



Reg. No. :

Name :

Eighth Semester B.Tech. Degree Examination, April 2016
(2008 Scheme)
08.801: DESIGN AND DRAWING OF REINFORCED CONCRETE
STRUCTURES (C)

Time : 4 Hours

Max. Marks : 100

- Instructions :** 1) Answer *all* questions.
2) *Use* of codes IS 456-2000, IS – 3370 (Part 1 – IV), IRC 6, IRC 21 and design charts are **permitted**.
3) Assume **any** missing data suitably.

PART – A

1. Explain briefly the design procedure for ground supported water tanks.
2. Explain the various load classifications as per IRC. **(2×10 = 20 Marks)**

PART – B

3. a) Design a suitable cantilever retaining wall to support a backfill 4 m high above the ground level. The backfill is inclined at an angle of 15° with the horizontal. Suitable soil for foundation is available at a depth of 1.3 m below the ground level with a safe bearing capacity of 170 kN/m^2 . The backfill of granular soil has a unit weight of 16 kN/m^3 and an angle of shearing resistance of 30° . The coefficient of friction between soil and concrete is 0.5. Use M 20 concrete and Fe 415 steel. **20**
- b) Draw to suitable scale,
 - i) Cross section showing reinforcement details of stem, toe slab and heel slab.
 - ii) Longitudinal section through stem. **20**

OR

4. a) Design a reinforced cement concrete rectangular water tank with open top for 96 m^3 capacity. The water tank is supported on columns at 4 m height from ground level. The depth of storage is 3.5 m and freeboard is 0.5 m. Use M 30 concrete and Fe 415 steel.

(Note : Design of the supporting structure is not expected).

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- b) Draw to suitable scale,
- i) Cross section of tank showing side reinforcements
 - ii) Plan of the tank showing reinforcement details of the base slab. **20**

PART – C

5. a) Design a reinforced cement concrete T beam girder for the following data : clear width of roadway 7.5 m, span (c/c distance of bearings) 16 m, thickness of wearing coat 80 mm, loading IRC Class AA tracked vehicle. Design the deck slab and longitudinal girder. Use M 25 concrete and Fe 415 steel. **20**
- b) Draw to suitable scale,
- i) Cross section showing reinforcement
 - ii) Plan showing reinforcement details. **20**

OR

6. a) Design the interior panel of a flat slab 6 m × 6 m (square panel) supported on columns. The size of the column is 500 mm × 500 mm and the imposed load on the panel is 4 kN/m². The height of each floor is 3.3 m. The floor slab is exposed to mild environment. Assume finish loads of 1 kN/m². Use M 20 and Fe 415. **20**
- b) Draw to suitable scale,
- i) Cross section through column strip
 - ii) Plan showing bottom reinforcement details of the slab. **20**