



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

Department of BUILDING & Civil engineering

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECE 2302 : ENGINEERING GEOLOGY

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: 15 Dec 2016

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 question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Q1. (a) Briefly discuss the classification Schemes used in igneous, sedimentary and metamorphic petrology

(6 marks)

(b) State four observable features that may be used in making inferences on the existence of faults.

(4 marks)

(c) Briefly outline the seismic refraction method of ground investigations.
(8 marks)

(d) An environmental concern has been raised about the presence of a coal seam in some areas of the project map (Figure page Figure).

i) Draw Strike lines and Construct cross-section X-Y

ii) Shade the areas where the seem will not be encountered at depth.

Show your working (12 marks)

Q2. (a) i) Define the following metamorphic textural terms:-

➤ Phyllite

➤ Hornfels

➤ Mylonite

(9 marks)

(b) Describe the structure and texture of the following rock types :

(i) Gneiss (ii) Conglomerate (iii) Granite (iv) Basalt. (8 marks)

(c) Explain the geological investigation for a bridge. (3 marks)

Q3. (a) Define the term hardness and explain how it can be determined (4 marks)

(b) List three agents of metamorphism. Explain the processes by which they cause rock transformation. (6 marks)

(c) Briefly describe the four types of metamorphism using field classification. (4 marks)

Q4. (a) (i) Define the term tenacity

(ii) Explain six terms used to describe tenacity in minerals
(7 marks)

(b) Differentiate between the following terms:-

i) Mineral and Crystal

ii) Shale and Slate

iii) Heave and throw (6 marks)

- (c) i) Explain four factors that affect igneous rock textures
ii) Define the following igneous textural terms:-

➤ Glassy

➤ Porphyritic

(7 marks)

- Q5. (a) Briefly discuss the Engineering significance of deformational structures (8 marks)
(b) Explain precautions necessary in civil works in the rift valley towns. (6 marks)
(c) Explain the classification of sedimentary rocks based on sediment source and environment of deposition (6 marks)

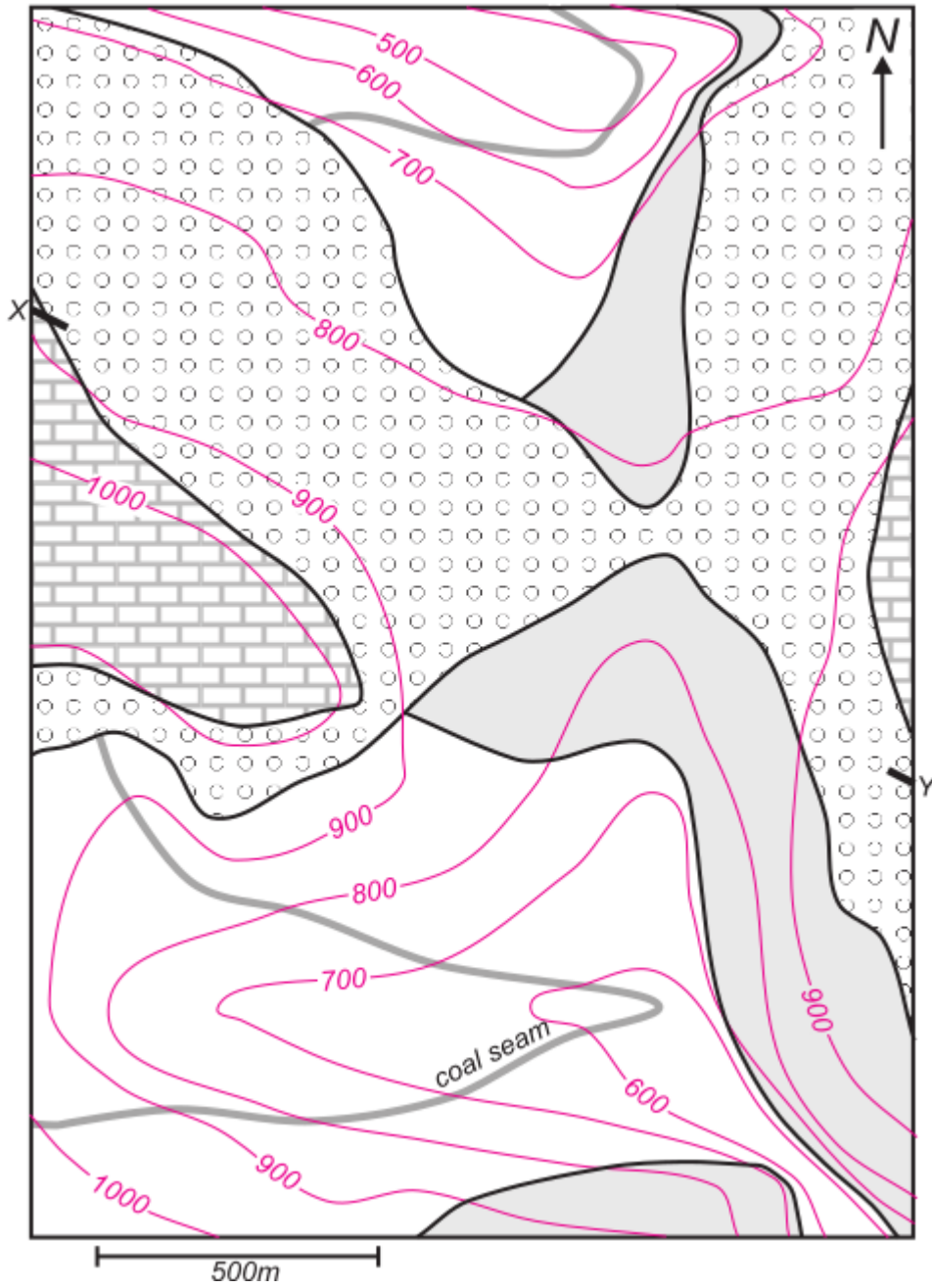


Figure 1: Geological map of project area