THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

((A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN BUILDING & CIVIL ENGINEERING

ECE 2302: ENGINEERING GEOLOGY I

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2012
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions.
Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory - 30 Marks)

a) Outline the role of geology in Civil Engineering. **(5 marks)**

b) Briefly discuss the modes of formation of igneous rocks. **(4 marks)**

c) Outline the processes that are involved in the formation of sedimentary rocks. **(6 marks)**

d) Briefly discuss the following physical properties of minerals:
- **i)** Hardness **(4 marks)**
- **ii)** Tenacity **(4 marks)**
- **iii)** Luster **(2 marks)**

e) Define metamorphism **(2 marks)**

f) Outline **THREE** metamorphic rocks which are foliated. **(3 marks)**

Question Two (20 marks)

a) Briefly discuss the classification of igneous rocks. **(6 marks)**

b) Using illustrations, discuss **FOUR** types of faults. **(8 marks)**

c) What is a geological map? Outline the uses of a geological map. **(6 marks)**

Question Three (20 marks)

a) Outline the purpose of site investigation in civil works. **(10 marks)**

b) Write short notes on:
- **i)** Contact metamorphism
- **ii)** Regional metamorphism **(6 marks)**

c) Using illustrations, explain the difference between an anticline and a syncline in folds. **(4 marks)**

Question Four (20 marks)

a) Briefly discuss the following quarry prospecting methods:
- i) Topographical maps
- ii) Use of Aerial photographs
- iii) Use of Geological maps
- iv) Use of geophysical methods **(8 marks)**

b) Briefly discuss **FOUR** possible earthquake effects. **(8 marks)**

c) Briefly discuss the following classes of sedimentary rocks:
- i) Rudites **(2 marks)**
- ii) Arenitesi **(2 marks)**

Question Five (20 marks)

a) Explain how deformational structures (faults and folds) can have implications in construction. **(6 marks)**

b) What engineering geological factors are applied in the selection of building stones? **(6 marks)**

c) Differentiate between quarrying and mining. **(4 marks)**

d) Outline the effects of quarries. **(4 marks)**