Uva Wellassa University, Sri Lanka
End Semester Examination – September/October 2012

MRT 431-2 – Mineral and Gem Exploration Methods

Duration: Two (02) hours

Uva Wellassa University

Total five (05) questions
Answer **four (04)** questions only
Illustrate your answers with sketches/diagrams where necessary

1.

i. Briefly explain the stages of a mineral exploration project.

ii. Discuss in detail how you could use remote sensing and GIS in mineral exploration.

iii. Explain in detail how you could use geochemistry in mineral exploration.

(25 marks)

2.

i. Write short notes on any four of the following geophysical methods in relation to mineral exploration.

a) Gravity method
b) Magnetic method
c) Seismic method
d) Electrical methods
e) Radiometric
f) GPR method

ii. If you are to carry out an exploration program in an urban terrain, discuss the anticipated problems and ways to overcome them.

(25 marks)

3.

i. Distinguish between primary geochemical environment and secondary geochemical environment. What is their influence in geochemical exploration?

ii. What are pathfinder elements and target elements. Describe how you could use pathfinder elements, target elements and geochemical haloes in mineral exploration.

iii. Explain how you could use the trace element studies in mineral prospecting.

iv. Describe how you could use exploratory multivariate data analysis techniques in exploration programs.

(25 marks)

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4. According to some authors, Sri Lankan land is 80% gem-bearing, yet we don't have a large scale gem prospecting map for Sri Lanka. Explain in detail how you can fulfill this task.

(25 marks)

5. Under the Kalu Ganga Multi-Purpose Development Project, rural land area of enormous size is going to be developed. Once the project is completed most part of the land will be covered by the reservoir or infrastructures. You are been asked to explore for all mineral resources in the area and extract them before the commencement of the project. Explain how you are going to do this assuming you have access to all the required data/facilities/instruments.

(25 marks)