No. of Printed Pages : **2 + Drawing Sheet**

BICE-017

01057

B. TECH. (CIVIL ENGINEERING)
BTCLEVI
Term-End Examination
June, 2013

BICE-017 : STRUCTURAL DESIGN AND DRAWING - II

Time : 3 hours *Maximum Marks : 70*

*Note : Answer **any five** questions and assume any data if necessary.*

1. A rectangular concrete beam 300mm deep and 200mm wide is prestressed by means of fifteen 5mm diameter wires located 65mm from the bottom of the beam and three 5mm wires, located 25mm from the top of the beam. If the wires are initially tensioned to a stress of 840N/mm^2. Calculate the percentage loss of stress in steel immediately after transfer, allowing for the loss of stress due to elastic deformation of concrete only. **14**

2. Design a prestress concrete beam of span 12m carrying imposed load of 20 kN/m^2 m40 concrete and steel with ultimate tensile strength of 1600 N/mm^2 are used. The permissible stresses in concrete in compression = 14N/mm^2 in tension = 0. Neglect the loss in prestress. Carrying of 12 wires of 5mm ϕ and effective prestressed force of 225 kN are available then show the position of cable. **14**

3. Write the design steps of trussed girder railway bridges. **14**

4. Design dimension and section of a circular tank with flexible base for capacity of 40,0000 litres. The depth of water is to be 4m, including a free board of 200 mm. Use m20 concrete. **14**

5. Design diameter, height and thickness of cylindrical steel tank with hemispherical bottom for 160000 litres capacity. The tank has conical roof. The ring beam of the tank is at height of 10m from the ground level. Take fy = 250N/mm^2. **14**

6. Write design steps of towers supporting with foundation. **14**

7. Write short notes on *any two* : **7x2=14**

   (a) Pre-tensioning method of prestress

   (b) Intze tank

   (c) Method of prestressing in steel tank