

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V • EXAMINATION – WINTER 2013****Subject Code: 152203****Date: 04-12-2013****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. List out different physical and mechanical properties of rocks. Explain any one. **07**
- (b) Give classification of strength. Add a note on uniaxial unconfined compressive strength. **07**
- Q.2** (a) What do you mean by rock mechanics? Give applications of it. **07**
- (b) Write a note on radial and longitudinal test for the measurement of permeability in rock masses. **07**
- OR**
- (b) Write a note on Flat Jack test to determine the strength of In-situ rocks. **07**
- Q.3** (a) What do you mean by creep in rocks? Explain measurement of creep in rocks. **07**
- (b) Define failure. Give types of failure. Discuss Mohr's and Coulomb theories of Failure. **07**
- OR**
- Q.3** (a) Define rheology. List out different rheological models. Explain any one. **07**
- (b) Describe Griffith's theory of fracture initiation in the rock mass with figure. **07**
- Q.4** (a) What do you mean by consolidation of soils? Explain consolidation test with neat sketch. **07**
- (b) Explain Direct Shear Test to measure the shear strength of soil. **07**
- OR**
- Q.4** (a) Give factors affecting permeability of soils. **07**
- (b) Which sources are affected to pre-mining state of stress? Determine the hydro-fracturing in rocks in pre-mining state of stress. **07**
- Q.5** (a) Discuss static and dynamic moduli of elasticity. **07**
- (b) List out the different methods for measurement of water pressure. Explain any one method for measuring the water pressure with neat sketch. **07**
- OR**
- Q.5** (a) Which parameters influencing wave velocity? Add a note on: "Types of waves." **07**
- (b) Explain ground water flow in rock mass. **07**

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