QP Code: 8464QP

Seat No.	

Total No. of Pages: 2

Winter Examination Oct/Nov 2023

Subject Name: B.Tech. CBCS_67751_84753_84938 _ Advanced Design of Concrete Structures_23.11.2023_10.30 AM To 01.00 PM

Subject Code: 84753

Day and Date: - Thursday, 23-11-2023 **Total Marks: 70**
Time: - 10:30 am to 01:00 pm

Instructions.:

1) All questions are compulsory
2) Figures to the right indicate full marks
3) Use of Scientific calculator is allowed
4) Assume suitable data wherever necessary and mention it boldly

Special Instruction.:

Use of IS 456-2000 is allowed

Q.1. Calculate design moments in an interior panel of a flat slab with panel size 5m × 5m supported by columns of size 500mm × 500mm. Provide suitable drop. Take live load as 3kN/m2 , Take floor finish load as 1kN/m2 . Use M20 concrete and Fe415 steel.[**[12]**

Q.2. Design a deep beam 300mm wide and 4.5m deep simply supported over a clear span of 5.5m.The beam carries uniformly distributed service load of 150kN/m, excluding self weight. Beam supported on wall of 450mm thick on each end. Use M20 grade concrete and Fe415 grade steel. **[12]**

Q.3. Design a chimney of height 70m, Given **[11]**
External Diameter –(i) at top -4m
(ii) at base – 4.8m
Shell thickness –(i) at top -200mm
(ii) at base – 400mm
Wind intensity 1.8kN/m2, throught.
Thickness of fire brick lining 100mm.
Air gap -100mm
Temperature difference -700C.
Coefficient of thermal expansion -11×10-6/C0
Es - 210×103 N/mm2
Unit weight of brick lined -20kN/m3
Use M25 concrete and Fe 415 grade steel.
Note-No Check for stresses is required

Q.4. Design a flat bottom circular elevated water tank of diameter 10m and total height 4m which is to be supported by ring beam of 7.5m diameter. The ring beam is to be supported by six columns equally placed. Use M25 concrete and Fe415 steel. Design the Top dome only. **[12]**

Q.5. Design only Stem of cantilever retaining wall to retain an earth embankment with horizontal top 3m above ground level. Density of earth=18kN/m3. Angle of internal friction Φ=300 SBC of soil is 200kN/m2.Take coefficient of friction between soil and concrete =0.5. Adopt M20 grade concrete and Fe-415 steel. **[12]**

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Q.6. **Design a rectangular slab of size 4m×6m which is simply supported along the edges and has to carry a service load of 4kN/m2. Assume coefficient of orthotropy μ=0.75. Use M20 grade concrete and Fe415 grade steel. The design may be restricted to bending only.** **[11]**

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