

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- Vth SEMESTER–EXAMINATION – MAY/JUNE - 2012

Subject code: 152203

Date: 04/062012

Subject Name: Rock Mechanics

Time: 02:30 pm – 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)** List out different physical and mechanical properties of rocks. Which factors are responsible for the mechanical properties of rock masses? Explain elasticity and plasticity. **07**
- (b)** Write the notes on Porosity, Density and Moisture content. **07**
- Q.2 (a)** What are the problems of Rock mechanics? Explain different discontinuities and defects in rock masses. **07**
- (b)** What is permeability? Write a note on experimental determination of permeability. **07**
- (b)** Write a note on Triaxial compressive strength. **07**
- Q.3 (a)** Which factors are important for the planning a piezometer installation to measure water pressure in rock masses. **07**
- (b)** What is soil profile? Classify the soils. Write Mohr-Coulomb theory. **07**
- Q.3 (a)** Write a note on Darcy's law. **07**
- (b)** Discuss Consolidation in soil. **07**
- Q.4 (a)** Explain Creep and its measurement in the rocks. **07**
- (b)** Explain "Rheological models are time – deformation – dependent stress models" with the help of Kelvin model. **07**
- Q.4 (a)** What is failure in rocks? Write a note on yield criteria of failure theories. **07**
- (b)** Write a note on Griffith's theory. **07**
- Q.5 (a)** Explain In-situ determination of Elastic properties of rocks by dynamic method. **07**
- (b)** Explain Cable Jacking test. **07**
- Q.5 (a)** Explain Static and dynamic moduli of elasticity. **07**
- (b)** Explain Flat jack technique. **07**
