

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2019

Subject Code: 2130606

Date: 18/06/2019

Subject Name: Geotechnics & Applied Geology

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Discuss briefly the scope of Geotechnical engineering in relation to Civil Engineering.	03
	(b) Define moisture content in soil. Draw phase diagram for fully saturated soil, partially saturated soil and fully dry soil, with all notations	04
	(c) What is an earthquake? What are the causes of earthquakes? Describe in brief.	07
Q.2	(a) Enlist types of soil water. Explain any two in short.	03
	(b) Write short note on honey comb structure and flocculated structure with neat diagrams.	04
	(c) Define liquid limit of clay. How to obtain liquid limit of clay in laboratory?	07
	OR	
	(c) Write step by step procedure of sieve analysis test for obtaining particle size distribution curve of soil.	07
Q.3	(a) What is flow net? What are the characteristics of flow net?	03
	(b) Explain different consistency limits and soil states with respect to volume and water content using neat sketch.	04
	(c) Discuss the different factors affecting permeability of soil, in detail.	07
	OR	
Q.3	(a) Define Darcy's law. Explain its validity.	03
	(b) Enlist the limitations of sedimentation analysis.	04
	(c) A horizontal stratified deposit of 3 layers of soil consists of thickness & permeability as; Top layer (3 m thick) is 3×10^{-3} cm/s middle layer (2 m thick) is 6.5×10^{-2} cm/s and bottom layer (4 m thick) is 7×10^{-4} cm/s. Find the equivalent permeability in horizontal and vertical direction.	07
Q.4	(a) Define and explain the process of chemical weathering.	03
	(b) Write short note on rock cycle.	04
	(c) Describe geology. Explain applications of geology in Civil Engineering.	07
	OR	
Q.4	(a) Explain the terms: evaporation and transpiration	03
	(b) What do you understand by the term liquifaction?	04
	(c) Explain plate boundaries. Briefly explain types of plate boundaries with neat sketches.	07
Q.5	(a) Define aquifer, aquitard and aquiclude.	03
	(b) Distinguish between the following; (i) Normal faults and Reverse faults; (ii) Dip and Strike.	04
	(c) What is remote sensing? Explain the application of remote sensing in engineering geology.	07

OR

- Q.5**
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|-----|--|-----------|
| (a) | What are the laws of stratigraphy? | 03 |
| (b) | Describe landslide. Which factors are responsible for landslides? | 04 |
| (c) | What are faults? How they are classified? Illustrate with neat and suitable diagram. | 07 |
