



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

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

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2012

TIME: 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

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One

- a) State advantages of pre-cast concrete units over in-situ construction. **(6 marks)**
- b) Outline the following types of pre-cast units:
- (i) Wear-resistant units
 - (ii) Load-bearing structural units
 - (iii) Impermeable and weather resistant units
 - (iv) Architectural units. **(14 marks)**

Question Two

- a) Outline the functional requirements of good form work. **(10 marks)**
- b) Outline the methods of surface treatment of formwork with respect re-use. **(5 marks)**
- c) Outline minimum periods of striking different components of form work. **(5 marks)**

Question Three

- a) Outline the process of concrete hand mixing. **(5 marks)**
- b) Describe the following modes of operation of the following types of mixers stating their advantages:
- (i) Tilting drum
 - (ii) Non-tilting drum
 - (iii) Reversing drum
 - (iv) Pan **(15 marks)**

Question Four

- a) Describe the procedure of concreting under water. **(8 marks)**
- b) Outline the following modes of transporting concrete and state their limitations:
- (i) Dumpers
 - (ii) Skips and buckets
 - (iii) Open tipper trucks **(12 marks)**

Question Five

- a) Outline the importance of water/cement ratio as it affects the properties of fresh and hardened concrete and state Duff Abraham's Law. **(8 marks)**
- b) Describe the process of carrying out the following tests on cements stating their importance in terms of setting time. **(12 marks)**