



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

**UNIVERSITY EXAMINATIONS FOR THE DEGREE IN SCIENCE IN
CONSTRUCTION MANAGEMENT**

**2ND YEAR 1ST SEMESTER UNIVERSITY EXAMINATIONS 2021-2022 ACADEMIC
YEAR**

CENTRE: MAIN CAMPUS

COURSE CODE: TCB 1205

COURSE TITLE: MATERIAL SCIENCE II

EXAM VENUE: STREAM: BSc CONSTRUCTION MGT

DATE: /12/2021 EXAM SESSION:

DURATION: 2 HOURS

Instructions

- 1. Answer question 1 (Compulsory) and ANY other two questions**
- 2. Candidates are advised not to write on question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION ONE

- a) Compare and contrast any THREE advantages and any THREE disadvantages of Timber as a construction material.
(12 marks)
- b) State any FOUR advantages of steel as a structural material.
(6 Marks)
- c) State any FOUR property changes in metals attributed to alloying elements.
(6 Marks)
- d) Define bituminous materials and TWO major characteristics of bituminous materials.
(6 Marks)

QUESTION TWO

- a) In reference to mechanical strength properties of timber, explain orthotropic nature of timber
(3 Marks)
- b) Explain any THREE factors which affect strength of structural timber
(9 Marks)
- c) State any FOUR advantages derived from proper seasoning of timber
(8 Marks)

QUESTION THREE

- a) Distinguish between low carbon steel and wrought iron.
(8 marks)
- b) List any FOUR precautions a construction manager would take to reduce corrosion effect in metals.
(6 Marks)
- c) State any THREE properties of aluminium which make it popular as a construction material and also state any THREE areas of its application in construction industry .
(6 Marks)

QUESTION FOUR

- a) Explain the following types of bitumen of cut-back asphalt
- i. Rapid curing
 - ii. Medium curing
 - iii. Slow curing
- (6 Marks)
- b) Explain the procedure and significance of the following quality control tests in bitumen
- i. Penetration test
 - ii. Flash point test
- (8 Marks)

c) State any FOUR bitumen safety handling procedures

(6 Marks)

QUESTION FIVE

(a) In reference to application in construction industry, state FOUR advantages and FOUR disadvantages of plastics.

(8 Marks)

(b) Explain the fundamental difference between thermoplastics and thermosetting plastics

(6 Marks)

(c) State any FOUR tests commonly done for plastics

(6 Marks)