APR -17/ TE/Insem.-3

T.E. (Civil)

FOUNDATION ENGINEERING

(2012 Pattern) (301009) (Semester-II)

Time : 1 Hour]   *[Max. Marks : 30*

Instructions to the candidates:

1) *Answer Q.1 or Q.2, Q.3 or Q.4 and Q.5 or Q.6 .*

2) *Answer to the two sections should be written in separate books.*

3) *Figures to the right indicate full marks.*

4) *Use of logarithmic tables, slide rule, Mollier charts, electronics pocket calculator and steam tables is allowed.*

5) *Assume suitable data if necessary.*

6) *Neat diagrams must be drawn wherever necessary.*

Q1) a) Explain the procedure of 'Standard Penetration Test' with a neat sketch. Which are the corrections to be applied ?   **[5]**

   b) Define

   i)   Area ratio

   ii) Inside clearance

   iii) Outside clearance

   iv) R.Q.D.

   v)   Recovery ratio   **[5]**

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

Q2) a) Determine the depth of overburden above the underlying stiff layer for the following data observed in seismic refraction test. Velocity in upper layer = 580m/s & velocity in lower layer = 4080 m/s. The break in time displacement plot was noted at 30 m/s.   **[5]**

   b) Explain with a neat sketch (i)Auger boring (ii) Wash boring .   **[5]**

<p align="right">***P.T.O.***</p>

Q3) a) Write a note on 'Effect of water table on bearing capacity of soil'. **[4]**

b) State Terzaghi's equation of bearing capacity for **[6]**
   i)   Strip footing
   ii) Square footing
   iii) Circular footing .
   Explain the meaning of each term.

OR

Q4) a) The results of two plate load tests on a given location are as follows.
   i)   diameter = 750mm, settlement= 15 mm, ultimate load =150kN.
   ii) diameter = 300 mm, settlement = 15 mm, ultimate load = 50kN.
   Determine the ultimate load on a circular footing of 1.2m diameter causing 15mm settlement. **[6]**

b) Differentiate between Terzaghi's Bearing Capacity Theory & Meyerhof's Bearing Capacity Theory. **[4]**

Q5) a) Explain with a neat sketch the procedure for determination of pre consolidation pressure. **[5]**

b) Define the following. **[5]**
   i)   Over consolidation ratio
   ii) Normally consolidated soil
   iii) Coefficient of compressibility
   iv) Compression index
   v)   Coefficient of volume compressibility
   vi) Degree of consolidation .

OR

Q6) a) Define the following. **[4]**
   i)   Differential settlement
   ii) Angular distortion
   iii) Elastic settlement
   iv) Consolidation settlement

b) A 6 m thick saturated clay has a compression index of 0.28. The void ratio at initial stress of 12kN/m^2 is 2.05. Calculate the settlement and change in void ratio if the stress is increased to 21.6 kN/m^2 . **[6]**

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