

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



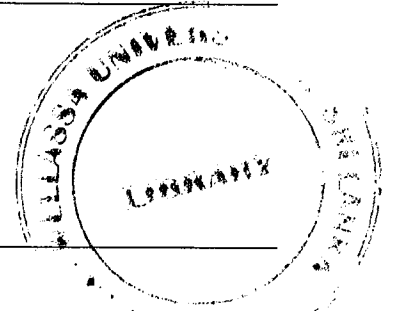
Instructions to candidates

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)

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)

