



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

ECV 210: CIVIL ENGINEERING MATERIALS II

DATE: 15/12/2021

TIME: 8.30-10.30 AM

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) State the properties of aluminum as a structural material. (3 marks)
- b) Describe three uses of cast aluminum alloys. (3 marks)
- c) Explain any three chemical properties of metals. (3 marks)
- d) What are the main causes of defects in wood and timber products. (2 marks)
- e) State the factors that affect the strength properties of wood. (4 marks)
- f) List the different types of polymers according to their applications. (3 marks)
- g) State the factors affecting the properties of polymers. (2 marks)
- h) list and explain the different types of ceramics. (4 marks)
- i) Describe the properties of ceramics that makes them viable structural materials (3 marks)
- j) What are Composite Materials and their Classification? (3 marks)

QUESTION TWO (20 MARKS)

- a) List and describe the defects in timber that occurs during seasoning (8 marks)
- b) Discuss different methods of wood preservation. (12 marks)

QUESTION THREE (20 MARKS)

- a) Explain the different types of corrosion in metals. (10 marks)
- b) Discuss the different methods of combating corrosion in metals. (10 marks)

QUESTION FOUR (20 MARKS)

- a) List the raw materials that are charged in the blast furnace during iron making and their functions. (8 marks)
- b) Discuss the importance of requirements for different alternative routes in iron making (4 marks)
- c) Describe the alternative iron making methods that exists. (8 marks)

QUESTION FIVE (20 MARKS)

- a) List and explain the qualities of a good timber (10 marks)
- b) State the importance of seasoning wood (3 marks)
- c) Discuss the different ways of seasoning timber (7 marks)