Seat No.:	Enrolment No.

Subject Code: 160606

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI • EXAMINATION - WINTER • 2014

Date: 08-12-2014

Subject Name: Geotechnical Engineering-II Time: 02:30 pm - 05:00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** 07 Describe culmann's method for the stability analysis of homogeneous slopes. (a) What are its limitation? A new canal is excavated to a depth of 5m below ground level through a soil **(b)** 07 having the following characteristics: $c = 14 \text{Kn/m}^2$, $\phi = 15^\circ$, e = 0.8 and G = 2.70. the slope of banks is 1 in 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? **Q.2** A retaining wall 9 m high retains a cohesionless soil, with an angle of internal 07 (a) 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. Discuss the various landslides remedial measures. **(b) 07** OR Determine the safe bearing capacity of a strip footing 1.5m wide and 1.5m depth **07 (b)** resting on a dry sand bed. Consider ($\gamma_{sand}=18 \text{ kN/m}^2$ 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). **Q.3** (a) State functions of foundation. State the causes of failure of foundation. Explain **07** any one method of improving bearing capacity of soil. Differentiate between finite and infinite slopes. **(b) 07** OR 07 **Q.3** Enlist factor affecting the bearing capacity and explain any two in detail. (a) What is a stability number? What is its utility in the analysis of stability of 07 **(b)** slopes? **Q.4** What is coulomb's wedge theory? Compare Rankine's theory and coulomb's **07** (a) Describe "Negative skin friction" **(b)** 07 **Q.4** Explain swidish circle method of stability analysis. 07 (a) What are the different types of earth pressure? Give examples. **(b)** 07 (a) What is pressure bulb? Explain its use. 07 **Q.5** Discuss the Electric Resistivity Method for sub soil Investigation. 07 **(b)** Q.5 (a) Elaborate the conditions where a pile foundation is more suitable than a shallow **07** foundation. Differentiate between General shear failure and local shear failure with neat 07 **(b)** sketch. ********