



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**DIPLOMA IN BUILDING & CIVIL ENGINEERING
DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN ARCHITECTURE**

EBC 2205: CIVIL ENGINEERING MATERIALS II

END OF SEMESTER EXAMINATION

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*
- *Pocket calculator*
- *Drawing instruments*

This paper consists of **FIVE** questions

Answer question **ONE** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question 1

- a) (i) Explain the main stages in the manufacture of Portland Cement
- (ii) State **THREE** reasons for adding Pozzolans to cement (14 marks)
- b) (i) Differentiate between admixtures and additives
- (ii) State **FOUR** types of admixtures (12 marks)
- c) Explain the following properties of cement
- (i) Soundness
- (ii) Fineness (4 marks)

SECTION B (Answer any TWO questions from this section)

Question 2

- a) With the aid of diagrams, illustrate the following types of slump test results
- (i) True slump
- (ii) Shear slump
- (iii) Collapse (6 marks)
- b) Explain the following methods of preparation and fixing of reinforcement for concrete
- (i) Welding
- (ii) Lapping
- (iii) Spacing
- (iv) Binding (8 marks)
- c) State any **THREE** rules to be observed when placing concrete in formworks (6 marks)

Question 3

- a) Explain how the following factors affect the strength of concrete
- (i) Bleeding
- (ii) Workability
- (iii) Curing
- (iv) Aggregate/cement ratio (12 marks)
- b) Explain the **THREE** types of curing methods giving an example in each case (8 marks)

Question 4

- a) (i) Explain the main reason for adding gypsum in the manufacture of cement
- (ii) State **TWO** consideration made when concreting under water
- (iii) State any **TWO** reasons for using prestressed concrete (10 marks)
- b) Explain any **FIVE** methods of transporting concrete (10 marks)

Question 5

- a) Explain the following types of mixes and where they are used
- (i) Designed mix
- (ii) Prescribed mix (5 marks)
- b) (i) State any **FIVE** qualities of good timber for formwork
- (ii) Explain **FIVE** factors that affect the workability of concrete (15 marks)