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 sefety of 3 on

a) Net bearing capacity and

b) ultimate bearing capacity. The soil has following parameters: γ=18kN/m^3, c=10kN/m^2, $\phi = 30°$. (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/m^2. 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/m^2. 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 contton soil. **[6]**

b) Draw a neat sketch of Double under reamed pile founcation. Name the various component parts. **[5]**

c) Explain "Differential Free Swell Index Test". **[5]**

Q11) a) Explain the pheonomenon 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 requirement 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]**

////