



# TECHNICAL UNIVERSITY OF MOMBASA

*Faculty of Engineering and Technology*

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**INSTITUTIONAL BASED PROGRAMME**

DIPLOMA IN BUILDING & CIVIL ENGINEERING

**EBC 2205: CIVIL ENGINEERING MATERIALS II**

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: JULY 2013**

**TIME: 2 HOURS**

**Instructions to Candidates:**

This paper consists of **FIVE** questions

- *Answer Booklet*

Answer question **ONE (COMPULSORY)** in **SECTION A** and any other **TWO** questions in **SECTION B**

Marks are indicated for each part of the question

This paper consists of **THREE** printed pages

**SECTION A** (*Answer all questions in this section*)

### Question One

- a) List **SIX** properties of cast iron (3 marks)
- b) Briefly describe the procedure of extracting ferrous metals from their ores (8 marks)
- c) Outline the following surface treatments applied to metals  
(i) Anodizing  
(ii) Painting (5 marks)
- d) Describe the following metal forming processes.  
(i) Drawing  
(ii) Extrusion (5 marks)
- e) Briefly describe the following properties as used in the study of construction materials  
(i) Ductility  
(ii) Brittleness  
(iii) Malleability  
(iv) Fatigue  
(v) Creep  
(vi) Strain  
(vii) Yield (7 marks)
- f) What are the **two** types of plastics (2 marks)

### SECTION A (*Answer all questions in this section - 20 Marks each*)

#### Question Two

- a) List **FOUR** types of iron ores (4 marks)
- b) Explain the stages involved in the extraction of pig iron (10 marks)
- c) Give **SIX** examples of the thermosetting plastics (6 marks)

#### Question Three

- a) Give **SIX** examples of continuous process in the manufacture of plastic articles (8 marks)
- b) State **SIX** uses of rubber (6 marks)
- c) State the functions of the following elements in painting  
(i) Under coat  
(ii) Finishing coat (6 marks)

#### Question Four

- a) What are the **FOUR** functions of primer in paint? (8 marks)
- b) Give **FOUR** factors affecting physical properties of steel (6 marks)
- c) Give **FOUR** examples of discontinuous process in plastic manufacture (4 marks)
- d) State **FOUR** properties of cast iron (2 marks)

**Question Five**

- a) Give **THREE** categories of ferrous metals (3 marks)
- b) What are the **FIVE** factors which determine the life span of paint (10 marks)
- c) Give the functions of the following components in paint.
  - (i) Solvent and thinners
  - (ii) Driers and catalyst (4 marks)
- d) State **THREE** uses of rubber (3 marks)