

**B. TECH. (CIVIL ENGINEERING)**

**BTCLEVI**

**Term-End Examination**

**June, 2014**

**BICE-017 : STRUCTURAL DESIGN AND  
DRAWING - II**

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Answer any five questions. IS 456 and IS 800 codes are allowed. Use of calculator is permitted.*

1. The wall of a reinforced concrete water tank is subjected to a bending moment due to characteristic load of 30 kNm per metre length and a tension of 50 kN/m. Design a suitable section for the wall, using grade M 20 grade of concrete and Fe 415 steel. 14
  
2. A Lecture-hall in a college is provided with 100 mm thick roof slab, which is supported by T-beams of 6 m effective span, the ends being simply supported. The distance between the centres of the ribs is 2.5 m. Design the T-beams. The load on the slab (excluding self weight of slab) is 14 kN/m<sup>2</sup>. Use M 20 grade of concrete and Fe 415 steel. 14
  
3. What is the principle of prestressing ? Compare pre-tensioning method and post tensioning method. 14

4. Design a welded plate girder of span 30 m to carry an superimposed load of 35 kN/m. Avoid use of bearing and intermediate stiffeners. Use Fe 415 steel. **14**
5. Design a self supporting steel stack of height 72 m above the foundation. The diameter of the cylindrical part of the chimney is 3 m. The foundation has to rest on medium soil having bearing capacity of 200 kN/m<sup>2</sup>. The thickness of fire brick work lining is 100 mm and the lining is supported by the stack throughout the height. The chimney has one breach opening. The topography at the site is almost flat and the location is of terrain category 2. **14**
6. Design an elevated rectangular pressed steel tank having a capacity of 120,000 litres. The tank is open on the top. The height of staging is 12 m upto the top of the column. **14**
7. Write a note on general features of **any two** of the following : **2x7=14**
- (a) Bridge girder
  - (b) Trussed girder
  - (c) Chimney Bunkers
-