R13

Code: 13A01804

B.Tech IV Year II Semester (R13) Regular Examinations April 2017

ADVANCED STRUCTURAL ENGINEERING

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Answer all questions

All questions carry equal marks

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1 Design an interior panel of a flat slab floor system for a warehouse 24 m x 24 m divided into panels of 6 m x 6 m for a live load of 5 kN/m^2. Use M25 grade concrete and Fe415 steel respectively. Draw the reinforcement details.

OR

2 Design a circular cylindrical bunker of capacity 400 kN to store coal using M20 concrete and Fe415 steel. Angle of repose 25°, unit weight of coal 8 kN/m^3. Coefficient of friction between coal and concrete is 0.444. Draw plan and cross sectional elevation of the bunker showing the reinforcement details.

3 A cylindrical tank of capacity 7,00,000 liters is resting on good unyielding ground. The depth of tank is limited to 5 m. A free board of 300 mm may be provided. The wall and the base slab are cast integrally. Design the tank using M20 concrete and Fe415 grade steel. Draw plan and cross sectional elevation of the tank showing the reinforcement details

OR

4 A counterfort-type retaining wall is to be designed to support a soil embankment with sloping discharge. Height of fill retained by wall = 9 m, surcharge angle = 10°, density of soil 16 kN/m^3, angle of internal friction Ø = 30, coefficient of friction between soil and base slab = 0.5, SBC of soil = 200 kN/m^2. Use M20 grade concrete and Fe415 grade HYSD bars. Design the counterfort type retaining wall and sketch the reinforcement details in the wall.

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