

Total No. of Questions : 12]

SEAT No. :

P3525

[Total No. of Pages :3

[4858]-1007
T.E. CIVIL (SEMETER-II)
FOUNDATION ENGINEERING
(2012 Pattern)

Time : 2½ Hours]

[Maximum Marks : 70

Instructions to the candidates:

- 1) *Answer Q 1or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10 and Q11 or Q12,*
- 2) *Neat diagrams must be drawn wherever 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.*

SECTION-I

Q1) Describe various types of soil samples. What is area ratio? State its significance. [7]

OR

Q2) Explain Electrical Resistivity Method in accordance with: [7]

- a) Principle
- b) Procedure and sketch
- c) Limitation.

Q3) A rectangular footing 2m×3m rests on a c- ϕ soil, with its base at 1.5m below the ground surface. Calculate the safe bearing capacity, using factor of safety of 3 on

- a) Net bearing capacity and
- b) ultimate bearing capacity. The soil has following parameters:
 $\gamma=18\text{kN/m}^3$, $c=10\text{kN/m}^2$, $\phi = 30^\circ$. (Use Terzaghi analysis) [6]

OR

Q4) Explain the effect of submergence on bearing capacity for different positions of ground level. [6]

P.T.O.

Q5) The result of consolidation test on a clay sample conducted in the laboratory indicates time for completion of half of the ultimate compression as 9 min. The sample was having a thickness of 25mm and drained at top and bottom. Estimate the duration for same degree of consolidation for 2.5 m thick of same clay resting on impermeable rock formation with coarse sand deposit overlaying it. [7]

OR

- Q6)** a) What is immediate settlement? Explain, how, it is evaluated. [3]
b) In a consolidation test void ratio decreased from 0.70 to 0.65, when the load was changed from 50 kN/m². Compute compression index and coefficient of volume change. [4]

SECTION-II

- Q7)** a) A group of 16 piles of 50 cm diameter is arranged with a center to center spacing of 1.0m. The piles are 9m long and are embedded in soft clay with cohesion 30 kN/m². Bearing resistance may be neglected for the piles-Adhesion factor is 0.6. Determine the ultimate load capacity of the pile group. [6]
b) Explain with sketches types of pile with basis of classification. [4]
c) Explain the following: [6]
i) Negative skin friction
ii) Feld's Rule

OR

- Q8)** a) State the advantages and disadvantages of piers in comparison of pile foundation. [5]
b) Explain how you decide bearing capacity of single pile by a conventional pile load test. [5]
c) Explain with a neat sketch "Sand Island Method" for well sinking [6]
- Q9)** a) Write a short note on "Sheet Pile". [4]
b) Discuss any three types of "Cofferdams" with its importance. [6]
c) Explain the preloading technique with neat sketch. [6]

OR

- Q10)** a) Explain any four Engineering problems associated with black cotton soil. [6]
b) Draw a neat sketch of Double under reamed pile foundation. Name the various component parts. [5]
c) Explain “Differential Free Swell Index Test”. [5]

- Q11)** a) Explain the phenomenon of Liquefaction for sandy soil and their effects. [6]
b) What is reinforced earth wall? Draw a neat sketch of reinforced earth wall. [6]
c) What are functional requirements of various types of geosynthetics [6]

OR

- Q12)** a) Write a short notes on “Types of Earthquakes” [6]
b) Explain the term. [6]
i) Magnitude of Earthquake
ii) Intensity of Earthquake
c) Explain the suitable methods for prevention of liquefaction of soil. [6]

