Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech., Summer 2018 - 19 Examination

Semester: 4 **Date: 08/05/2019**
Subject Code: 03104255 **Time: 02:00 pm to 04:30 pm**
Subject Name: Geotechnical Engineering-I **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 **Objective Type Questions** - (Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark) **(15)**

1. _____ is a branch of geology that deals with study of minerals.
   (a) paleontology (b) petrology
   (c) minerology (d) hydrogeology
2. soil particle having size more than 4.75 mm is _____
   (a) Sand (b) gravel
   (c) silt (d) clay
3. Which clay mineral show high swelling property?
   (a) Kaolinite (b) Illite
   (c) Montmorillonite (d) chlorite
4. The soil transported by wind is called
   (a) Aeoline soil (b) Alluvial soil
   (c) Residual soil (d) Talus
5. Silt is denoted by which symbol ?
   (a) S (b) G
   (c) M (d) C
6. Uniformity Coefficient (C_u) is the ratio of _____to _____.
7. Which is the upper most part of earth?
8. Define Activity of soil.
9. Draw a neat sketch two phase diagram of soil.
10. Define liquid limit of soil.
11. What do u mean by weathering of rocks?
12. Define dry Density.
13. Enlist different types of soil water.
14. What do u mean by compaction of soil ?
15. Define the Darcy's law.

Q.2 **Answer the following questions. (Attempt any three)** **(15)**

A) What is the importance of geology for civil engineering?
B) Explain I.S classification system of soil.
C) Describe step by step procedure to perform liquid limit test in the laboratory.
D) A soil sample has a porosity of 40 percent. The specific gravity of solids is 2.70. Calculate (a) void ratio, (b) dry density, and (c) unit weight if the soil is completely saturated.

Q.3 A) According to the mode of origin, give the classification of rocks. **(07)**
B) Derive $\gamma_d=\gamma_b/(1+w)$ **(08)**

OR

B) A soil has liquid limit of 33% and plastic limit of 20%. Determine: i) plasticity index ii) liquidity index iii) consistency index if it has natural water content of 25%. **(08)**

Q.4 A) Enumerate the type of weathering. Distinguish between physical and chemical weathering. **(07)**

OR

A) Explain the factors affecting permeability of soil. **(07)**
B) What are the different types of soil structures occur in nature. Describe each in brief. **(08)**