

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

ADVANCED STRUCTURAL ENGINEERING

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer all questions

All questions carry equal marks

- 1 Design an interior panel of a flat slab 8 m x 8 m for a live load of 10 kN/m². Use M₂₀ grade concrete and Fe₄₁₅ steel respectively. Draw the reinforcement details.

OR

- 2 Design a RC chimney shell, with the following data:

Height above ground level = 60 m

Outside diameter = 4 m throughout,

Thickness of brick lining = 100 mm up to 40 m from ground,

Wind pressure = 2 kN/m²

Draw plan and cross sectional elevation of the chimney showing the reinforcement details.

- 3 Design a circular water tank with flexible connection at base for a capacity of 5,00,000 liters. The tank rests on a firm level ground. The height of tank including a free board of 200 mm should not exceed 3.5 m. The tank is open at top. Use M₂₀ concrete and Fe₄₁₅ steel. Draw plan and cross sectional elevation of the tank showing the reinforcement details

OR

- 4 Design a cantilever retaining wall to retain earth for a height of 4 m. The density of soil is 18 kN/m³. Safe bearing capacity of soil is 200 kN/m². Take the coefficient of friction between concrete and soil as 0.6. The angle of repose is 28 degrees. Use M₂₀ concrete and Fe₄₁₅ steel. Assume backfill is horizontal. Draw plan and sectional details of the reinforcement.
