TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR DECREE IN:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE 13J, 13M 12S)

ECE 2302: ENGINEERING GEOLOGY

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
TIME ALLOWED: 2 HOURS

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

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
Use neat, large and well labeled diagrams where required
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Outline the rock of geology in Building and Civil Engineering **(5 marks)**

b) Briefly discuss the processes that are responsible for the origins of the THREE classes of rocks **(10 marks)**

c) Explain FOUR factors that affect igneous rock textures **(4 marks)**

d) Briefly discuss sedimentary processes **(8 marks)**

e) Define Engineering Geology **(3 marks)**

Question Two

a) Briefly discuss the classification of igneous rocks based on S_1O_2 content **(8 marks)**

b) Outline the main classes of sedimentary rocks **(4 marks)**

c) Briefly discuss the effects of deformational structures in construction **(8 marks)**

Question Three

a) Briefly discuss FOUR possible earthquake effects **(8 marks)**

b) Outline the main objectives of size, investigation **(6 marks)**

c) Define metamorphism and highlight the processes that take place in metamorphism **(6 marks)**

Question Four

a) Explain the following physical properties of minerals:
- **(i)** Hardness
- **(ii)** Tenacity
- **(iii)** Luster **(10 marks)**

b) Differentiate between faults and joints **(4 marks)**

c) Outline the elements of faults **(6 marks)**

Question Five

a) Differentiate Quarrying from mining **(4 marks)**

b) Briefly discus the following types of faults:
- **(i)** Normal fault
- **(ii)** Reverse fault
- **(iii)** Dip-slip fault
- **(iv)** Thwart fault **(8 marks)**

c) Briefly discuss the following quarry prospecting methods; **(8 marks)**
- **(i)** Topographical maps
- **(ii)** Aerial photos
- **(iii)** Geological maps
- **(iv)** Geophysics