



# **THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

*(A CONSTITUENT COLLEGE OF JKUAT)*

*Faculty of Engineering and Technology*

**DEPARTMENT OF BUILDING AND CIVIL ENGINEERING  
HIGHER DIPLOMA**

**EBC 3114 : GEOLOGY**

SPECIAL/SUPPLEMENTARY EXAMINATIONS

**SERIES: MAY, 2011**

**TIME: 2 HOURS**

**Instructions to Candidates:**

Attempt Question **ONE** (COMPULSORY) and any other **TWO** Questions correctly.

## COMPULSORY (30 MARKS)

### Question ONE

- (a) Briefly describe the following groundwater terms:
- (i) Aquifer, Aquiclude, Aquitard
  - (ii) Permeability, Porosity, Hydraulic conductivity
- (12 Marks)
- (b) Outline Geologic factors considered in the identification of Natural Building Stones. (6 Marks)
- (c) Describe the geologic factors that affect selection of gravels and sands. (6 Marks)
- (d) Explain the relevance of the geologic time scale. (6 Marks)

### ANSWER ANY TWO QUESTIONS FROM THIS SECTION (20 MARKS)

### Question TWO

- (a) Differentiate between the following:
- (i) Dike and Sill
  - (ii) Normal fault and Reverse fault
- (4 Marks)
- (b) (i) Describe Luster.
- (ii) List **SIX** descriptive terms used for describing non-metallic luster. (6 Marks)
- (c) Outline the Silica tetrahedral classification of silicate groups. (12 Marks)

### Question THREE

- (a) (i) List **THREE** agents of metamorphism.
- (ii) Explain the processes which the listed agents in 5a(i) cause metamorphism. (6 Marks)
- (b) (i) Explain **FIVE** methods used in prospecting for quarries.
- (ii) Outline **FOUR** limitations of blasting as a method of quarrying. (14 Marks)

#### Question FOUR

(a) Explain the following terms used in sedimentary petrology:

- (i) Diagenesis
- (ii) Lithification
- (iii) Cement

(7 Marks)

(b) Differentiate between the following terms:-

- (i) Profiling and Sounding
- (ii) Cleavage and Fracture
- (iii) Streak and Lustre

(6 Marks)

(c) (i) Explain **FOUR** factors that affect igneous rock textures.

(ii) Define the following igneous textural terms:-

- Basaltic
- Porphyritic

(7 Marks)

#### Question FIVE

(a) Explain **EIGHT** geological considerations made in tunneling.

(4 Marks)

(b) Referring to the geological Map (Fig. 1):

- (i) Draw and label strike lines.
- (ii) Draw Geological section x-y.
- (iii) Find Dip and Strike of beds.
- (iv) Write a brief geological history of the site.

(16 Marks)