EG-312

B.E. VII Semester (CGPA) Civil Engg.

Examination 2018

GEOTECHANICAL ENGINEERING-I

Paper - CE-703

Time Allowed : Three Hours]   **[Maximum Marks : 60**

Note : i) All questions are to be attempted.

ii) All questions carry equal marks.

iii) There is internal choice in each question.

iv) Assume suitable data if necessary.

Q.1. a) Discuss influence of Clay minerals on engineering properties of Soil.

b) What are important index properties? Explain any one, with experimental details and its use.

OR

c) What are Consistency Limits? Give their importance and method of determination of any one of them.

d) Explain method of classification based on particle size distribution. How it is carried out for time particles?

Q.2. a) Describe various methods of finding permeability of soils in laboratory. Give advantages of one over other and conditions of their suitability.

b) What are Flownets? Give their uses and methods of obtaining same.

OR

c) What are assumptions in Terzaghi's theory of one dimensional consolidation? Discuss their validity.

d) An undisturbed sample of clay stratum 2m thick was tested in laboratory and average value of coeff. of consolidation was found to be 2×10^{-4} cm^2/sec. If the structure is built on the clay how long will it take to attain halt the ultimate settlement under the load of structure. Assume double drainage.

Q.3. a) How many types of shear test can be performed in triaxial testing machine depending upon the drainage conditions. Give procedure to measure pore pressure.

b) Draw a neat sketch of box shear test and give its advantages and disadvantages over triaxial testing.

OR

c) Explain unconfined compression testing of soil with neat sketch. Give advantages of the test.

d) A cylinder of soil fails under axial vertical stress of 16 tons/m^2 when it is laterally unconfined. The failure plane makes an angle of 50° with the horizontal. Calculate values of shear parameters.

Q.4. a) Explain stability analysis of infinite slopes for cohesive soils and cohesionless soils.

b) What is Stability Number? How it is determined? Give its use.

OR

c) Explain Swedish circle method step by step giving its assumptions for C-ϕ soils.

d) Explain steps in friction circle method for slope analysis with neat sketch.

Q.5. a) Explain limitations of Rankine and Coulomb's earth pressure theories.

b) Explain Culmann's method for analysis of cohesionless soils.

OR

c) Explain Reinforced earth retaining walls and its construction.

d) Explain effect of surcharge load and how it is accounted for in graphical construction analysis.

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