

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V • EXAMINATION – SUMMER • 2014****Subject Code: 152203****Date: 19-06-2014****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) Give the name of different physical properties of rocks. 07  
List out the factors responsible for it. Explain porosity properties of rocks.
- (b) Define the term Rock Mechanics. 07  
Explain in detail the field of application of rock mechanics.
- Q.2** (a) What is hardness of rock? 07  
Describe the mohr's scale of hardness.
- (b) What is rheology? 07  
List out different rheology models. Explain Kelvin model.
- OR**
- (b) What is strength of rocks? 07  
Write a short note on Tensile strength of various rocks.
- Q.3** (a) Define Creep in rocks? 07  
Write a short note on estimation of creep deformation in rocks.
- (b) Write a note on radial and longitudinal test for the measurement of permeability in rock masses. 07
- OR**
- Q.3** (a) Discuss static and dynamic moduli of elasticity 07
- (b) Which parameters influencing wave velocity? 07  
Discuss different types of waves by dynamic properties of rock.
- Q.4** (a) Explain direct shear test with proper figure. 07
- (b) Describe the Griffith's theory in rock mass. 07
- OR**
- Q.4** (a) Explain Flat Jack test to determine the strength of In-situ rocks. 07
- (b) Determine the hydro-fracturing in rocks in pre-mining state of stress. 07
- Q.5** (a) Explain ground water flow in rock mass. 07
- (b) What is Consolidation of soil? 07  
Describe the consolidometer test for soil.
- OR**
- Q.5** (a) List out different methods of the Measurement of water pressure. 07  
Explain any one in briefly.
- (b) What is mean by compaction of soil? 07  
Add a note on Factors affecting on permeability of soils.

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