

The National University of Lesotho
BSc. Examination
PG 2421: Introduction to physical geology

January 2024

Duration: 3 hours

Marks: 100

Instructions:

- Answer **Question 1** and **any three**.
 - Where applicable illustrate your answer with diagrams.
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Question 1 (Compulsory)

- a. Define the following terms (14)
- Isotope
 - Radioactive isotope
 - Coral
 - Half life
 - Subduction
 - Organic material
 - Chronological order
- b. List and define 3 disciplines in the study of geology (6)
- c. and give 2 reasons why we have to study geology (5)
- (25)

Question 2

With the help of a clearly labelled profile of the cross-section of Lesotho, discuss the five geological formations that are exposed in Lesotho (25)

(25)

Question 3

- a. Describe the Moh's scale, what it is used for and how it is applied in the study of geology (10)
- b. Describe the rock cycle as well as the energy that is involved in driving the cycle (15)
- (25)

Question 4

- a. Describe the eight mineral properties and how those properties are used to identify or characterise minerals (24)
 - b. Give one example of a halide mineral (1)
- (25)**

Question 5

- a. Describe the shape of the earth and its layers according to chemical composition (10)
 - b. Describe the tectonic processes that are happening at the Great Rift Valley and the effects (8)
 - c. List 7 major tectonic plates (7)
- (25)**

Question 6

- a. Write short notes on how the following can be used to determine absolute or relative **age of the rocks.** (9)
 - i. Sedimentary rocks
 - ii. Radiometric dating
 - iii. Fossils
 - b. Write short notes about Homo Naledi (10)
 - c. Write short notes about the Malmani Dolomites of the Transvaal Super Group (6)
- (25)**