

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER V • EXAMINATION – WINTER - 2012****Subject code: 152203****Date: 17-01-2013****Subject Name: Rock Mechanics****Time: 02:30 pm to 05:00 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) What is rock mechanics? Give the applications and limitations of rock mechanics. **07**

(b) Which are the responsible factors for mechanical properties of rock masses? Write a note on elasticity and plasticity of rocks. **07**

Q.2 (a) Explain electrical, thermal and swelling properties of rocks. **07**

(b) Write a note on radial and longitudinal test for the measurement of permeability in rock masses. **07**

OR

(b) Explain fault and fold as a defects in rock masses. **07**

Q.3 (a) Give the stress analysis in isotopic rocks under dynamic loading. **07**

(b) Explain ground water flow in rock mass. **07**

OR

Q.3 (a) Determine the hydro-fracturing in rocks in pre-mining state of stress. **07**

(b) Give the instruments used for measurement of water measurement. **07**

Q.4 (a) What is rheology? Explain Kelvin model. **07**

(b) Explain Griffith criteria of fracture initiation in rock masses. **07**

OR

Q.4 (a) What is creep? Give the measurement of creep in rocks. **07**

(b) Explain kinds of failure in different material. Give the conclusion on strength and failure criteria. **07**

Q.5 (a) Which factors are influenced wave velocities? Add a note on static and dynamic moduli of elasticity. **07**

(b) Write a note on flat-jack test for measurement of strength of rocks. **07**

OR

Q.5 (a) Give the consolidation and compaction properties of soil. **07**

(b) Classify the soils on the basis of consistency. **07**
