Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-Vth Examination December 2010

Subject code: 152203
Subject Name: Rock Mechanics

Date: 16 /12 /2010 **Time: 03.00 pm - 05.30 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)**	Define the Permeability. Give the Longitudinal and Radial tests to determine the permeability of rocks.	**07**
	(b)	List out the Mechanical properties of rocks. Explain Tri-axial compressive strength with neat sketch.	**07**
Q.2	**(a)**	Write a note on Flat Jack test to determine the strength of In-situ rocks.	**07**
	(b)	Write a note on deformability of rocks.	**07**
		OR	
	(b)	Explain Porosity and Thermal properties of rocks.	**07**
Q.3	**(a)**	Explain "Creep in rock mass" under combined loading condition.	**07**
	(b)	Explain Failure of rocks. Give the types of Failure.	**07**
		OR	
Q.3	**(a)**	Explain measurement of Creep in rocks.	**07**
	(b)	Discuss Mohr's and Coulomb theories of Failure. Give the conclusion on Strength and Failure criteria of rocks.	**07**
Q.4	**(a)**	Explain In-situ Determination of Elastic properties of rocks by dynamic method.	**07**
	(b)	Ground water flow in rock masses.	**07**
		OR	
Q.4	**(a)**	What is Rheology? Explain "The Kelvin Model"	**07**
	(b)	List out the different methods for measurement of water pressure. Explain any two methods with neat sketches.	**07**
Q.5	**(a)**	Factors affecting on permeability of soil.	**07**
	(b)	What is consolidation of soil? Explain types of consolidation.	**07**
		OR	
Q.5	**(a)**	Describe the consolidometer test for soil. Show how the results of this test are used to predict the rate of settlement and magnitude of settlement.	**07**
	(b)	Explain Direct Shear Test to measure the shear strength of soil.	**07**

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