



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

***Faculty of Engineering and
Technology***

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

Institutional Based Programme

HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 2214: ENGINEERING GEOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JUNE/JULY 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *Scientific Calculator*
- *Mathematical tables*

This paper consists of **FIVE** questions. Answer any **THREE** questions

Maximum marks for each part of a question are clearly shown

This paper consists of **TWO** printed pages

Question 1 (20 marks)

- a) Explain the term hardness as applied to minerals and how can be determined (5 marks)
- b) Outline **FOUR** characteristics of a basalt (8 marks)
- c) Distinguish a dyke from a soil with the aid of sketches (7 marks)

Question 2 (20 marks)

- a) State **TWO** agents of metamorphism and explain the effects caused by each agent to a sedimentary deposit (10 marks)
- b) Explain the basis on which a volcanic can be differentiated from an intrusive occurring on site (5 marks)
- c) A sand deposit on the beach has a higher concentration of quartz compared to Mica. Explain (5 marks)

Question 3 (20 marks)

- a) Describe contact metamorphism that can be caused to a shale deposit (10 marks)
- b) Briefly explain the following:
 - (i) Cement as applied in sedimentary petrology
 - (ii) Porphyritic texture
 - (iii) Retention of ground fluids by fold structures (10 marks)

Question 4 (20 marks)

- a) Briefly explain **FIVE** geological effects caused by faults (10 marks)
- b) Outline **FIVE** geological considerations that apply to selection of dam sites (10 marks)

Question 5 (20 marks)

- a) Briefly explain the difference in the crusting strength between a marble and granite (6 marks)
- b) Outline the following:
 - (i) **TWO** geological effect of a fold
 - (ii) **TWO** geological considerations applied to blasting when tunneling (14 marks)