

**B.Tech. CIVIL ENGINEERING (BTCLEVI)**

**Term-End Examination**

**December, 2016**

00542

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

*Time : 3 hours*

*Maximum Marks : 70*

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*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 tables is permitted. Use of scientific calculator is permitted.*

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1. (a) Write any four advantages of prestressing. 7
- (b) Discuss the loss of prestress due to elastic shortening of concrete. 7
2. (a) Explain various types of stresses generated in a concrete dome due to its self-weight. 7
- (b) Discuss various factors responsible for resistance of concrete against shear forces. 7
3. Explain briefly various IRC loadings considered for design of bridges. 14

4. (a) Explain why concrete and steel having good strength are needed in prestressed concrete structures. 7
- (b) Briefly explain how a prestressed concrete beam is designed. 7
5. (a) Write the advantages and disadvantages of welding in steel construction briefly. 7
- (b) Briefly describe various precautions which may be taken for a good quality control of concrete construction. 7
6. Design a square water tank having inner dimensions of 7.5 m × 7.5 m × 2.65 m high with walls fixed at the bottom and free at the top. The tank is directly supported on the earth. The floor slab is monolithic with the walls. The free board is 15 cm. Use M20 concrete and HYSD bars of Fe 415 grade. 14
7. Write short notes on any *two* of the following topics : 2×7=14
- (a) Staging for a Tank
- (b) Plate Girder Bridge
- (c) Importance of Reinforcement Detailing in RCC Work