

University of Choice

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
(MMUST)**

**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

MAIN CAMPUS

**FIRST YEAR SECOND SEMESTER EXAMINATIONS
FOR THE DEGREE**

OF

**BACHELOR OF SCIENCE IN DISASTER MITIGATION AND SUSTAINABLE
DEVELOPMENT (DMSD)**

CODE: DSM 103

COURSE TITLE: MINERALS, ROCKS AND SOILS

DATE: 13/4/2023


TIME: 3-5 PM

INSTRUCTIONS TO CANDIDATES

1. This paper consists of **FOUR** questions
2. **QUESTION ONE IS COMPULSORY**
3. Answer **QUESTION ONE AND ANY OTHER TWO QUESTIONS**

TIME: 2 Hours

MMUST observes ZERO tolerance in examination cheating

This Paper consists of 2 printed pages, Please Turn Over 

QUESTION ONE

- (a) Explain what is meant by the term 'SOIL' under the following concepts:
- (i) Soil as a medium of plant growth (2 Marks)
 - (ii) Soil as an organized natural body (2 Marks)
- (b) With the help of a well labeled pic chart, show clearly the composition of an ideal soil. (6 Marks)
- (c) Giving examples of each, distinguish between a 'mineral' and a 'rock'. (5 Marks)
- (d) Give two different reasons why Silicate minerals are the most abundant class of minerals on the earth's crust. (4 Marks)
- (e) Distinguish between the following:
- (i) Lava and magma (2 Marks)
 - (ii) Intrusive igneous rock and extrusive igneous rocks (2 Marks)
 - (iii) High silicon silicate minerals and low silicon silicate minerals (2 Marks)
- (f) A 500 g of wet soil contains 30 g of water. Calculate the water content on (i) a wet mass basis; and (ii) on a dry mass basis? (5 Marks)

QUESTION TWO

With the help of a well labeled diagram, explain the main processes of the rock cycle and its implications in natural resource management. (20 marks)

QUESTION THREE

In general, silicate minerals can be considered as belonging to two groups, namely Dark Silicate minerals and Light Silicate minerals. Outline using examples, the differences between these two types of silicate minerals. (20 Marks)

QUESTION FOUR

Evaluate the factors that influence soil erosion by water on cropland. How do these factors relate to the factor values in the Universal Soil Loss Erosion (USLE)? (20 Marks)