Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
300 level 1st Semester Examination – Jan. / Feb. 2016
MRT 331-3 Applied Geophysics and Engineering Geology

Uva Wellassa University

Instructions to candidates
Duration: 03 hours
Number of questions: 06
Answer all Questions
Mark allocation: 600 marks

1.

a. What are the most commonly used geophysical methods in mineral exploration? Briefly explain the principle behind each method.
b. Discuss the advantages of using geophysical methods in subsurface exploration programmes. Evaluate their capabilities and limitations.

(100 mark)

2.

a. Describe how residual soils form. Discuss their properties.
b. How would you apply geophysics in geotechnical investigations? Explain with examples.

(100 mark)

3.

a. Describe the preliminary arrangements you would make for a magnetic survey at a local scale. What will be your major concerns? Give reasons.
b. Explain how you would estimate the subsurface extension of a magnetite ore body by carrying out a magnetic survey.

(100 mark)

4.

Describe the following parameters as applied in engineering geology. Explain how you would determine them in a given sample.

a. Moist density
b. Dry density
c. Void ratio
d. Porosity
e. Degree of saturation

(100 mark)

39

5.

a. Describe in detail how Vertical Electrical Sounding (VES) can be used to estimate the depth to the bedrock in a construction site.

b. How do you estimate the thicknesses of different geologic layers?

(100 mark)

6.

Write short notes on the following.

a. Rock failure

b. Stress and strain under compression

c. Hydraulic fracturing

d. Planes of weaknesses in rocks

(100 mark)