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BICE-017

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00313

December, 2018

BICE-017 : STRUCTURAL DESIGN AND DRAWING – II

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Use of IS 456 : 2000, IS 800 : 2007 and steel tables is allowed. Use of scientific calculator is permitted.*

1. (a) Describe the various steps for design of steel chimneys, in detail with neat sketches. 7

(b) Explain in detail the post-tensioning and pre-tensioning methods. 7

2. (a) Explain the various types of stresses generated in a concrete dome due to its self-weight. 7

(b) Explain in detail the stability of chimney. 7

3. Design a circular water tank with rigid connection at base for a capacity of 4,00,000 litres. The tank rests on a firm ground. The height of tank including a free board of 200 mm should not exceed 3·5 m. The tank is open at the top. Use M 20 and Fe 415. 14

4. A rectangular concrete beam 250 × 300 mm is pre-stressed by a force of 540 kN at a constant eccentricity of 60 mm. The beam supports a concentrated load of 68 kN at the centre of span of
3 m. Determine location of pressure line at centre, quarter span and supports. Neglect self-weight. *14*

5. Classify steel chimneys. Derive the expression for bending moment, stresses and thickness of plates for designing a steel chimney. *14*

6. (a) Discuss why under-reinforced flexural members are preferred to the over-reinforced ones. *7*

(b) Draw a neat sketch showing the stress-strain relationship of mild steel and explain. *7*

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

(a) Plate Girder Bridge

(b) Effect of Torsion in an RC Beam

(c) Importance of Reinforcement detailing in RCC Work.