



## TECHNICAL UNIVERSITY OF MOMBASA

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### SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of BUILDING & Civil engineering

### UNIVERSITY EXAMINATIONS FOR:

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

**TCV 4413 : CONSTRUCTION MEASUREMENT 1**

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*
- *The standard method of measurement for building and related works for East Africa, (SMM 2008 edition)*
- *Answer booklet*
- *Dimension papers.*
- *Calculator*

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 20 MARKS)**

- a) Determine the unit rate for concrete (1:3:6), produced using 200 l, NT concrete mixer, purchased at a cost of Kshs. 1,650m, and having a resale value of KShs. 750m after 4 years of use. Use the following data and assume any other data as necessary;
- i. Coarse aggregates – shs. 8,000/m<sup>3</sup>
  - ii. Fine aggregates – shs. 4,500/m<sup>3</sup>
  - iii. Cement – shs. 750/= per 50 kg bag.

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

- a) With reference to drawing no. EST/008/48, use the following approximate estimating techniques to determine the probable cost of the proposed building;
- i. Functional unit method
  - ii. Cubic unit method

iii. Superficial area method

Discuss the merits and demerits, of each approach.

**Question THREE, (20 marks)**

Explain the following factors which contribute to discrepancies in the BID rate from a number of contractors;

- i) Differences in facilities,
- ii) Standards,
- iii) Financial prevailing,
- iv) Errors
- v) Deliberate distortion

**Question FOUR, (20 marks)**

Build up a unit cost for the following, building elements as extracted from the bills of quantities;

- i. 200 mm thick, solid concrete block wall, bedded in cement sand mortar (1:3)
- ii. 3 cts of plastic emulsion paint on plastered walls.
- iii. 4 mm thick clear sheet glass in panes not exceeding 1m<sup>2</sup>.

**Question FIVE, (20 marks)**

Discuss the following work procurement procedures, stating the merits and demerits of each procedure.

- i. Open tendering,
- ii. Selective tendering,
- iii. Package deal,
- iv. Management contracting