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TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING
TCV4317 : ENGINEERING GEOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: JULY 2025

TIME: 2 HOURS

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 question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE (COMPULSORY) (20 Marks)

- a) Outline the role of geology in Civil Engineering. (6marks)
- b) Briefly discuss the following physical properties of minerals.
i) Hardness ii) Tenacity iii) Luster. (8marks)
- c) Describe the properties of basalts that make them suitable for construction. (6marks)

ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO (20 Marks)

- a) Describe the classification of igneous rocks based on silica content. Give examples.(6marks)
- b) Describe the genetic classification of sedimentary rocks. Give examples. (8marks)
- c) Briefly discuss the metamorphic changes that take place in a rock. (6marks)

QUESTION THREE (20 Marks)

- a) Briefly discuss the main objectives of site investigation. (4marks)
- b) Discuss **Four (4)** earthquake effects. (8marks)

- c) With the aid of sketches, describe;
i) A Fold,
ii) A Fault **(8marks)**

QUESTION FOUR (20 Marks)

- a) Describe the purposes of a dam. **(5marks)**
b) Briefly discuss i) Unconfined aquifer ii) Confined aquifer. **(8marks)**
c) Briefly discuss the **Three (3)** types of **Quarries**. **(7marks)**

QUESTION FIVE (20 Marks)

- a) Briefly discuss the geotechnical effects associated with deformational structures. **(6marks)**
b) Outline the Rock Mass rating system. **(6marks)**
c) Define a tunnel. Describe two tunneling methods. **(8marks)**