



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

*Faculty of Engineering and Technology*

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**DIPLOMA IN BUILDING & CIVIL ENGINEERING**

**EBC 2214: ENGINEERING GEOLOGY I**

**END OF SEMESTER EXAMINATION**

SERIES: AUGUST/SEPTEMBER 2011

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer booklet*

This paper consists of **FIVE** questions in **TWO** sections: **A** and **B**

Answer question **ONE** is compulsory from Section A and any other **TWO** questions from section B

Maximum marks for each question are as shown

This paper consists of **THREE** printed pages

## SECTION A - COMPULSORY

### Question 1

- a) Briefly discuss the role of geology in construction (5 marks)
- b) Briefly explain the modes of formation of igneous rocks (4 marks)
- c) Write short notes on the following igneous structures (18 marks)
- (i) Batholiths
  - (ii) Dykes
  - (iii) Sills
- d) State the sedimentary processes that lead to the formation of sedimentary rocks (3 marks)

## SECTION B (*Answer any TWO questions*)

### Question 2

- a) Outline the **FOUR** categories used to classify igneous rocks (8 marks)
- b) With the aid of illustrations, discuss **FOUR** types of faults (10 marks)
- c) Explain the meaning of metamorphism (2 marks)

### Question 3

- a) Describe the sources of ground water (8 marks)
- b) Explain the meaning of an aquifer (2 marks)
- c) Write short notes on
- i) Contact metamorphism
  - ii) Regional metamorphism (6 marks)
- d) Explain the meaning of the terms (4 marks)
- (i) Schist
  - (ii) Gneiss the use of the following in quarry prospecting

### Question 4

- a) Briefly explain the use of the following in quarry prospecting (8 marks)
- (i) Topographical maps
  - (ii) Aerial photographs
  - (iii) Geological maps
  - (iv) Geophysical methods

- b) State the purposes of Rock tunneling (3 marks)
- c) Explain the meaning of the dam based on engineering geology (2 marks)
- d) Briefly explain the main purposes of dam construction (7 marks)

**Question 5**

- a) Briefly discuss with the aid of sketches **FOUR** types of folds (8 marks)
- b) Write short notes on any **TWO** of the following construction stones:
  - (i) Riprap
  - (ii) Rockfill
  - (iii) Derrick and armouring stone (6 marks)
- c) Outline engineering geological factors that apply in the selection of building stones (6 marks)