

Total No. of Questions : 12]

SEAT No. :

**P3565**

**[5560]-508**

[Total No. of Pages : 2

**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/m<sup>2</sup> to 200 kN/m<sup>2</sup>. If the effective stress was further increased from 200 kN/m<sup>2</sup> to 400 kN/m<sup>2</sup> 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/m<sup>2</sup>. 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 its 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]

