



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT BUILDING AND CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

BSC IN CIVIL ENGINEERING

ECE 2302: ENGINEERING GEOLOGY

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: 11 May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, Drawing Instruments, Scientific calculator, examination pass and student ID

This paper consists of five questions. Attempt question ONE (Compulsory) and any other TWO questions.

- Q1. (a) Briefly describe the following groundwater terms.
- ii) Aquifer, Aquiclude, Aquitard
 - iii) Permeability, Porosity, Hydraulic conductivity (8 marks)
- (b) Referring to the geological Map (Fig.1);
- (i) Draw and label strike lines
 - (ii) Draw Geological section x-y
 - (iii) Find Dip and Strike of beds
 - (iv) Write a brief geological history of the site (16 marks)
- (c) Describe the geologic factors that affect selection of gravels and sands (6 marks)

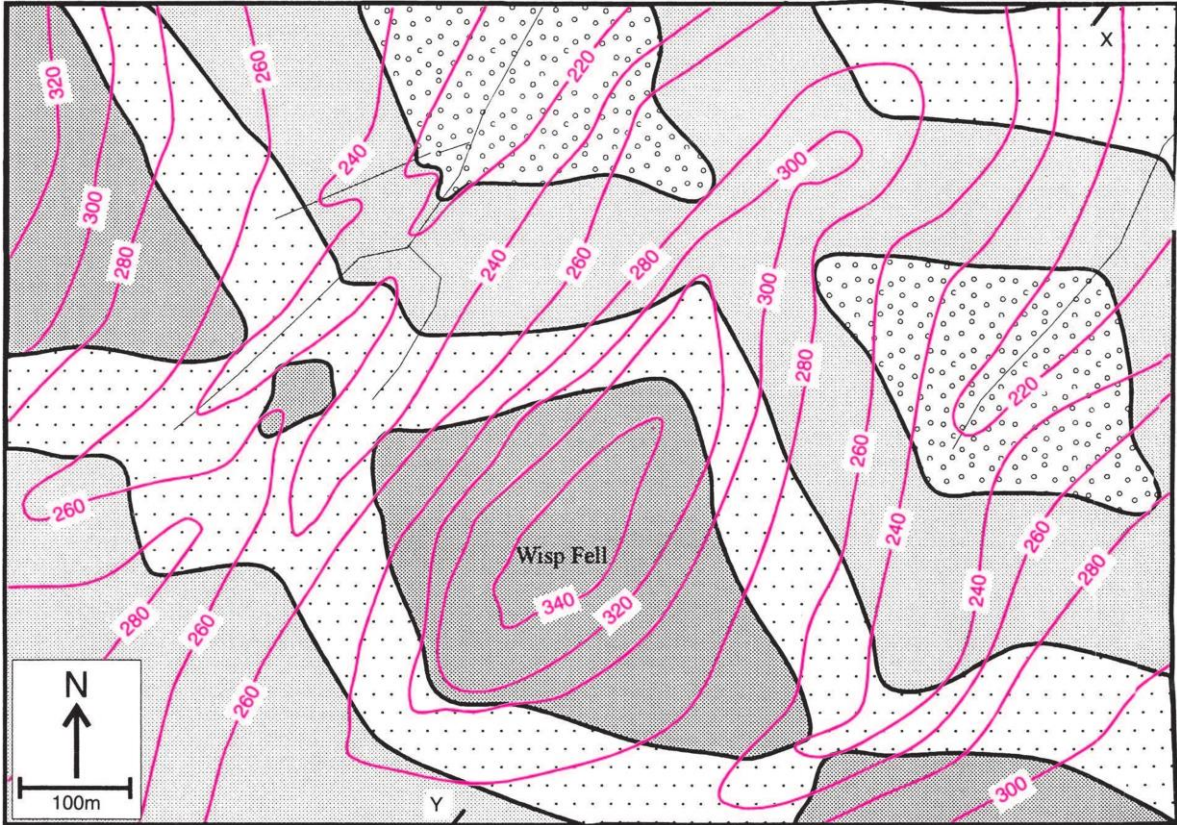


Figure 1: Geological Map

- Q2. (a) Differentiate between the following;
- iv) Dike and Sill
 - v) Normal fault and Reverse fault (4 marks)
- (b) (i) Describe Luster
(ii) List six descriptive terms used for describing non-metallic luster (6 marks)
- (c) Outline the Silica tetrahedral classification of silicate groups (12 marks)
- Q3. (a) (i) List three agents of metamorphism
(b) Explain the processes which the listed agents in 5 a(i) cause metamorphism. (6 marks)
- (c) (i) Explain five methods used in prospecting for quarries
i) Outline four limitations of blasting as a method of quarrying. (14 marks)
- Q4 (a) Explain the following terms used in sedimentary petrology
- (i) Diagenesis
 - (ii) Lithification
 - (iii) Cement (7 marks)
- (b) Differentiate between the following terms:-
- i) Profiling and Sounding
 - ii) Cleavage and Fracture
 - iii) Streak and Lustre (6 marks)
- (c) i) Explain four factors that affect igneous rock textures
ii) Define the following igneous textural terms:-
- Basaltic
 - Porphyritic (7 marks)
- Q5. (a) Explain **eight** geological considerations made in tunneling (8 marks)
- (b) Outline Geologic factors considered in the identification of Natural Building Stones (6 marks)
- (c) Explain the relevance of the geologic time scale (6 marks)