TECHICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBC 12J)
DIPLOMA IN ARCHITECTURE (DA 12J)

EBC 2203: CIVIL ENGINEERING MATERIALS II

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: FEBRUARY 2013
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*
This paper consists of **FIVE** questions.

Answer any **THREE** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

Question One

a) Outline the significance of water/cement ratio as it affects the properties of concrete. **(8 marks)**

b) Outline the process of carrying out the following tests on cements:
- **(i)** Initial setting time
- **(ii)** Final setting time **(8 marks)**

c) State the importance of testing the setting times of cements **(4 marks)**

Question Two

a) Describe the following as applied to properties of fresh concrete:
- **(i)** Workability
- **(ii)** Compactability
- **(iii)** Mobility
- **(iv)** Consistency **(10 marks)**

b) Outline the process of carrying out the following tests:
- **(i)** Slump test
- **(ii)** Compaction factor test **(10 marks)**

Question Three

a) Describe the following modes of transporting concrete stating their limitations:
- (i) Wheelbarrows
- (ii) Dumpers
- (iii) Skips and buckets
- (iv) Ready-mix concrete trucks **(12 marks)**

b) Describe the procedure of under-water concreting. **(8 marks)**

Question Four

a) Describe the modes of operation of the following types of mixers:
- **(i)** Tilting drum
- **(ii)** Non-tilting drum
- **(iii)** Reversing drum
- **(iv)** Pan **(15 marks)**

b) Outline the process of hand mixing **(5 marks)**

Question Five

a) Outline the functional requirement of a good formwork **(10 marks)**

b) Outline surface treatment of formwork. **(5 marks)**

c) Outline required periods of striking parts of formwork. **(5 marks)**