



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN
CIVIL ENGINEERING

ECV 205: CIVIL ENGINEERING MATERIALS 1

Date: 3/12/2015

Time: 2:00 – 4:00 PM

INSTRUCTIONS:

- *This paper comprises five questions*
- *Answer question one and any other two questions*
- *All the optional questions carry equal marks*

Question One (30marks)

- List and describe **Five** Civil Engineering Construction Materials (5 marks)
- Describe **Two** properties of each of the following aggregates:
 - natural aggregates (2 marks)
 - artificial aggregates. (2 marks)
- Explain the term bleeding of fresh concrete and state three of its remedies (5 marks)
- List and describe **Four** factors that influence the durability of concrete (4 marks)
- List and describe **Three** properties of hardened concrete (6 marks)
- List **Two** properties of each of the following:
 - Building stones (2 marks)
 - blocks (2 marks)
 - bricks (2 marks)

QUESTION TWO (20MARKS)

A 3500N/m^2 concrete is made with limestone aggregate. If 55% of the aggregate is replaced with solid steel balls (about the same average size as the aggregates) explain the change in:

i) Compressive strength (10 marks)

ii) Elastic modulus (10 marks)

QUESTION THREE (20MARKS)

Describe the Concrete manufacturing processes.

QUESTION FOUR (20MARKS)

Name and describe **Ten** Concrete products.

QUESTION FIVE (20MARKS)

Describe the hydration process of Portland cement.