Roll No .....

CE - 702

B.E. VII Semester

Examination, December 2013

Advanced Structural Design - II (RCC)

Time : Three Hours *Maximum Marks : 70*

Note: 1. Attempt five questions and only one from each unit.
2. Use IS code and design aids is permitted.
3. Missing data may be assumed suitably.

Unit - I

1. In a 10m wide hall portals are provided at 4m c/c distance. Height of hall is 4m. Design beam, column and foundation of portal.

OR

2. a) Explain the function of shear wall.
   b) Explain the difference between a braced and an unbraced building. What condition should be satisfied by a braced building?

Unit - II

3. Design a stem of a cantilever retaining wall, retaining levelled earth 5.4m above base level. Take the density of soil is 16kN/m^3 and angle of repose is 30°. Base width 4m, toe projection = 1.0m, Thickness of base slab = 0.4m. Apply the stability checks and design the stem.

OR

4. Design the counterfort of a counterfort retaining wall, retaining 8.5m of earth above the base. The counterforts are spaced 4m c/c. The base slab is 5m wide with 1m clear toe projection. Unit wt of soil is 17kN/m^3 and the angle of repose = 30°.

Unit - III

5. Design and detail the wall of a circular water tank of 200kL capacity having rigid wall and base connections. Maximum depth of water is limited to 3.2m.

OR

6. Design the top dome, top ring beam and cylindrical wall of an Intze tank for the following data:
   i) Diameter of cylindrical portion - 12m
   ii) Rise of top dome - 1.8m
   iii) Thickness of top dome - 100mm
   iv) Height of cylindrical wall - 4.5m

Unit - IV

7. Design the side wall of silo to store coal. Dia of silo-6m, Height of cylindrical wall-16m unit-wt of coal 8.5 kN/m^3. μ = 0.22, coefficient of friction - 0.4 sketch the details.

OR

8. Design a bunker to store 580kN of coal unit weight and angle of repose of coal may be taken as 8.5kN/m^3 and 30° respectively. The stored coal is surcharged at its angle of repose. The size of Bunkers as 4m×4m and a height of 1.4m with a central hole of size 0.5m×0.5m.

Unit - V

9. Compute the maximum bending moment for a solid slab bridge for IRC class AA tracked vehicle loading for the following data:
   i) Clear span - 8.0m
   ii) Clear width of roadway - 7.5m
   iii) Average thickness of Wearing coat - 80mm
   iv) Width of bearing - 500mm.

OR

10. A simply supported prestressed concrete beam of rectangular cross-section 300mm×500mm is loaded with a total uniformly distributed load of 200kN over a span of 5m. Sketch the distribution of stresses at the mid-span and end section if the prestressing force is 1500kN and the tendon is eccentric, located at 150mm above the bottom fibre.

******