

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2152204****Date: 31/05/2019****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) Describe the various uses of Rock Mechanics. **03**
(b) Explain the engineering properties of soil. **04**
(c) What are the dynamic properties of rock? Explain them. **07**
- Q.2** (a) List out the Mechanical properties of rocks. **03**
(b) Explain swelling and anisotropy in rocks. **04**
(c) Explain in-situ elastic properties of rock. **07**
- OR**
- (c) How abrasivity is determined in rock? **07**
- Q.3** (a) Explain types of consolidation. **03**
(b) Explain Isotropic and Anisotropic Rock. **04**
(c) Explain Failure of rocks. Give the types of Failure. **07**
- OR**
- Q.3** (a) Write note on Analysis of Stress. **03**
(b) Write a note on Thermal Properties of Rock. **04**
(c) Write a note on Triaxial compressive strength. **07**
- Q.4** (a) What is application of rock mechanics in mining? **03**
(b) Explain ground water flow in rock mass. **04**
(c) Explain Moh's and Griffith criteria of rock failure. **07**
- OR**
- Q.4** (a) Write short note on Water influence on rock mass. **03**
(b) Write note on Permeability of rocks. **04**
(c) What is rheology? List out different rheology models. Explain Kelvin model. **07**
- Q.5** (a) Define the following terms: (1) Permeability (2) Viscosity (3) Elasticity. **03**
(b) What are the pre-mining stress in rock mass. **04**
(c) Write a note on the hydro-fracturing in rocks in pre-mining state of stress. **07**
- OR**
- Q.5** (a) Explain the Mohr's scale of hardness. **03**
(b) Define the following terms: (1) Rock (2) Density (3) Mineral (4) Strength. **04**
(c) Define creep? Give the measurement of creep in rocks. **07**
