



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

*Faculty of Engineering and Technology*

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**CERTIFICATE IN BUILDING (2011)**

EBC 1130: CONSTRUCTION MATERIALS I

**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*
- *Mathematical tables*

This paper consists of **FIVE** questions

Answer **THREE** questions

This paper consists of **THREE** printed pages

## SECTION A (COMPULSORY) – 30 MARKS

### Question 1

- a) Briefly describe the following properties as used in the study of construction materials
- (i) Ductility
  - (ii) Brittleness
  - (iii) Malleability
  - (iv) Toughness
  - (v) Fatigue
  - (vi) Creep
  - (vii) Ageing
  - (viii) Heat treatment (8 marks)
- b) With the aid of sketch, describe the natural process of seasoning timber (10 marks)
- c) Briefly describe the following timber defects with the aid of a sketch
- (i) Radial shake
  - (ii) Wane
  - (iii) Twist (6 marks)
- d) Describe the full cell method of pressure impregnation in the preservation of timber (6 marks)

## SECTION B (Answer *any TWO* questions from this section)

### Question 2

- a) Outline **FOUR** advantages of clay bricks as a construction material (4 marks)
- b) Briefly describe **TWO** types of igneous stones (2 marks)
- c) Outline **TWO** properties of aluminum (2 marks)
- d) With the aid of sketch describe the following timber products
- (i) Batten board
  - (ii) Block board
  - (iii) Lamin board
  - (iv) Strip board (12 marks)

### Question 3

- a) Briefly describe the behavior of clay bricks under the following headings
- (i) Chemical resistance

- (ii) Fire resistance
- (iii) Thermal movement (3 marks)

b) Outline **FIVE** uses of cast Iron in construction (5 marks)

c) Outline the manufacture of cast iron (12 marks)

**Question 4**

With the aid of a well labeled sketch, explain the Drying Shrinkage test in Bricks (20 marks)

**Question 5**

a) Briefly describe **FIVE** processes which glues/Adhesive set (5 marks)

b) Distinguish between pot life and shelf life in the use of adhesives (4 marks)

c) Using a well labeled sketch, describe the trunk of an exogenous tree (8 marks)

d) Briefly describe the Chemical seasoning of timber (3 marks)