

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V • EXAMINATION – SUMMER 2013****Subject Code: 152203****Date: 21-05-2013****Subject Name: Rock Mechanics****Time: 10:30 pm 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.

- Q.1** (a) Define rock mechanics. Give the applications and limitations of rock mechanics. **07**  
 (b) Give classification of strength. Describe uniaxial unconfined compressive strength with neat sketch. **07**
- Q.2** (a) List out physical and mechanical properties of rocks. What information we get out of them? Explain Density property of rocks. **07**  
 (b) Write a note on cable jacking test to determine the strength of In-situ rocks. **07**
- OR**
- (b) Write a note on radial and longitudinal test for the measurement of permeability in rock masses. **07**
- Q.3** (a) Explain ground water flow in rock mass. **07**  
 (b) Discuss Mohr's and Coulomb theories of Failure. Give the conclusion on Strength and Failure criteria of rocks. **07**
- OR**
- Q.3** (a) Explain any two methods in brief of the Measurement of water pressure with neat sketch. **07**  
 (b) Determine the hydro-fracturing in rocks in pre-mining state of stress. **07**
- Q.4** (a) Explain In-situ Determination of Elastic properties of rocks by dynamic method. **07**  
 (b) Explain "Creep in rock mass" under combined loading condition. **07**
- OR**
- Q.4** (a) Write a note on types of waves by dynamic properties of rock **07**  
 (b) What is rheology? Explain Kelvin model. **07**
- Q.5** (a) What is Consolidation of soil? Explain types of consolidation. **07**  
 (b) Explain Griffith criteria of fracture initiation in rock masses. **07**
- OR**
- Q.5** (a) Explain Factors affecting on permeability of soils. **07**  
 (b) Describe the consolidometer test for soil. **07**

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