No. of Printed Pages : **3 + Drawing Sheet**

BICE-011

B. TECH. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

December, 2013

00591

BICE-011: STRUCTURAL ANALYSIS - II

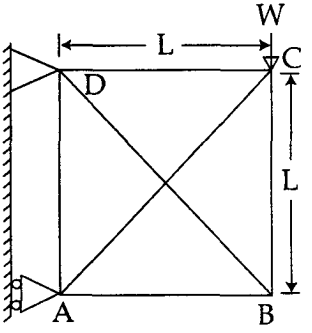
Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **any seven** questions. Use of scientific calculator is **permitted**. Assume any missing data suitably.*

1. (a) Define the castigliano's first theorem. **3**

(b) Calculate the central deflection and slope at ends of a simply supported beam carrying a u.d.l. w per unit length over the whole span of length L. **7**

2. Find the forces in member of the frame shown below. All members have the same cross-sectional area and are of the same material. **10**



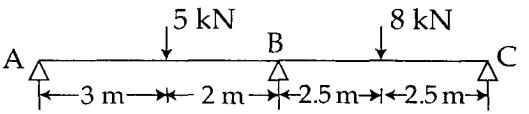
3. Draw the maximum shear force and maximum bending moment diagrams of single point load (w) moving over a simply supported beam of span L. **10**

4. Two wheel loads of 16kN and 8kN, at a fixed distance 2m apart, cross a simply supported beam of 10m span. Draw the influence lines for B.M and S.F for a point 4m from the left abutment. **10**

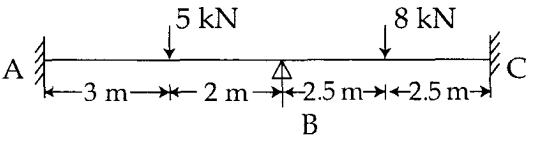
5. A three hinged parabolic arch of 20m span and 4m central rise carries a point load of 4kN at 4m horizontally from the left hand hinge. Calculate normal thrust and shear force at the section under load. **10**

6. A light cable, 18m long is supported at two ends at the same level. The supports are 16m apart. The cable supports three loads of 8, 10 and 12N dividing the 16m distance in four equal parts. Find the shape of string and the tension in various portions. **10**

7. A beam ABC, 10 m long simply supported at ends A and C is continuous over joint B and is loaded as shown below. Using slope deflection method, Compute, the moments at B and plot the B.M diagram. EI is constant. **10**



8. Analyse the beam loaded as shown below by moment distributer method. Draw BMD and SFDs. EI is constant. **10**



9. Find the fixed end moments of the beam shown below : **10**