GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III (NEW) EXAMINATION – SUMMER 2021

Subject Code:3130606   **Date:06/09/2021**
Subject Name:Geotechnical Engineering
Time:10:30 AM TO 01:00 PM   **Total Marks:70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)** Explain three phase of soil.	**03**
	(b) Explain soil formation in Geological cycle.	**04**
	(c) What is the scope of geotech engineering in the field of civil engineering?	**07**
Q.2	**(a)** What is particle size distribution?	**03**
	(b) A soil has a water content of 10% and a unit weight of 20 kN/m^3. If the gravity of soil mass is 2.70, determine the dry unit weight , void ratio and degree of saturation.	**04**
	(c) What do you mean by consistency of soil? How is it determined?	**07**
	OR	
	(c) Explain the grain size distribution by using sieve analysis method.	**07**
Q.3	**(a)** What is platicity index?	**03**
	(b) Discuss the IS classification system.	**04**
	(c) State and explain factors affecting permeability.	**07**
	OR	
Q.3	**(a)** Distinguinsh between free water and held water.	**03**
	(b) Describe the spring analogy for primary consolidation .	**04**
	(c) Ennumerate the factors affecting bearing capacity and explain in detail.	**07**
Q.4	**(a)** Describe triaxial shear test..	**03**
	(b) In a consolidted drained triaxial test , a specimen of claybfails at a cell pressure of 60 kN/m^2. The effective shear parameters are C' = 15 kN/m^2 ,and Ø'= 20^0 , Determine the compressive strength.	**04**
	(c) What is Mohr's strength theory? Sketch typical strength envelope for a clean sand	**07**

OR

Q.4	**(a)** What are the different types of earth pressure? Give examples.	**03**
	(b) Write short note on Earth pressure at rest.	**04**
	(c) Discuss the assumption in the Rankine's theory of earth pressure.	**07**
Q.5	**(a)** Discribe the method of locating centre of critical slip circle.	**03**
	(b) What are the different types of the slope failure?	**04**
	(c) Write a short note on 'Swedish circle method'.	**07**

OR

Q.5	**(a)** State different types of the shallow foundation.Explain any one with neat sketch.	**03**
	(b) Write short note on group action and efficiency of pile group.	**04**
	(c) Describe plate load test with naet sketches.	**07**

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