



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

Bachelor of Science in Applied Sciences

Second Year Semester I Examination – July / August 2023

PHY 2109 – PHYSICAL GEOLOGY

Time: One (01) hour

Answer two questions including the first question.

1. a) “Plate tectonics” is the theory which states that the Earth’s lithosphere is divided into several plates and move over the mantle (asthenosphere), resulting in various topographical features of the Earth.

Explain how the following topographical features of the ocean are formed.
 - i. Mid oceanic ridge system (06 marks)
 - ii. Trench (06 marks)
 - iii. Island arc (08 marks)
- b) “The rocks which are closer to the mid oceanic ridges are younger than those which are farther away from them”

Justify the above statement. (10 marks)
- c) What are the different types of seismic waves generated by earthquakes? Explain the characteristics of each of them. (20 marks)
- d) Discuss how the seismic waves are used to determine the mantle – outer core boundary of the Earth. (20 marks)
- e) Briefly discuss the features of Seismograms and Travel – Time curves used to determine the epicenter of an earthquake. (20 marks)
- f) Distinguish between the seismogram obtained for an earthquake of long epicenter distance and that for an earthquake of short epicenter distance. (*Hint: comment on the S-P time intervals*)

(10 marks)

2. a) What are minerals and what is the difference between a rock and a mineral? (20 marks)
- b) Briefly discuss the following properties of minerals.
- i. Specific gravity ii. Luster
 - iii. Cleavage iv. Fracture
 - v. Colour and Streak (50 marks)
- c) Briefly explain the three major mineral separation techniques used in *Lanka Mineral Sands Ltd, Pulmoddai, Sri Lanka*. (15 marks)
- d) “*Streak is one of the best properties used in the identification of minerals*”
Justify the above statement. (15 marks)
3. Write **short notes** on the following;
- a) Negative magnitude (in Richter scale) earthquakes. (25 marks)
 - b) Relative age principles used to determine the relative ages of rock strata. (25 marks)
 - c) Rock cycle (25 marks)
 - d) Angle of repose of a granular material. (25 marks)

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