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15MN64

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Rock Mechanics

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Discuss on scope, importance development and application of rock mechanics in mining engineering, with suitable examples. **(10 Marks)**
   b. Name the discontinuities in rock known to you and explain how they influence mining operations/activities with suitable examples. **(06 Marks)**

OR

2 Write short notes on:
   a. Mapping and hemispherical projection of joints/discontinuities. **(08 Marks)**
   b. Barton's shear strength of joints. **(08 Marks)**

Module-2

3 Discuss on the following:
   a. Mohr's circle of stress **(10 Marks)**
   b. Secondary principal stress in two dimension **(06 Marks)**

OR

4 Discuss on the following:
   a. Stress-strain relationship. **(08 Marks)**
   b. Elastoplastic behavior of rocks. **(08 Marks)**

Module-3

5 Explain with a suitable diagram how the uni-axial compressive strength of a rock sample is determined in laboratory as per ISRM suggested methods. **(16 Marks)**

OR

6 Write short notes on:
   a. Tri-axial strength **(08 Marks)**
   b. Protodyakonov strength index. **(08 Marks)**

Module-4

7 Explain with the help of a line diagram "flat jack" method of in-situ measurement of rocks. **(16 Marks)**

OR

8 Explain any one theory of rock failure, with suitable diagrams. Give its applications and limitations. **(16 Marks)**

Module-5

9 Explain in detail how static elastic constant of a rock is determined. What are the precautions to be observed during such experiment? **(16 Marks)**

OR

10 What is a rheological model? Explain in detail how rheological models are used to determine rock properties, with suitable examples. **(16 Marks)**

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