



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 2018/2019 ACADEMIC YEAR

CENTRE: MAIN CAMPUS

COURSE CODE: TCM3213

COURSE TITLE: MATERIAL SCIENCE II

EXAM VENUE: STREAM: BSc CONSTRUCTION MGT

DATE: ../12/2018 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) State any SIX factors a construction manager may consider when selecting materials for any building or civil engineering applications.
(6 marks)
- b) State any FOUR demerits of timber as a construction material.
(6 Marks)
- c) State any FOUR reasons for use of steel reinforcement in concrete construction.
(6 Marks)
- d) State any TWO steel alloys and TWO steel property changes attributed to the alloying element.
(6 Marks)
- e) Define bituminous materials and TWO major characteristics of bituminous materials.
(6 Marks)

QUESTION TWO

- a) With aid of a neat sketch explain any TWO conversion methods of Timber.
(6 Marks)
- b) Answer the following in reference to timber preservation
- i. State any THREE requirements of a good wood preservative
 - ii. Explain any THREE methods of wood preservative treatment
(6 Marks)
- c) Discuss the importance of seasoning in Timber.
(8 Marks)

QUESTION THREE

- a) State any SIX advantages of steel as a structural material.
(6 marks)
- b) Explain one method of improving fire protection in steel construction
(2 Marks)
- c) State any TWO characteristics for each of following types of steel.
- i. Low carbon steel or mild steel
 - ii. Medium carbon steel
 - iii. High carbon steel
(6 Marks)
- d) In reference to any Non-Ferrous metal of your choice which is popularly applied in construction industry answer the following questions:
- i. State THREE of its properties supporting why it is popular as a construction material and,
 - ii. State any THREE areas of its application in construction industry .
(6 Marks)

QUESTION FOUR

- a) State any TWO characteristics bituminous materials (4 Marks)
- b) Distinguish the following types of bituminous material as used in pavement construction
- i. Straight run bitumen
 - ii. Cut back asphalt
 - iii. Emulsified asphalt
- (6 Marks)
- c) State FOUR advantages of plastics as a construction material. (6 Marks)
- d) Compare and contrast any FOUR characteristics of thermoplastics and thermosetting plastics. (4 Marks)