



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN ARCHITECTURE (DARC)

ECV 2101: MATERIAL SCIENCE II

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2014

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

All questions carry equal marks

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

- a) Briefly describe the hydration process of cement stating its importance in concrete. **(6 marks)**
- b) Explain the wet process of manufacturing cement. **(10 marks)**
- c) Briefly describe the main composition of ordinary Portland cement **(6 marks)**

Question Two

- a) State the factors influencing the properties of concrete as a composite material. **(6 marks)**
- b) Briefly describe the various types of concrete mixes. **(9 marks)**
- c) State the advantages of concrete as construction material. **(5 marks)**

Question Three

- a) Explain the following method of mixing concrete.
 - (i) Hand mixing
 - (ii) Machine mixing **(8 marks)**
- b) Describe the various methods of transporting concrete **(8 marks)**
- c) State the safety precautions to be observed when placing concrete. **(4 marks)**

Question Four

- a) State the reasons for curing concrete. **(6 marks)**
- b) Explain the various methods of curing concrete. **(10 marks)**
- c) State the factors influencing the selection of a particular method of curing concrete. **(4 marks)**

Question Five

- a) State the advantages of precast concrete over the onsite produced concrete. **(6 marks)**
- b) Briefly describe the common types of precast concrete products in road works. **(8 marks)**
- c) State the factors that influence the need for repair of concrete surfaces and members. **(6 marks)**