



*(University of Choice)*

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

**(MAIN CAMPUS)**

**UNIVERSITY MAIN EXAMINATIONS**

**2023/2024 ACADEMIC YEAR**

**SECOND YEAR FIRST SEMESTER EXAMINATIONS**

**FOR THE DEGREE OF**

**BACHELOR OF SCIENCE IN**

**CIVIL AND STRUCTURAL ENGINEERING**

**BACHELOR OF TECHNOLOGY IN BUILDING CONSTRUCTION**

**BACHELOR OF TECHNOLOGY EDUCATION IN BUILDING AND CIVIL  
TECHNOLOGY**

**COURSE CODE: CSE 225**

**COURSE TITLE: ENGINEERING GEOLOGY**

**DATE: 11<sup>TH</sup> DECEMBER 2023      TIME: 3 P.M – 5 P.M**

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**Instructions to Candidates**

1. This paper contains FIVE questions
2. **Question ONE (1) is Compulsory**
3. **Attempt a total of FOUR questions in this booklet.**
4. Marks for each question are indicated in the parenthesis

**Examination duration is 2 hours**

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over →

**Question 1** **COMPULSORY** **(30 Marks)**

- a) Explain Well point technique in relation to groundwater dewatering [5 Marks]
- b) Describe key characteristics about the earth's structure [5 Marks]
- c) Describe the following processes in relation to engineering geology:
- i) Weathering and Dedudation [2 Marks]
  - ii) Degradation and aggradation [2 Marks]
  - iii) Faulting and folding [1 Mark]
- d) List **FIVE** characteristics of igneous rocks [5 Marks]
- e) Briefly discuss the composition of the earth's mantle as it relates to engineering Geology. [5 Marks]
- f) Describe the process and products of Geomorphic processes in engineering geology [5 Marks]

**Question 2** **(20 Marks)**

- a) With an aid of a sketch, describe distinct regions of earth structure [7 Marks]
- b) Describe evidences supporting the theory of plate tectonics in relation to engineering Geology [4 Marks]
- c) Discuss weathering processes that remove and add material at the earth's surface in Geomorphological process [5 Marks]
- d) What is the significance of the geological structures in the civil engineering project? [4 marks]

**Question 3** **(20 Marks)**

- a) Describe major characteristics of earthquake [5 marks]
- b) Briefly discuss Seismic refraction method as one of Geophysical investigation methods [8 Marks]
- c) What is the significance of the geological structures in the civil engineering project? [4 marks]
- d) Describe the importance of igneous rocks in engineering geology [3 Marks]

**Question 4** **(20 Marks)**

- a) With an aid of a diagram describe geomorphic processes [8 Marks]
- b) Briefly describe plate boundaries in earth movement that explain the concept of engineering Geology in rift valley formation [3 Marks]
- c) Briefly describe the importance of geological maps in civil works [6 marks]
- d) Outline the advantages of resistivity method in Geophysical investigation [3 Marks]

**Question 5** **(20 Marks)**

- a) Describe the evidences supporting the theory of continental drift [8 Marks]
- b) Describe rock mechanics in relation to engineering geology [4 Marks]
- c) Discuss the application of geology to civil structural engineering investigation sites [8 marks]