[4758] - 7

T.E. (Civil)
FOUNDATION ENGINEERING
(2008 Pattern) (301010) (Semester - II)

Time :3 Hours]   *[Max. Marks : 100*

Instructions to the candidates:
1) *Answer three questions from Section I and three questions from Section II.*
2) *Answers to the two Sections should be written in separate answer-books.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Use of logarithmic tables, slide rule, electronic calculator is allowed.*
5) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain the purpose of subsoil exploration. **[6]**

b) How will you decide the depth of exploration and the number of borings? Discuss the guide rules. **[6]**

c) Discuss Pressure meter test. **[6]**

OR

Q2) a) Explain the following: **[6]**

i) Area Ratio

ii) Inside clearance

iii) Chunk sampling

b) Enlist the different geophysical methods and describe any one in detail.**[6]**

c) Write a note on Standard Penetration Test. **[6]**

Q3) a) Compare General & Local modes of Shear failures. **[6]**

b) A 2m wide strip footing is founded at a depth of 1.5m below the ground level in a homogeneous bed of dense sand, having the following properties: $\phi = 36°$, $\gamma = 1.85 t/m^3$, Nc = 60, Nq = 42, Nγ = 47. Factor of safety = 3. Determine the Ultimate, net ultimate and safe bearing capacity of the footing. **[6]**

c) Write a note on effect of eccentricity of loading on bearing capacity.**[4]**

OR

Q4) a) Explain Plate load test in detail. **[6]**

    b) Explain effect of water table on bearing capacity of soil. **[6]**

    c) Write a note on Floating foundation. **[4]**

Q5) a) Define the following terms: **[6]**

       i) Normal consolidation

       ii) Over consolidation

       iii) Pre consolidation pressure

    b) What are the different types of foundation settlement? Explain in detail.**[6]**

    c) A square footing on sand at 2 m depth shows an elastic settlement of 5.5mm. Under a loading of 200kN/m^2. How much a footing would settle if it has to carry a load of 150kN/m^2? **[4]**

<p align="center">OR</p>

Q6) a) Distinguish between consolidation and elastic settlement. Explain how they are determined? **[6]**

    b) Explain Terzaghi's theory of one dimensional consolidation. **[6]**

    c) Draw contact pressure distribution diagram for sandy and clayey soil.**[4]**

<p align="center"><u>SECTION- II</u></p>

Q7) a) Enlist the methods of determining pile capacity. Explain any two methods in short. **[6]**

    b) An RRC pile of 18m overall length is driven into a deep stratum of soft clay having an unconfined compressive strength of 3.5t/m^2. The diameter of the pile is 30cm. Determine the safe load that can be carried by the pile with a factor of safety 3. Take $(\alpha = 0.95)$. **[6]**

    c) Explain the following: **[6]**

       i) Negative skin friction

       ii) Feld's Rule.

<p align="center">OR</p>

Q8) a) Write a short note on Group capacity of pile. **[6]**

b) Explain the Cyclic pile load test. **[6]**

c) State the advantages and disadvantages of piers in comparison of pile foundation. **[6]**

Q9) a) What is Caisson? How Caissons are classified based on methods of construction? **[6]**

b) State the characteristics of BC soil and explain the role of 'Montmorillonite'. **[6]**

c) What is pier? Explain methods of installation of pier. **[4]**

OR

Q10) a) Sketch and describes the various components of well foundation, indicting functions of each component. **[6]**

b) Discuss the earth pressure distribution for cantilever sheet pile wall. **[6]**

c) Explain Differential free swell test. **[4]**

Q11) a) Explain with neat sketches various functions of Geotextiles. **[8]**

b) Write a detail note with sketches on Geosynthetic application in civil engineering. **[8]**

OR

Q12) Write a short note on: **[16]**

a) Types of earthquake

b) Surface rupture

c) Liquefaction

d) Reinforced earth wall.

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