Code: 15A01802 **R15**

B.Tech IV Year II Semester (R15) Regular Examinations April 2019

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 with panel size 6 x 6 m supported by columns 5 m x 5 m. Provide suitable drop. Take live load as 4 kN/m^2. Use M20 steel and Fe 415 steel. Draw plan and sectional elevation.

OR

2 Design a circular cylindrical bunker of capacity 250 kN to store coal using M20 steel and Fe450 steel and unit weight of coal is 8.0 kN/m^3, angle of repose of coal is 25°C. Draw plan and sectional elevation.

3 Design a cylindrical water tank of capacity 100cum resting on ground having a flexible base. The material used in construction is M25 grade concrete mix and HYSD, Fe415 steel. The overall height of the tank is restricted to 3.00 m with free board of 200 mm. The bearing capacity of soil at the site is 150 kN/m^2. Draw plan and sectional elevation.

OR

4 Design a cantilever retaining wall, which is required to support a bank of earth 4.0 m high above the ground level on the toe side of the wall. Consider the backfill surface to be inclined at an angle of 15° with the horizontal. Assume good soil for foundation at a depth of 1.25 m below the ground level with a safe bearing capacity of 160 kN/m^2. Further assume the backfill to comprise granular soil with a unit weight of 16 kN/m^3 and an angle of shearing resistance of 30°. Assume the coefficient of friction between soil and concrete to be 0.5. Draw plan and sectional elevation.

*****