



## TECHNICAL UNIVERSITY OF MOMBASA

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SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of BUILDING & Civil engineering

**UNIVERSITY EXAMINATIONS FOR:**

BACHELOR OF SCIENCE IN CIVIL ENGINEERING  
**ECV 4123 : WORKSHOP TECHNOLOGY & PRACTICE**

END OF SEMESTER EXAMINATION

**SERIES:** April 2025

**TIME:** 2 HOURS

### **Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **four** questions.

Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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### **QUESTION ONE (COMPULSORY 30 MARKS)**

- a) Discuss the safety aspects with respect to;
  - i) lifting heavy loads,
  - ii) use of ladders,
  - iii) Workshop set out. **(15marks)**
- b) Fire extinguishers are indispensable in extinguishing fire, particularly in the early stages. Outline typical handheld extinguishers, stating, their constituents, colour codes, types of fires they are designed to extinguish, and types of fire, they should not be used. **(15marks)**

### **ANSWER ANY TWO QUESTIONS**

#### **Question TWO, (20marks)**

- a) Outline with the aid of sketches the following types of scaffolds;
  - i) Dependent scaffolds.
  - ii) Independent scaffold. **(12marks)**

- b) With the aid of sketches, describe the construction of the working platform of a scaffold, and show all features to ensure the safety of use of the platform. **(8marks)**

**Question THREE, (20 marks)**

- a) Discuss the following aspects as relate to setting out of buildings.
- i) Orientation of the building,
  - ii) The building line,
  - iii) The ranging line. **(6marks)**
- b) Outline the setting out of a rectangular building using the Pythagoras theorem method. **(6marks)**
- c) Sketch and detail a typical setting out timber profiles. **(8marks)**

**Question FOUR, (20marks)**

- a) Outline the following functions of walls;
- i) Strength and stability,
  - ii) Thermal insulation,
  - iii) Sound insulation,
  - iv) Weather control,
  - v) Fire control. **(10marks)**
- b) With the aid of suitable graphs, illustrate the effects of mortar to the overall strength of brickwork. **(5marks)**
- c) State the importance of brickwork bonding and, with the aid of suitable sketches, illustrate the following bonding techniques;
- i) Stretcher bond.
  - ii) Flemish bond. **(5marks)**

**Question FIVE, (20marks)**

Outline the supply of water from the mains to a two-story building (maisonette), and show the distribution from the main storage tank to the following appliances;

- i) Ground floor: kitchen sink, WC, wash hand basin, and bath.
- ii) First floor: WC, wash hand basin, bath and the hot water storage cylinder.

Show all the necessary control features of the system. **(20 marks)**

