TE/Insem./APR-13
T.E (Civil)
301009 : FOUNDATION ENGINEERING
(2015 Pattern) (Semester II)

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

Instructions to the candidates:

1) *Answer Q.1 or Q.2, Q.3 or Q.4, 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, Mollies 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 in detail Seismic Refraction Method of soil investigation. **[5]**

    b) Write a note on purpose and planning of subsurface exploration. **[5]**

OR

Q2) a) Explain with neat sketch SPT and explain how this test is performed on the field. **[4]**

    b) A sampling tube of 72 mm diameter and 5 mm thick. It is fitted with cutting edge. The inside diameter of cutting edge is flushed with sampling tube. The cutting edge is 6 mm thick. Compute inside clearance, outside clearance, and area ratio. Comment on sample collected by tube. **[6]**

Q3) a) Explain in detail various modes of bearing capacity failures along with suitable diagram. **[5]**

    b) A square foundation is 1.5m x 1.5m in plan. The soil supporting the foundation has a friction angle $\Phi=20°$, $C=15.2$ kN/m^2. The unit weight of soil, γ, is 17.8 kN/m^3. Determine the allowable gross load on the foundation with a factor of safety of 4. Assume that depth of foundation is 1m and that general shear failure occurs in soil when Nc=17.69, Nq=7.44, Nγ=3.64 **[5]**

OR

Q4) a) Explain in detailed with neat sketch bearing capacity evaluation by plate load test. **[5]**

b) Write a note on effect of water table on bearing capacity. **[5]**

Q5) a) Enlist different causes of settlement and explain any one in detail. **[5]**

b) In a consolidation test the void ratio decreases from 0.7 to 0.65 when the load was changed from 50 kN/m² to 100 kN/m². Compute compression index and coefficient of volume change. **[5]**

OR

Q6) a) Explain with neat sketch laboratory consolidation test. **[5]**

b) A soil sample having void ratio 0.6 decreases by 0.1 when subjected to increasing load of 200 kN/m² to 275 kN/m². Calculate the coefficient of compression and coefficient of volume compressibility. **[5]**

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