THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)
Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR BACHELOR OF ENGINEERING IN BUILDING & CIVIL ENGINEERING

EBC 2106: CIVIL ENGINEERING MATERIALS I

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY/MARCH 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination
- *Answer booklet*
- *Drawing Instruments*

This paper consists of **FIVE** questions
Answer question **ONE (COMPULSORY)** from **SECTION A** and any other **TWO** questions from **SECTION B**
Maximum marks for each part of a question are clearly shown
This paper consists of **TWO** printed pages

SECTION A (COMPULSORY)

Question 1

a) (i) Outline **FIVE** factors that affect the strength of concrete
(ii) Briefly describe **THREE** requirements of concrete mix design (10 marks)

b) Describe **FIVE** factors that influence choice of traditional construction materials (10 marks)

SECTION B (Answer any TWO questions from this section)

Question 2

a) (i) Outline **THREE** benefits of curving concrete

(ii) Briefly describe **THREE** methods of curving giving an example in each case (12 marks)

b) (i) Differentiate between tilting drum mixer and pan mixer

(ii) Outline **FOUR** qualities of good formwork (8 marks)

Question 3

a) Define the following terms:
   (i) Admixture
   (ii) Additive (4 marks)

b) (i) Briefly describe any **THREE** categories of admixtures

(ii) State **FOUR** uses of reinforcement in concrete

(iii) Outline **FOUR** factors considered in the placement of concrete (16 marks)

Question 4

a) (i) Outline **FOUR** factors that affect quality control in concrete

(ii) Briefly describe **FOUR** mechanical properties of aggregates (14 marks)

b) Briefly explain the following properties of fresh concrete
   (i) Workability
   (ii) Mouldability
   (iii) Compatibility (6 marks)

Question 5

a) Briefly describe the following tests done on fresh concrete
   (i) Slump test
   (ii) Compacting factor test (8 marks)

b) (i) Outline **FOUR** advantages of using masonry units in construction of buildings

(ii) State **THREE** types of stone deterioration

(iii) State any **THREE** methods of mix design in concrete (12 marks)