



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

ECV 210: CIVIL ENGINEERING MATERIALS II

DATE: 25/5/2022

TIME: 11.00-1.00 PM

INSTRUCTIONS:

- This paper comprises of five questions. Answer **three** questions
- Question one is **compulsory** and carry 30 marks
- Answer any other **two** questions

QUESTION ONE (30 MARKS)

- a) Name the following:
- i. The seven ceramic processing steps. (7 marks)
 - ii. A molten metal that catches fire in chlorine gas and gives off white fumes. (2 marks)
 - iii. A metal that forms two types of oxides and rusts in moisture; write the chemical formula of the oxide. (2 marks)
- b) Explain the difference between Wrought iron, Cast iron and Pig iron. (6 marks)
- c) List three (3) forms of cathode protection. (3 marks)
- d) Outline three (3) physical properties of dried wood. (6 marks)
- e) Elucidate two (2) methods used to make timber a fire resistant materials. (4 marks)

QUESTION TWO (20 MARKS)

The major advantages of using aluminum are tied directly to its remarkable properties.

- a) List five (5) such properties. (5 marks)
- b) Describe each of the five (5) properties in 2 i) above (15 marks)

QUESTION THREE (20 MARKS)

Describe the process for the manufacture of steel.

QUESTION FOUR (20 MARKS)

- a) List the three steps in the three-step process to increase strength of aluminum alloys by heat treatment. (3 marks)
- b) Describe the three-step process in 4 i) above (17 marks)

QUESTION FIVE (20 MARKS)

- a) Define the term seasoning of wood. (2 marks)
- b) Explain 6 (six) advantages of wood seasoning process (18 marks)