TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE 14M)

EBC 2107: ENGINEERING GEOLOGY

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2014
TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions of the **FIVE** questions
All questions carry equal marks
Maximum marks for each part of a question are as shown
Use neat, large and well labeled diagrams where required.

This paper consists of **THREE** printed pages

Question One

a) Distinguish the following:
- **(i)** Quartz from mica based on cleavage
- **(ii)** Quartz from calcite based on hardness
- **(iii)** Hematite from mica base on magnetism
- **(iv)** Flourite from Galena based on streak
- **(v)** Galena from mica based on Diaphaneity **(10 marks)**

b) Briefly explain the abundance of quartz compared to mica occurring in beach sands. **(5 marks)**

c) Outline the importance of mineral hardness **(5 marks)**

Question Two

a) Distinguish a granite from a basalt if they occur on a construction site. **(6 marks)**

b) Briefly explain FIVE characteristics of a basalt. **(10 marks)**

c) Explain the term 'cement' as applied to sedimentary rocks **(4 marks)**

Question Three

a) Outline factors for contact metamorphism of a shale. **(10 marks)**

b) With the aid of sketches, distinguish a normal fault from a reverse fault. **(6 marks)**

c) Explain the criteria for recognition of folds on a construction site. **(4 marks)**

Question Four

a) Outline THREE methods for prospecting of quaries. **(6 marks)**

b) Outline FOUR geological considerations for selection of dam sites. **(8 marks)**

c) Outline THREE geological problems that can be encountered during tunneling. **(6 marks)**

Question Five

a) Explain the following terms as applied to geological maps.
- (i) Strike
- (ii) Dip
- (iii) Unconformity **(6 marks)**

b) State FOUR main features of a geological map **(4 marks)**

c) Use figure 1, provided to answer the following:
- (i) Complete the explanation column
- (ii) Name type of feature marked x

(iii) If the stratum above boundary P were a volcanic bed state type of surface the boundary P would be formed.

(iv) State the sequence of geological events that affected the area from which the cross-section was made. **(10 marks)**