



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A CONSTITUENT COLLEGE OF JKUAT)

Faculty of Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

EBC 2214: ENGINEERING GEOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: OCTOBER 2011

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this examination

- *Answer booklet*
- *Mathematical tables/Calculator*

This paper consists of **FIVE** Questions.

Answer **QUESTION ONE** and any other **TWO** Questions.

Maximum marks for each part of a question are as shown.

This paper consists of **THREE PRINTED** pages

QUESTION ONE (COMPULSORY)

- (a) Outline the role of geology in construction (5 marks)
- (b) Briefly discuss the modes of formation of igneous rocks (4 marks)
- (c) Using illustrations, write short notes on the following igneous structure.
- (i) Batholiths
 - (ii) Dykes
 - (iii) Sills (18 marks)
- (d) Identify sedimentary processes that lead to the formation of sedimentary rocks. (3 marks)

QUESTION TWO

- (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) Define metamorphism (2 marks)

QUESTION THREE

- (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.
- (i) Schist
 - (ii) Gneiss (4 marks)

QUESTION FOUR

- (a) Outline the uses of the following in quarry prospecting.
- (i) Topographical maps

- (ii) Aerial photographs
- (iii) Geological maps
- (iv) Geophysical methods. **(8 marks)**
- (b) State the purposes of Rock tunneling. **(3 marks)**
- (c) Explain the meaning of the dam based in engineering geology. **(2 marks)**
- (d) Briefly explain the main purposes of dam construction **(7 marks)**

QUESTION FIVE

- (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 amouring stone **(6 marks)**
- (c) Outline engineering geological factors that apply in the selection of building Stones. **(6 marks)**