Total No. of Pages : 2

Seat No.

B.E. (Civil Engineering) (Semester - VIII) Examination, November - 2014
STRUCTURAL DESIGN OF FOUNDATION AND RETAINING STRUCTURES (Elective - II)
Sub. Code : 49179

Day and Date : Saturday, 29 - 11 - 2014

Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

Instructions :
1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of IS 456 - 2000 allowed.

SECTION - I

Q1) Design a square footing to carry a load of 800 kN transmitted through a 40 cm square column reinforced with 20 mm steel bars in the longitudinal direction. The footing is based at 1.0 m below ground level. The safe bearing capacity of soil may be taken as 200 kN/m². Use M20 concrete and Fe 415 steel. **[25]**

Q2) A column 300 x 300 mm in section stands on a pile cap supported on three piles. The column is situated centroid of the pile group. The load transfer on column is 800 kN, is supported on three piles 300 mm ϕ in section. The center to center distance between the piles is 1.2 m. Design a suitable pile cap. Use M20 concrete and Fe 415 steel. **[25]**

Q3) A building contains 12 columns 400 x 400 mm in three rows of four each. The distance between the columns is 4 m. Each of the four corner columns carry a load of 600 *kN*, each of the exterior columns carry a load of 900 *kN* and each of the interior columns carry a load of 1500 *kN*. The net bearing capacity of the soil is 100 *kN/m²*. Design a raft foundation using M30 concrete and Fe 415 grade steel. **[25]**

P.T.O.

SECTION - II

Q4) a) What are the measures taken for rectification of tilts and shifts of well foundation? **[15]**

b) Explain with neat diagram what are the different types of wall foundation that are used in the field. **[10]**

Q5) The steam of a cantilever type retaining wall is 5 m tall. The wall retains soil level with its top. The soil weight 19 kN/m³ and having an angle of repose is 30°. The safe bearing capacity of soil 200 kN/m² and the coefficient of friction between soil and concrete as 0.65. Use M20 concrete and Fe 415 steel. Design stem and heel slab of retaining wall. **[25]**

Q6) a) Explain in detail with figure the vertical wall break water and rubble mound break water. **[13]**

b) Design a wall breakwater for the following data: **[12]**

Depth of water = 16.0 m

Wind Velocity = 130 km/hrs

Fetch of wave = 220 km