

00461

B. TECH. (CIVIL ENGINEERING)**BTCLEVI****Term-End Examination****December, 2013****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. A reinforced circular water tank wall is resting on bitumen filling at its base. The diameter of tank is 10 m and is to have 2.5 m of water when it is full. Assuming M 20 grade concrete and Fe 415 steel, find a suitable thickness for the wall and the circumferential as well as vertical reinforcement required. 14

2. A T beam is as shown in Fig. 1. If the section is subjected to a factored torsion of 150 kN/m. Calculate the torsion carried by the two main rectangular portions of the T beam, assuming
 - (a) elastic theory
 - (b) plastic theory14

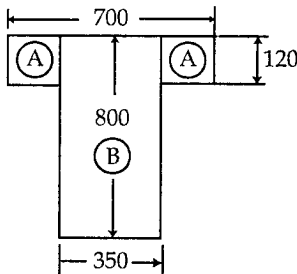


Fig. 1

3. What is prestressed concrete ? Write its advantages and disadvantages. Describe the method adopted for prestressing. 14
4. Design a plate girder for an effective span of 18 m. It is to carry two concentrated loads of 400 kN at 6 m from both ends along with superimposed uniformly distributed load of 50 kN/m. The girder is effectively supported laterally. 14
5. Design a simply supported gantry girder to carry one electric overhead travelling crane, with following data. 14
- Span of gantry girder = 6.5 m
 - Span of crane girder = 16 m
 - Crane capacity = 250 kN
 - Self weight of crane girder excluding trolley = 280 kN
 - Self weight of trolley = 50 kN
 - Minimum hook approach = 1.0 m
 - Distance between wheels = 3.5 m
 - Self weight of rails = 0.3 kN/m
6. Explain the design considerations and code requirements for steel tank with conical and hemispherical bottom in detail. 14
7. Write short notes on *any two* : 2x7=14
- (a) Design of intze tank
 - (b) Design of steel chimney
 - (c) Design of trussed girder
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