



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**UNIVERSITY EXAMINATION FOR:**

**BACHELOR OF SCIENCE IN CIVIL ENGINEERING (INSTITUTIONAL  
BASED EXAMINATION)**

**ECE 2302: ENGINEERING GEOLOGY**

**END OF SEMESTER EXAMINATION**

**SERIES: MARCH 2017**

**TIME: 2 HOURS**

**DATE: 30<sup>th</sup> MARCH**

**Instructions to Candidates**

You should have the following for this examination

-Answer Booklet, examination pass and student ID

-Drawing instruments.

This paper consists of five questions.

Attempt any THREE questions.

**Do not write on the question paper.**

**QUESTION ONE (COMPULSORY)**

(a) Explain the following terms used in sedimentary petrology:

i) Diagenesis

ii) Lithification

iii) Cement

(6 marks)

(b) Referring to the geological map (Figure 1, pg. 3):

i) Draw and label strike lines

ii) Draw Geological section x-y

iii) Find Dip and Strike of beds

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iv) Write a brief geological history of the site (16 marks)

(c) Discuss the geologic factors that affect selection of gravels and sands. (8 marks)

**Attempt any TWO questions**

**QUESTION TWO**

(a) Briefly explain the silica content classification of igneous rocks. (10 marks)

(b) Briefly outline the following as used in metamorphic rocks:

(i) Structural classification

(ii) Field classification

(10 marks)

**QUESTION THREE**

(a) List **TEN** physical properties of minerals. (5 marks)

(b) Explain the terms *linear*, *Areal* and *Volumetric* with respect to ground investigations.

(6 marks)

(c) Explain **THREE** advantages and **THREE** limitations of drilling as an investigation method.

(9 marks)

**QUESTION FOUR**

(a) (i) Outline **FOUR** types of quarries

(ii) Explain **FIVE** prospecting methods used in quarrying (8 marks)

(b) List **FOUR** important material properties considered in the selection of natural construction materials. (4 marks)

(c) Briefly explain **FOUR** important factors in geological assessment of sands and gravels deposits. (8 marks)

**QUESTION FIVE**

(a) Explain **TEN** geological characteristics that should be considered in tunneling

(10 marks)

(b) Differentiate between the following:-

(a) Gneiss and Schist

(b) Porphyritic and Porphyroblastic

(c) Tenacity and Hardness

(d) Cleavage and fracture

(e) Lopolith and Laccolith

(10 marks)

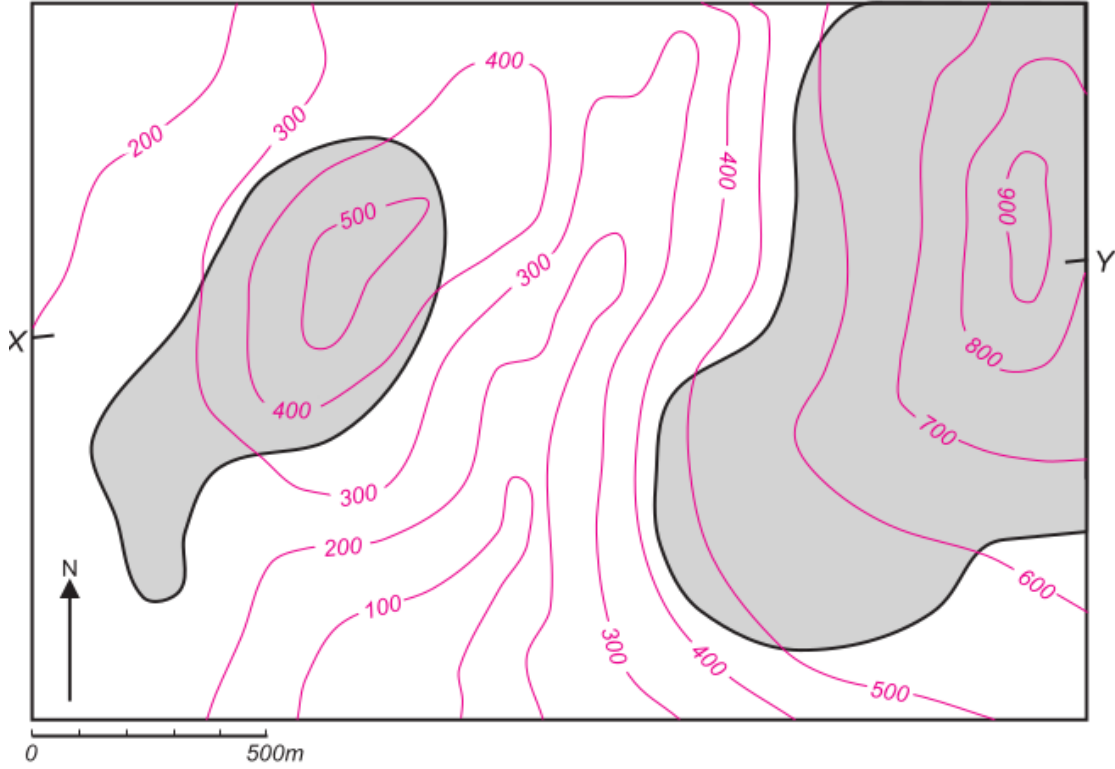


Figure 1: Geological Map

