Uva Wellassa University, Sri Lanka
Faculty of Science and Technology
Mineral Resources and Technology Degree Programme
2nd Semester Examination – September/October 2013

Uva Wellassa University

MRT 331-3 - Applied Geophysics and Engineering Geology
Part B

mNumber of Questions : Four (04)
Answer all questions
Time Allocation : One (01) hour
Total Marks : 100
Illustrate your answers with sketches where necessary

1. Cement grouting is a major process of strengthening slopes and foundations, briefly explain structural geological influences on rock grouting. (20 Marks)

2. A sandstone core sample with 50 mm diameter and 134 mm length is composed of quartz (50 %), plagioclase (30 %), biotite (10 %) and calcite cement (10 %). On saturation in water, its wet weight is 22.32 N; after oven drying its weight is 20.37 N.

   (a) Calculate specific gravity of the rock sample

   (b) Calculate dry and wet unit weight (n = 0..15)

   (c) Calculate unconfined compression stress

   ($SG_{quartz} = 2.65$, $SG_{plagioclase} = 2.7$, $SG_{biotite} = 2.95$ and $SG_{calcite} = 2.7$, $\gamma_w = 0.998$ g/cm^3, load at rupture for point load test = 598 kPa) (40 Marks)

3. Briefly describe point load test and slaking and durability for a given rock sample (20 Marks)

4. Briefly point out significances of Rock Quality Designation (RQD) values on Rock Mass Rating (RMR) process. (20 Marks)

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