Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
300 Level 2nd Semester Examination January- 2019

MRT321-2 Mineral Exploration Methods

Instructions to candidates
Duration: 02 hours
Number of Questions: Part A: Essay 03 , Part B: Essay 02
Answer all questions
Mark allocation: 200
Illustrate your answers with sketches/diagrams where necessary

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Part A

01.

a. What are the functions of the senior geologist in the mineral exploration process?
(10 mark)

b. What are the major objectives in following surveys in the mineral exploration process ?
i. Secondary Reconnaissance Survey
ii. Follow-up Survey
(10 mark)

c. Describe the importance of an orientation survey in mineral exploration in detail.
(20 mark)

02. Explain how you would carry out a stream sediment survey to study the distibution of gem minerals in a given drainage basin.
(30 mark)

03. Write short notes on the following.
a. Geobotanical Anomalies
b. Dispersion Halos
c Stages of an Exploration Project
(30 mark)

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Part B

1. Briefly discuss the following topics.
   a. Active and passive geophysical methods
   b. Signal and noise
   c. Conceptual model and numerical model
   d. Airborne survey and land survey
   e. Ground penetration radar (GPR) survey and seismic survey

(50 mark)

2.

a. The variation in gravity data may or may not be caused by geological anomalies. Exploration geophysicists have to use data reduction techniques for isolating the anomalies of true geological origins as gravity anomalies produce very small perturbations relative to gravitational acceleration (i.e. $g = 9.81\ m/s^2$). Briefly discuss four (04) major types of corrections for gravity measurements.

(30 marks)

b. Your company manager asks you to prepare a geological evaluation of a magnetite ore body. This evaluation is ultimately used in design development and production stages. You have reasonable resources for sampling and financial supports. Discuss the processes required to prepare a geological evaluation of the magnetite ore body.

(20 marks)

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