

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. Sem. - V - Examination – June- 2011****Subject code: 152203****Subject Name: Rock Mechanics****Date: 24/06/2011****Time: 10:30 am – 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) What is meant by hardness of rocks? Discuss the Mohr's scale of hardness. **07**
(b) How does information about elasticity and plasticity of a rock mass help in designing structures over them? **07**

- Q.2** (a) Explain swelling and anisotropy in rocks. **07**
(b) Which factors are responsible for rock strength? Add a note on Uniaxial compressive strength of the rock. **07**

OR

- (b) Write a short note on Tensile strength of various rocks. **07**

- Q.3** (a) Discuss static and dynamic moduli of elasticity. **07**
(b) Which tests are carried out for an investigation of in-situ strength of the rock mass? Explain any one in brief. **07**

OR

- Q.3** (a) Explain the hydro-fracturing tests for measuring in-situ stresses in mining. **07**
(b) Explain the cable jacking test. **07**

- Q.4** (a) What is Creep in rocks? Write a short note on estimation of creep deformation in rocks. **07**
(b) What is meant by the failure in rocks? Write a note on mechanism of failure in different plastic materials. **07**

OR

- Q.4** (a) Discuss the Griffith's theory in rock mass. **07**
(b) Write notes on: Bingham model and Burger model. **07**

- Q.5** (a) What is consistency of soil? Explain limits of it. **07**
(b) Explain "Darcy's law for the water flow.". **07**

OR

- Q.5** (a) Which are the different factors to classify the soil? Explain in brief. **07**
(b) Discuss any one method for measuring the water pressure. **07**
