P3565

[5560]-508

T.E. (Civil)
FOUNDATION ENGINEERING
(2015 Course) (Semester - II) (End Semester) (301009)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:
1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.*
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) *Use of non-programmable calculator is allowed.*

Q1) Explain percussion drilling with its advantages and disadvantages.   **[6]**

OR

Q2) Explain the corrections to be applied to observed N value in Standard Penetration Test. Also mention when and why these corrections are applied.

[6]

Q3) Write a note on :   **[7]**
   a)   Presumptive Bearing Capacity
   b)   Limitations of Plate load test.

OR

Q4) Enlist the assumptions in Terzaghi's bearing capacity theory. State Terzaghi's bearing - capacity equation with meaning of each term.   **[7]**

Q5) Define   **[7]**
   a)   contact pressure
   b)   differential settlement.
   How differential settlement can be reduced?

OR

Q6) Explain the procedure for determination of pre-consolidation pressure. A normally consolidated clay settled by 10 mm when the effective stress was increased from 100 kN/m² to 200 kN/m². If the effective stress was further increased from 200 kN/m² to 400 kN/m² on the same soil, calculate the settlement.   **[7]**

P.T.O.

Q7) a) Enlist the types of pile foundation according to function. **[5]**

b) Write a note on 'micropiles'. **[6]**

c) What is negative friction? A pile of 300 mm diameter passes through a recently filled up compressible soil of 4.5 m length. The undrained cohesion of soil is 30 kN/m². Calculate the negative skin friction of pile. Take adhesion factor = 0.9. **[6]**

OR

Q8) a) Write a note on 'caisson disease'. **[5]**

b) Enlist the advantages and disadvantages of drilled piers. **[6]**

c) Draw a sketch of floating caisson and discuss the steps during it's construction. **[6]**

Q9) a) Explain the engineering problems associated with black cotton soil. **[5]**

b) Write a note on 'R.C.Diaphragm' method. **[6]**

c) Enlist any four uses of cofferdams and explain earth fill cofferdam. **[6]**

OR

*Q10)*a) Draw a neat sketch of double under reamed pile and name various components. **[5]**

b) Explain 'pre loading technique' of soil improvement. **[6]**

c) Explain 'swelling pressure test' with a neat sketch. **[6]**

*Q11)*a) Explain the mechanism of reinforced soil. **[4]**

b) Write a note on **[6]**

   i) Magnitude of earthquake and

   ii) Intensity of earthquake.

c) Enlist the types of geosynthetics and explain any two types. **[6]**

OR

*Q12)*a) Explain general principles of earthquake resistant design. **[4]**

b) Explain the use of geosynthetics in **[6]**

   i) pavements.

   ii) foundations.

c) Write a note on 'liquefaction' of soil. Discuss its effects on built environment. **[6]**

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