Code No: 155DA **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, February - 2022
ROCK MECHANICS
(Civil Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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1.a) Explain the Geo-mechanical rock mass classification.
b) A dry rock sample of Diameter 50 mm and length 100 mm weighs 300g, after saturating in brine solution at specific gravity 1.05, its weight increased to 330g. Calculate the porosity of the rock sample in percentage. [7+8]

2.a) Explain the Rock Structure Rating (RSR).
b) Explain about Rock Mass Rating (RMR). [7+8]

3.a) Explain the method of determining tensile strength of rocks as per ISRM standards. How do you report the test results?
b) Explain the factors affecting the compressive strength of rocks. [7+8]

4.a) Discuss the method of determining the triaxial strength of rocks.
b) Explain the method determining slake durability index of rocks. [7+8]

5.a) Define dynamic elastic constants and state how they are related to dynamic wave velocities.
b) Explain the strength criteria for isotropic intact rocks. [7+8]

6.a) Discuss the "Toppling failure" with neat sketch.
b) Draw the diagram of a pit slope undergoing circular failure and mention the equilibrium equation and define the parameters used. [7+8]

7.a) Distinguish between factor of safety of a dry slope and a wet slope underground planar Failure.
b) Distinguish between a planar failure and wedge failure and state the conditions under which each type of failure occur. [7+8]

8.a) Describe the drilling and blasting operation in drifting.
b) Find out the toe burden of a vertical hole located in a 15 m bench having a face slope angle of 20^0 and possessing a crest burden of 2.0 m? [7+8]

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