TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE)

ECE 2302: ENGINEERING GEOLOGY

END OF SEMESTER EXAMINATION
SERIES: APRIL 2013
TIME ALLOWED: 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)** in section **A** and any other **TWO** questions from section **B**
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

SECTION A

Question One (Compulsory)

a) Define "Engineering Geology" **(3 marks)**

b) Outline the role of geology in building and civil engineering. **(5 marks)**

c) Write short notes on the following physical properties of minerals:
- **(i)** Hardness **(3 marks)**
- **(ii)** Tenacity **(4 marks)**
- **(iii)** Luster **(2 marks)**

d) (i) Which are the **THREE** classes of rocks? **(1 mark)**
(ii) Outline the processes that are responsible for their origins **(6 marks)**

e) Define Metamorphism **(2 marks)**

f) Which are the two main groups of common Rock forming minerals? Give **FOUR** examples of each. **(4 marks)**

SECTION B (Attempt any TWO questions)

Question Two

a) Briefly discuss the classification scheme in igneous petrology **(8 marks)**

b) Outline the engineering geologic factors considered in the identification of natural building stone. **(6 marks)**

c) Describe the following igneous textures: **(6 marks)**
- **(i)** Porphyritic
- **(ii)** Classy
- **(iii)** Vesicular

Question Three

a) Briefly discuss the processes that lead to the formation of sedimentary rocks. **(12 marks)**

b) Explain clastic and non-clastic rocks. Give examples. **(8 marks)**

Question Four

a) Outline the major objectives of rite investigation. **(5 marks)**

b) Explain the FOUR stages of site investigation. **(8 marks)**

c) What is geological map? Outline the use of geological map? **(4 marks)**

d) Explain the following types of geological structures:
- **(i)** Faults
- **(ii)** Folds and
- **(iii)** Joints **(3 marks)**

Question Five

a) Explain how an earthquake is formed. **(2 marks)**
b) Briefly discuss the effects of earthquakes. **(10 marks)**
c) Distinguish between quarrying and mining **(2 marks)**
d) Outline the implications deformational structures (faults folds and joints) may have in construction. **(6 marks)**