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**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

# University Examinations 2012/2013

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN LAND RESOURCES PLANNING AND MANAGEMENT**

# ALP 2103: GEOLOGY AND GEOMORPHOLOGY

**DATE: AUGUST, 2012**  **TIME: 2 HOURS**

**INSTRUCTIONS: Answer Question ONE and Any Other THREE Questions. Illustrate your answers as necessary.**

**Question One**

a) Define the following terms:

1. Mineral
2. Rock
3. Essential mineral
4. Accessory mineral
5. Secondary mineral [5 marks]

b) Describe the theory of plate tectomics and show how it explains the formation of the following:

1. Mid oceanic ridge
2. The Rift Valley
3. Himalayas [5 marks]

c) Describe the Bowen reaction series and show how it explains weathering of rocks.

[6 marks]

**Question Two**

a) Describe the cycle of rocks and processes associated with it. [4 marks]

b) Discuss the crystallization stages of minerals and the nature of the resultant minerals.

[5 marks]

c) Describe the mineralogical composition, texture and the naming system of the following rock clans:

1. Diorite clan
2. Syenite clan [6 marks]

**Question Three**

a) Describe the following intrusive bodies and textures of the rocks they contain.

1. Batholiths
2. Dykes [4 marks]

b) Outline the classification of detrital rocks. [6 marks]

c) Describe the following land forms which are common in Kenya.

1. Mountains
2. Plateau
3. Uplands
4. Plains
5. Bottomlands [5 marks]

**Question Four**

a) Define weathering and describe the two main types of weathering. [4 marks]

b) Using chemical equations, show how chemical weathering takes place in rocks.

[5 marks]

c) Name the six factors of landscape formation and show each of them causes landscape evolution. [6 marks]

**Question Five**

a) Explain the principle of radiometric dating and state the approximate age of the earth.

[3 marks]

b) Define the principle of issostasy and explain how its is maintained between adjacent masses of equal cross section. [4 marks]

c) Name and describe four major metamorphic rocks formed through regional metamorphism. [8 marks]