



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

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

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

CONSTRUCTION TECHNICIAN II

EBC 1112: CONSTRUCTION MATERIALS IV

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *Scientific calculator*
- *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 **THREE** printed pages

SECTION A (COMPULSORY)

Question 1(20 marks)

- a) (i) State **FIVE** requirements of formwork
- (ii) State **THREE** types of admixtures (8 marks)
- b) Briefly describe the following types of mixes
- (i) Nominal mixes
- (ii) Standard mixes
- (iii) Design mixes (6 marks)
- c) Outline **THREE** advantages of precast concrete systems (6 marks)

SECTION B (Answer any TWO questions from this section)

Question 2 (20 marks)

- a) Briefly describe the types of precast concrete used for:
- (i) Agricultural products
- (ii) Sanitary and storm water
- (iii) Utility structures (9 marks)
- b) (i) Briefly explain **THREE** ways prestressing of concrete can be achieved.
- (ii) State **THREE** uses of reinforcement in concrete
- (iii) Define the term Quality Control in concrete (11 marks)

Question 3 (20 marks)

- a) (i) Outline any **FIVE** properties of fresh concrete
- (ii) State an **FIVE** factors that influence the choice of mix design (10 marks)
- b) With the aid of a well labeled diagram, illustrate floor formwork (10 marks)

Question 4 (20 marks)

- a) With the aid of diagram, illustrate the following as used in reinforcement bars
- (i) Bending
- (ii) Hooking
- (iii) Laping
- (iv) Welding (10 marks)
- b) State **FIVE** steps taken to ensure quality of concrete (10 marks)

Question 5 (20 marks)

- a) (i) State **FOUR** advantages of bonded post-tension concrete
- (ii) Outline **FOUR** factors considered in choosing a mix design (12 marks)
- b) Briefly describe **FOUR** ways of preventing concrete yield discrepancies (8 marks)