Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI • EXAMINATION – WINTER • 2014

Subject Code: 160606   **Date: 08-12-2014**

Subject Name: Geotechnical Engineering-II

Time: 02:30 pm - 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.**

Q.1	**(a)**	Describe culmann's method for the stability analysis of homogeneous slopes. What are its limitation ?	**07**
	(b)	A new canal is excavated to a depth of 5m below ground level through a soil having the following characteristics: c= 14Kn/m², ϕ=15°,e=0.8 and G=2.70. the slope of banks is 1in 1. Calculate the factor of safety with respect to cohesion when the canal runs full. If it is suddenly and completely emptied, what will be the factor of safety?	**07**
Q.2	**(a)**	A retaining wall 9 m high retains a cohesionless soil, with an angle of internal friction 33°. The surface is level with the top of the wall. The weight of the top 3 m of the fill is 21 kN/m³. Find the magnitude and point of application of the resultant active thrust.	**07**
	(b)	Discuss the various landslides remedial measures.	**07**
		OR	
	(b)	Determine the safe bearing capacity of a strip footing 1.5m wide and 1.5m depth resting on a dry sand bed. Consider (γ_{sand}=18 kN/m² and bearing capacity factors N_c 35.5, N_q =23.2, N_γ=22.0, corresponding to ϕ=38° and factor of safty=3).	**07**
Q.3	**(a)**	State functions of foundation. State the causes of failure of foundation. Explain any one method of improving bearing capacity of soil.	**07**
	(b)	Differentiate between finite and infinite slopes.	**07**
		OR	
Q.3	**(a)**	Enlist factor affecting the bearing capacity and explain any two in detail.	**07**
	(b)	What is a stability number? What is its utility in the analysis of stability of slopes?	**07**
Q.4	**(a)**	What is coulomb's wedge theory? Compare Rankine's theory and coulomb's theory.	**07**
	(b)	Describe " Negative skin friction"	**07**
		OR	
Q.4	**(a)**	Explain swidish circle method of stability analysis.	**07**
	(b)	What are the different types of earth pressure? Give examples.	**07**
Q.5	**(a)**	What is pressure bulb? Explain its use.	**07**
	(b)	Discuss the Electric Resistivity Method for sub soil Investigation.	**07**
		OR	
Q.5	**(a)**	Elaborate the conditions where a pile foundation is more suitable than a shallow foundation.	**07**
	(b)	Differentiate between General shear failure and local shear failure with neat sketch.	**07**

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