No. of Printed Pages : 3

BICE-017

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

June, 2016

00926

BICE-017 : STRUCTURAL DESIGN AND DRAWING – II

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **five** questions. All questions carry equal marks. Assume any missing data suitably, if necessary, and mention the same. Use of IS 456 – 2000, IS 800 – 2007 and steel table is permitted. Use of scientific calculator is permitted.*

1. Explain the following in detail :

(a) Post-Tensioning method and Pre-Tensioning method 7

(b) Stability of steel chimney 7

2. Design a stringer beam for a through type truss bridge of span 60 m. The cross beams are provided at 6 m c/c. The stringer beams are at 2 m c/c. Bridge is used for National highway. 14

3. A rectangular beam, 200 mm × 400 mm, spans over 10 m and carries an imposed load of 5 kN/m. If the force of prestress is 500 kN and tendons are centred at 100 mm from the bottom, compute the stresses in the beam using the load balancing concept. Assume the profile of prestress tendons as parabolic. *14*

4. A 125 KL circular overhead water tank has the following dimensions :

Inner radius of circular wall	= 4250 mm
Thickness of wall	= 100 mm
Height of wall	= 3150 mm
Thickness of top dome	= 75 mm
Rise of bottom of top dome	= 1000 mm
Free board	= 150 mm
Height of staging above G.L.	= 25 m

Design only top dome, top ring beam and vertical wall of the tank. Use M25 and HYSD bars. *14*

5. (a) What is the difference between plate girder bridges and truss girder bridges ? *7*

(b) Describe the factors for selecting the type of steel chimneys. *7*

6. Write the steps for designing of towers supported with foundation. *14*

7. Write down the design steps for the following members of a square steel tank : *14*

   (a) Vertical side walls

   (b) Base slab