



MACHAKOS UNIVERSITY

University Examinations 2016/2017

**SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING**

SECOND YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE

CIVIL ENGINEERING

SUPPLEMENTARY EXAMINATION

ECV 300: ENGINEERING GEOLOGY

DATE: 31/8/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer question one and any other two questions

QUESTION ONE

- a) Giving relevant examples, describe how would you select a suitable site for the construction of a Dam by carrying out geological investigation? (10 marks)
- b) The core sample has Total length of core run = 200 cms, the length of core pieces have lengths as shown in figure 1.
 - i) Differentiate between core recovery and Rock quality designation index (RQD) (4 marks)
 - ii) Determine the RQD for the drilled core (4 marks)
- c) Using hypothetical values describe the Geomechanics Classification or the Rock Mass Rating (RMR) system published by Bieniawski in 1976 as used to classify a rock mass. (12 marks)

QUESTION TWO

- a) Explain the importance/relevance of geographical location in terms of susceptibility to earthquake actions. (8 marks)
- b) Discuss the six basic methods used by Engineering geologist to arrive at recommendations for safety precautions (12 marks)

QUESTION THREE

- a) With schematic drawing, define and show the main parts of a folded bed (10 marks)
- b) Most sedimentary rocks are formed by the lithification of weathered rock debris that has been physically transported and deposited. Describe the four main phases in sedimentary rock formation (10 marks)

QUESTION FOUR

- a) The engineering geological map should be based on a good geological map. Explain why The geological maps cannot be used directly in engineering work (8 marks)
- b) With the aid of neat diagrams, show how faults are geometrically classified into different types (12 marks)

QUESTION FIVE

- a) Discuss the key aspects to look out for, In order to properly evaluate a potential dimension stone deposit (10 marks)
- b)
 - i) What is Rock Bolting? (2 marks)
 - ii) Discuss the Process and functions of rock bolts in detail. (8 marks)

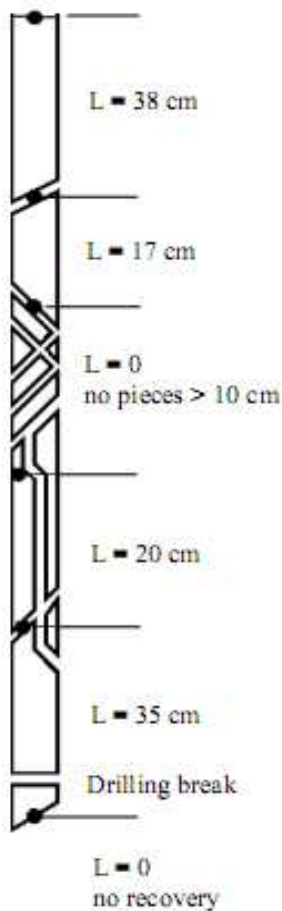


Figure 1: Use for Qn1b