SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | | **Total number of pages:02**

Total number of questions:06

B.Tech. || CE || 6th Sem

Geotechnical Engineering

Subject Code: BTCE-601A (RG)

Paper ID: M118

(2015 batch)

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A **(10 × 2 = 20)**

Q. 1. Short-Answer Questions:

(a) Write the advantages of triaxial shear test.

(b) What are uses of consistency limits.

(c) Differentiate between primary consolidation and secondary consolidation.

(d) What do you mean by Uniformity Coefficient and Coefficient of Curvature.

(e) Name the different engineering properties of soil.

(f) What do you mean by Seepage Velocity.

(g) What are the factors that affect compaction.

(h) Differentiate between void ratio and porosity.

(i) What is Mohr's strength theory for soils..

(j) Prove that Se = wG.

PART B **(5 × 8 = 40)**

Q2. a) What do you understand about index properties of soil. What is their importance.

b) Differentiate between dry sieve analysis and wet sieve analysis. Why the wet sieve analysis is required

Or

What is the use of classification of soils. Discuss Indian standard classification system.

[CO1]

Q3. A soil sample has a dry density of 1.816gm/ml in the natural condition. When 410

gm of soil was poured in a vessel in a very loose state, its volume was 290ml. The same soil when vibrated and compacted was found to have a volume of 215ml. Determine the relative density.

OR

A soil specimen has a water content of 10% and a wet unit weight of 20kN/m^3.If the specific gravity of solids is 2.70. Determine the dry unit weight, void ratio and the degree of saturation. Take γ_w=10KN/m^3. **[CO1]**

Q4. Differentiate between normally consolidated and over consolidated soils. How would you determine the over-consolidation pressure.

OR

Describe Standard Proctor Test and Modified Proctor Test. How would you decide the type of the test to be conducted. **[CO2]**

Q5. How would you determine the average permeability of a soil deposit consisting of a number of layers. What is its use in soil engineering.

OR

Explain the different methods for the determination of the coefficient of permeability in a laboratory. **[CO3]**

Q6. Discuss the friction circle method for the stability analysis of slopes. Can this method be used for purely cohesive soil.

OR

Describe the direct shear test. Explain its principle in detail. Also give the merits and demerits of the test. **[CO4]**