Uva Wellassa University of Sri Lanka
Faculty of Applied Sciences
Department of Science and Technology
3rd Year 1st Semester Examination – July/August 2019

Uva Wellassa University

MRT 351-2 Geophysics

Number of questions: Part A – Twelve (12) Structured, Part B – Two (02) Essay
Answer all questions
Time allocation: Two (02) hours
Marks allocation: 100

Index No.

Part A

1. Distinguish between active and passive geophysical techniques. Give an example for each.

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2. State the physical property detected by each geophysical technique.
   (a) Seismic .....
   (b) Gravity .....
   (c) Resistivity .....
   (d) Magnetic .....
   (e) Electromagnetic.....

3. Giving an example, explain geophysical anomaly.

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4. Briefly describe the two methods of line configuration in a geophysical survey.

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5. How does the station interval of a geophysical survey affect the quality of its output?

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6. Distinguish between global geophysics and applied geophysics.

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7. Explain the condition where a refracted seismic wave from a seismic source can reach a detector before the direct wave.

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8. Briefly describe the nature of particle motion in a Rayleigh wave.

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9. Why don't S-waves propagate through fluids?

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10. State two (02) essential characteristics of a seismic source.

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11. List the components of a moving-coil geophone.

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12. Briefly describe the functions of the transmitter and the receiver in electromagnetic surveys.

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(5 x 12 = 60 marks)

Part B

1. (a) Discuss the nature of electrical current flow in the subsurface.

   (b) Describe the characteristics of the Wenner electrode array.

   (c) Qualitatively interpret H-type and K-type resistivity curves obtained from vertical electrical sounding.

   (d) Describe the application of constant separation traversing and vertical electrical sounding for subsurface investigation.

(20 marks)

2. (a) Describe ferromagnetism of earth materials and its importance in metallic mineral prospecting.

   (b) Discuss secular variation and diurnal variation of earth's magnetic field.

   (c) Explain the principle of a proton precession magnetometer.

   (d) With a suitable example, give a qualitative interpretation of a magnetic anomaly.

(20 marks)

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