UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

FIRST SEMESTER EXAMINATIONS, NOV/DEC 2018

COURSE NO:MA 471
COURSE NAME: Introduction to Geophysics
CLASS: MA IV TIME: 3hrs

Name**:** _____Index Number: _____

Attempt All Questions

1. You are to conduct a seismic geophysical survey on the new UMaT Park opposite K.T. Hall.

   a) List all the equipment you will need to carry out your investigation.

   b) Using a well labelled sketch show how the overburden and underlying phyllites will be detected.

   c) Construct a travel time curve to a distance of 60 m for the park; assume the top overburden is 10 m thick soil layer with P-wave velocity 500 m/s over a phyllite layer 20 m thick with P-wave velocity 1500m/s. What is the crossover distance?

   d) Calculate the critical angle and the critical distance.

   e) Calculate the intercept time T_i using the equation: $T_i = \frac{2Z\sqrt{V_2^2 - V_1^2}}{V_2 V_1}$

   (25 marks)

2. A real estate developer is interested in developing a land at Accra. He intends to have a residential facility with its source of water from groundwater. The waste from this new community will be transported to a land fill site to be located about 50km in a nearby town. What geophysical methods will you recommend for all the projects and why?

   (15 marks)

3. Briefly explain the following terms as used in rock magnetism: Induced magnetism, Thermoremnant magnetization, Diamagnetism, Para-magnetism and Ferromagnetism.

   (10 marks)

4. **a)** Define a fault and name the three main types of faults.

   b) Define an earthquake and briefly explain how they occur.

   c) Name five applications of Geophysical Methods

   (10 marks)

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