

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**M.Tech. Winter 2017 - 18 Examination**

**Semester: 1**  
**Subject Code: 03215102**  
**Subject Name: Rock Mechanics**

**Date: 28/12/2017**  
**Time: 2:00pm-4:30pm**  
**Total Marks: 60**

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**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 A) Define: 1) Competent Rock 2) In Competent Rock 3) Chunk 4) Rock 5) Core (05)**

**B) Short Note on Igneous Rocks. (05)**

**C) Explain RQD Method with Example. (05)**

**Q.2 Answer the following questions. (Attempt any three) (Each five mark) (15)**

**A) Triaxial test on rock**

**B) Explain Linear elastic material & Perfectly elastic material**

**C) Tensile test on rock**

**D) Explain Mechanism of Rock bolting**

**Q.3 A) The coefficient of friction for 3 rocks are 0.8, 0.75, 0.7 respectively. Estimate the theoretical ratios (07)**  
of uniaxial compressive strength & uniaxial tensile strength for the given rock. If the tensile strength as calculated in the laboratory are  $70 \text{ Kg/cm}^2$ ,  $60 \text{ Kg/cm}^2$  &  $50 \text{ Kg/cm}^2$  Use Mohr Coloumb's & Modified Griffith Criterion of failure.

**B) Explain with neat sketch Stress Strain Characteristics of Rock (08)**

**OR**

**B) Explain Factors affecting strength of rock. (08)**

**Q.4 A) Which are the different failure theories of criterion of failure? Explain Classical theories (07)**

**OR**

**A) Explain Principles of Design of Rock bolt system (07)**

**B) If core run is 200 cm, core recovery was 88% & RQD is 78 %. How much core length is (08)**  
disregardless. If 14 % core length is further disregarded out of the disregard less core length, how RQD is modified? Classify the rocks in both cases.