

Total No. of Questions : 6]

SEAT No. :

P73

APR. -16/TE/Insem. - 3

[Total No. of Pages : 2

T.E. (Civil)

**FOUNDATION ENGINEERING
(2012 Pattern) (Semester - II)**

Time : 1 Hour]

[Max. Marks :30

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4 and Q.5 or Q.6.*
- 2) *Neat diagrams must be drawn whenever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary and mention it clearly.*
- 5) *Non programmable calculator is allowed.*

- Q1)** a) Explain in detail “soil exploration for an important building project”. [5]
b) Explain electrical resistivity method. Also write application of this method. [5]

OR

- Q2)** a) Describe various methods of drilling holes for sub surface investigation. [5]
b) Explain with sketch a typical “Core Log”. Indicate core recovery and RQD values for various rock types / layers. [5]

- Q3)** a) Explain with neat sketches modes of shear failure in soil. [5]
b) Compute safe bearing capacity of a square footing 1.8m wide and located at a depth of 1.2m below ground level in a soil having unit weight, $\gamma = 20$ kN/m³, $C = 20$ kN/m² and $\phi = 20$. Assume factor of safety 2.5.

Take Terzaghi’s bearing capacity factors for $\phi = 20$ as

$$N_c = 17.7, N_q = 7.4 \text{ and } N_y = 5.0. \quad [5]$$

OR

P.T.O.

- Q4)** a) Write a short note on plate load test. Also explain limitations of plate load test. [5]
- b) Two plate load tests were conducted at a site, one with 0.5m square test plate and other with 1m square test plate. For a settlement of 25mm, the loads were found to 60 kN and 180 kN respectively. Determine the allowable load which a square footing $2\text{m} \times 2\text{m}$ can carry with the settlement not exceeding 25mm. Adopt Housel's approach. [5]

- Q5)** a) Write the difference between immediate settlement and primary consolidation settlement. [5]
- b) Explain the method of determining preconsolidation pressure. [5]

OR

- Q6)** a) What is contact pressure? Draw contact pressure distribution of a rigid footing on sandy and clayey soil strata. [5]
- b) Explain the following terms and state the formulae. [5]
- Coefficient of compressibility.
 - Degree of consolidation.
 - Coefficient of consolidation.

