



TECHICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN ARCHITECTURE (DA 12M)

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBC 12M)

ECV 2201: CIVIL ENGINEERING MATERIALS III

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JULY 2013

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *Scientific Calculator*

This paper consists of **FIVE** questions. Answer any **THREE** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

Question One

- a) Name and explain **FOUR** characteristics of Building stones which are considered for selection in application in construction of structures. **(8 marks)**
- b) Outline the procedure for carrying out crushing test on stones. **(8 marks)**
- c) Define the following terms as used in quarrying:
 - (i) Screening
 - (ii) Tamping **(4 marks)**

Question Two

- a) Sketch a cross-section of an exogenous tree and indicate the parts. **(8 marks)**
- b) Explain the following Timber Defects:
 - (i) Heart shakes
 - (ii) Twisted fibres or wandering hearts **(8 marks)**
- c) State **FOUR** requirements of a good timber preservative. **(4 marks)**

Question Three

- a) Define the following terms as applied in metals:
 - (i) Tenacity
 - (ii) Yield
 - (iii) Brittleness **(6 marks)**
- b) Briefly explain the following heat treatments.
 - (i) Hardening
 - (ii) Annealing **(6 marks)**
- c) Outline the Bessemer Converter process of making steel. **(4 marks)**
- d) Name and explain **TWO** methods of protecting ferrous metals against deterioration. **(4 marks)**

Question Four

- a) Name and explain **THREE** constituents of plastics. **(6 marks)**
- b) Outline the following processes of moulding plastics:
 - (i) Injection moulding
 - (ii) Blowing **(6 marks)**
- c) State **FIVE** properties of rubber. **(5 marks)**
- d) (i) Explain the term vulcanization as applied in rubber.
(ii) State the effect of vulcanization. **(3 marks)**

Question Five

- a) State the **FIVE** main functions of paints (5 marks)
- b) State **FIVE** characteristics of a good paint (5 marks)
- c) (i) State the **THREE** main functions of Varnish.
- (ii) State **TWO** ingredients of a Varnish (4 marks)
- d) Name and explain **THREE** defects in painting. (6 marks)