

TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
Department of ARCHITECTURE & BUILT ENVIRONMENT

UNIVERSITY EXAMINATION FOR: DIPLOMA IN ARCHITECTURE DIPLOMA IN QUANTITY SURVEYING

EAR 2104 : GEOLOGY AND CLIMATOLOGY

END OF SEMESTER EXAMINATION

SERIES: JULY 2025

TIME: 2 HOURS

DATE: JULY 2025

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of five questions.

Attempt any THREE questions.

Do not write on the question paper.

QUESTION ONE

- (a) (i) State the principal objective of engineering geologist.
(ii) Outline the FIVE stages of construction where engineering geological studies are important..

(7 Marks)

- (b) Identify and explain FIVE areas in building and civil engineering where geology is applied.

(10 Marks)

- (c) In regards to structure of earth, describe Mantle.

(3 Marks)

QUESTION TWO (20 Marks)



- (a) In regard to igneous rocks, describe TWO processes of their formation. (4 Marks)
- (b) Briefly describe a sill and its formation. (6 Marks)
- (c) With aid of sketches, describe the following types of faults: (10 Marks)
- (i) Vertical
 - (ii) Reversed

QUESTION THREE (20 Marks)

- (a) Outline FOUR typical hazards and other adverse conditions that should be evaluated and mitigated by engineering geologist. (6 Marks)
- (b) (i) Explain the term Liquefaction.
(ii) Outline FIVE factors upon which liquefaction potential depend. (7 Marks)
- (c) Identify and explain TWO factors affecting climate. (5 Marks)
- (d) Briefly explain the importance of climatology in Architecture. (2 Marks)

QUESTION FOUR (20 Marks)

- (a) Identify and describe FOUR elements of climate. (8 Marks)
- (b) Identify and explain FOUR characteristics of tropical climate. (8 Marks)
- (c) (i) Distinguish between macro-climate and micro-climate.
(ii) Briefly explain the importance of macro-and micro-climate in built environment (4 Marks)

QUESTION FIVE (20 Marks)

- (a) Outline FOUR aims of enhancing micro-climate around building. (6 Marks)
- (b) In regard to effect of climate on architectural expressions, explain THREE areas of consideration in respect of Sun. (6 Marks)
- (c) The form of a building can have a great effect on the impact of wind. Outline EIGHT ways of ensuring safety on buildings. (8 Marks)