



## TECHNICAL UNIVERSITY OF MOMBASA

---

FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**UNIVERSITY EXAMINATION FOR:**  
DIPLOMA IN BUILDING AND CIVIL ENGINEERING  
EBC 2106: ENGINEERING GEOLOGY  
END OF SEMESTER EXAMINATION

**SERIES: AUGUST 2019**

**TIME: 2 HOURS**

**DATE: ----AUG 2019**

### Instructions to Candidates

You should have the following for this examination

- Answer Booklet, examination pass and student ID
- Drawing instruments.
- Scientific calculator

This paper consists of **FIVE** questions.

Attempt **any THREE** questions.

**Do not write on the question paper**

**Mobile Phones are NOT allowed inside the examination room**

### **QUESTION ONE**

(a) Outline **SIX** adverse geological conditions that engineering geologists address.

(6 Marks)

(b) Briefly explain **FOUR** techniques used by engineering geologists in their investigation.

(6 Marks)

(c) Describe the following physical properties of rock forming minerals:

- (i) Luster
- (ii) Tenacity
- (iii) Diaphaneity
- (iv) Streak

(8 Marks)

## **QUESTION TWO**

- (a) Describe the following process of forming igneous rocks.  
(4 Marks)
- (b) Describe a sill and its formation.  
(6 Marks)
- (c) Identify and explain THREE compositional subdivisions of sedimentary rocks based on their mineralogy.
- (d) Briefly describe sedimentary rocks, stating the process of formation  
(4 Marks)

## **QUESTION THREE**

- (a) Identify and describe FOUR metamorphic textures.  
(8 Marks)
- (b) Explain THREE factors upon which the degree of alteration attained during metamorphism depends.  
(6 Marks)
- (c) Describe THREE types of faults.  
(6 Marks)

## **QUESTION FOUR**

- (a) With the aid of a sketch, describe an Overfold.  
(7 Marks)
- (b) Briefly explain the method used to recognize folds in the field.  
(3 Marks)
- (c) Identify and explain FOUR purposes of dam construction.  
(8 Marks)
- (d) Briefly describe the composition of 'Mohale dam'.  
(2 Marks)

## **QUESTION FIVE**

(a) Explain the importance of dimension stone quarries.

(4 Marks)

(b) There are various geological aspects that generally contribute to effective development of a quarry. Outline FOUR of them.

(6 Marks)

(c) In regard to mechanical tunneling, describe the importance of the following rock characteristics:

(i) Toughness

(ii) Abrasiveness

(6 Marks)

(d) Identify and explain FOUR dangerous gases encountered during tunneling.

(4 Marks)