B.E. (Civil Engineering) (Semester - VIII) (Elective - II) Examination, Dec. - 2013
STRUCTURAL DESIGN OF FOUNDATION AND RETAINING STRUCTURES (New)
Sub. Code : 49179

**Day and Date : Friday, 13 - 12 - 2013**   **Total Marks : 100**
Time : 2.30 p.m. to 5.30 p.m.

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 an isolated square sloped footing for a column 500 × 500 mm, transmitting an axial load of 1200 kN. The safe bearing capacity of soil 120 kN/m². Use M20 concrete and Fe 415 steel.   **[25]**

Q2) Design a pile under a column transmitting an axial load of 800 kN. The pile is to be driven to a hard stratum available at a depth of 8 m. Use M20 concrete and Fe 415 steel.   **[25]**

Q3) Design a raft foundation supporting 12 columns of a building. Fig 1.0 shows the position of the columns. The load on each column is 400 Kn. Use M20 concrete and Fe 415 steel. The safe bearing capacity of soil 120 kN/m². **[25]**
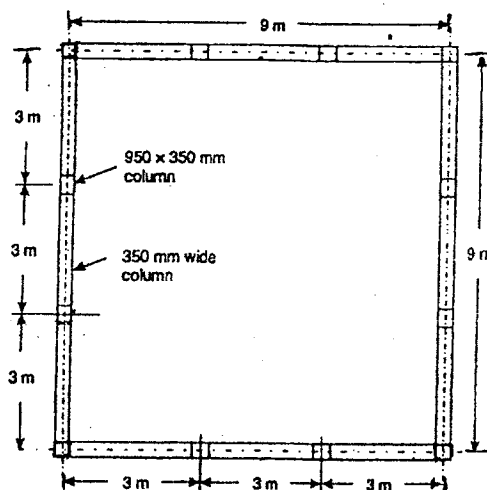
Fig 1.0

SECTION - II

Q4) a) Explain with neat diagram what are the different types of wall foundation that are used in the field. **[13]**

b) What are the different forces that are acting on the well foundation? **[12]**

Q5) Design stem and heal of a cantilever retaining wall for a road for the following requirements: **[25]**

- Height of wall from the bottom of base to top of stem = 6m
- Superimposed load due to road traffic = 18 kN/m^2
- Unit weight of fill = 18 kN/m^3
- Angle of internal friction for fill material = 30°
- Allowable bearing pressure on ground = 160 kN/m^2
- Coefficient of friction between concrete and ground = 0.4
- Use M20 concrete and Fe 415 steel

Also provide a parapet wall of 1m height on top of stem

Use M20 concrete and Fe 415 steel.

Q6) a) Explain different method of construction of mound type of breakwater. **[10]**

b) Design a rubble mound breakwater for the following data. **[15]**
Depth of water = 16.0 m
Wind Velocity = 130 km/hrs
Fetch of wave = 330 km.