figure 3

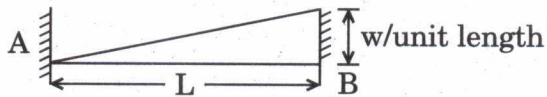**5.** Find the fixed end moments for the beam carrying uniformly varying load shown in Figure 4. *14*

Figure 4

6. The load system as shown in Figure 5 crosses a beam simply supported over a span of 24 m. Determine the maximum bending moment and shear force at a section 8 metres from the left hand end. *14*
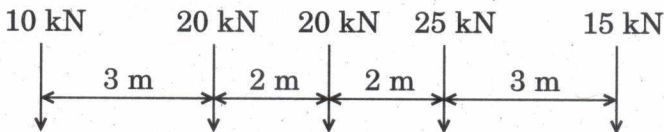

Figure 5

7. An arch rib is hinged at the springings and at the crown and is parabolic in shape. Show that the maximum bending moment in the arch caused by a single concentrated load occurs when the load is applied at a horizontal distance of $\dfrac{L}{2\sqrt{3}}$ from the crown. *14*

8. Write short notes on any ***two*** of the following topics : *2×7=14*

(a) Rigid Frames

(b) Effects of a Moving UDL

(c) Plane and Space Structures