



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
CERTIFICATE IN BUILDING & CIVIL ENGINEERING

ECV 1101: CIVIL ENGINEERING MATERIALS I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2015

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

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

Maximum marks for each part of a question are as shown
Use neat, large and well labeled diagrams where required
This paper consists of **TWO** printed pages

Question One

Defects can occur in timber at various stages, using clearly drawn illustrations describe any TWO defects (in each case) that occur under the following circumstances.

- (i) Natural defects
 - (ii) Seasoning defects
 - (iii) Conversion defects
 - (iv) Storage defects
- (20 marks)**

Question Two

- a) Using clear illustrations describe timber conversion under the following methods:
- (i) Through and through sawing
 - (ii) Tangential sawing
 - (iii) Quarter sawing
 - (iv) Rift/Radial sawing
- (8 marks)**
- b) List any FOUR clay products
- (2 marks)**
- c) Describe FIVE tests that are usually carried out on stones highlighting the importance of each.
- (10 marks)**

Question Three

- a) List FIVE advantages of EARTH as one of the oldest building construction material used in the rural areas
- (5 marks)**
- b) Describe the following physical/mechanical properties of metals under the following aspects:
- (i) Thermal conductivity & electrical conductivity
 - (ii) Ductility is malleability
 - (iii) Elasticity
- (15 marks)**

Question Four

- a) Give EIGHT reasons as to why Timber is currently being used most in the construction industry over other building materials
- (8 marks)**
- b) Briefly explain FIVE weaknesses which are distinct in Bricks as a civil engineering construction materials
- (10 marks)**
- c) Define the following terms as used in metals:
- (i) Tenacity
 - (ii) Melting point
- (2 marks)**

Question Five

- a) With aid of diagrams illustrate the various types of shakes which occurs as timber defects highlighting the cause of each **(9 marks)**
- b) Timber is broadly classified as Hardwood and Softwood. Giving TWO examples of each compare and contrast the physical characteristics of each **(9 marks)**
- c) Define Coefficient of linear expansion as used in metals **(2 marks)**