THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)
(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN BUILDING & CIVIL ENGINEERING

ECE 2313: CIVIL ENGINEERING MATERIALS

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 question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) State the significance of seasoning timber and describe the kiln seasoning method, highlighting any possible defects which could result from the process. **(8 marks)**

b) Discuss the influence of carbon in ferrous metals. **(8 marks)**

c) Discuss why plastics are replacing some of the traditional construction materials in civil engineering. **(6 marks)**

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d) Describe with the aid of a suitable graph the tensile test of steel. **(8 marks)**

Question Two

Explain the following as applied in metallurgy.

(i)   Brittle and ductile fracture **(6 marks)**
(ii)   Elastic and plastic deformation of metals. **(6 marks)**
(iii)   Crystalline structure metals. **(8 marks)**

Question Three

a) Outline the main properties of steel and state the constituent material used in steel manufacture.
 (4 marks)
b) Describe the manufacture of steel, and state the main types of carbon steels. **(4 marks)**

c) Outline the main-heat treatment of steel. **(12 marks)**

Question Four

a) Distinguish between thermoplastics and thermosetting plastics giving **THREE** examples of each.
 (8 marks)
b) Describe with the aid of appropriate sketches, three methods of manufacturing plastics.
 (12 marks)

Question Five

Describe the following types of steels:

(i)   Grade 50/55
(ii)   Railway steels
(iii)   Prestressed tendons
(iv)   Bridge wire. **(20 marks)**