



THE TECHNICAL UNIVERSITY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING  
HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 3218: MEASUREMENT, ESTIMATING & COSTING

**SPECIAL/SUPPLEMENTARY EXAMINATION**

**SERIES: FEBRUARY 2013**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Dimension papers*
- *Pocket Calculator*
- *A copy of the Standard Method of Measurements for Building Works*

This paper consists of **FIVE** questions.

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

**Question One (Compulsory)**

- a) Take off all quantities for the manhole shown in drawing No. 01. **(15 marks)**
- b) Abstract and bill the items in (a) above. **(15 marks)**

**Question Two**

Take off all quantities for the door shown in drawing No. 02 including adjustments. **(15 marks)**

**Question Three**

- a) List **FOUR** components of a unit rate. **(2 marks)**
- b) Outline **FOUR** sources of cost information. **(4 marks)**
- c) Briefly describe the following methods of approximate estimating giving **TWO** merits and **TWO** demerits of each method.
- (i) Approximate quantities
  - (ii) Cubic method **(9 marks)**

**Question Four**

- a) Outline the following terms used in Building economies:
- (i) Cost plan
  - (ii) Cost check
  - (iii) Cost control **(6 marks)**
- b) Describe the following methods of depreciation of a plant:
- (i) Sum of numbers of years method
  - (ii) Straight line method **(9 marks)**

**Question Five**

Build up a unit rate for 150mm thick vibrated reinforced concrete slab mix 1:2:4. 20mm aggregates in m<sup>2</sup>.  
Use the data given below. **(15 marks)**

## Data

Skilled Labour	Ksh 80/hr
Unskilled Labour	Ksh 40/hr
Overheads and Profits	30%
Cement per 50kg bag	Ksh. 800
Sand per tonne	Ksh. 1000
Ballast per tonne	Ksh. 2000
Density of cement	1440kg/m <sup>3</sup>
Density of sand	1500 kg/m <sup>3</sup>
Density of aggregates	1500kg/m <sup>3</sup>
Purchase Price of 200 litre mixer	Ksh. 420,000
Resale value	Ksh. 60,000
Interest on Investment	30% of purchase price
Maintenance, Repairs, Insurance and Taxes	75% of annual depreciation
Hours worked in a year	1500 hours
Diesel consumption 1 litre per hour @	Ksh. 100/litre
Cycle time	3 minutes
Efficiency	905
Gang size of 10 labourers, 2 masons and one operator	
Hire rate for vibrator	Ksh. 4000/- for 8 hours

Assume any other necessary information.