



THE TECHNICAL UNIVERSITY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**DIPLOMA IN CIVIL ENGINEERING (DC 10B)**

EBC 2310: ESTIMATING & COSTING OF CIVIL ENG. WORKS

**SPECIAL/SUPPLEMENTARY EXAMINATION**

**SERIES: FEBRUARY 2013**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Pocket Calculator*

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) (i) List **FOUR** components of a unit rate  
(ii) Outline **FOUR** sources of cost information. **(6 marks)**
- b) Briefly describe the following methods of approximate estimating giving **TWO** merits and **TWO** demerits of each method.  
(i) Superficial area method  
Storey enclosure method  
Approximate quantities method **(12 marks)**
- c) Outline the following terms used in Building Economies:  
(i) Cost plan  
(ii) Cost check  
(iii) Cost control  
(iv) Cost analysis **(6 marks)**
- d) Explain how the following design variables affect the cost of building:  
(i) Plan shape  
(ii) Wall to floor area ratio  
(iii) Circulation area **(6 marks)**

### Question Two

- a) State **FIVE** factors that affect the following:  
(i) Operating cost of a mechanical plant  
(ii) Owning cost of a mechanical plant **(5 marks)**
- b) Using a hypothetical example explain the following methods of depreciation calculation:  
(i) Sum of number of years method  
(ii) Straight line method **(10 marks)**

### Question Three

- a) Outline **FIVE** sources of cost information. **(10 marks)**
- b) Outline **FIVE** roles of a estimator. **(5 marks)**

### Question Four

Calculate the hourly owning cost of the plant using the data given below:

#### Data:

Plant initial cost	Ksh. 5,000,000
Plant useful life	5 years
Plant scrap value	Ksh. 1,000,000
Plant maintenance per year	305 of annual depreciation

Insurance, taxes, licences	5% of initial cost per year
Interest	15% of initial cost per year
Tyre cost	5% of initial cost per year
Hours worked annually	2000 hours
Use straight line method of depreciation	
Assume any necessary information	

### Question Five

Build up a unit rate for 150mm thick vibrated reinforced concrete mix 1:2:4 slab use the data given below (per m<sup>2</sup>)

#### Data

Skilled labour	Ksh. 80/hr
Unskilled labour	Ksh. 40/hr
Overheads and profits	30%
Cements per 50kg bag	Ksh. 800
Sand per tonne	Ksh. 1,000
Ballast per tonne	Ksh. 2,000
Density of cement	1440kg/m <sup>3</sup>
Density of sand	1500kg/m <sup>3</sup>
Density of aggregate	1500kg/m <sup>3</sup>
Purchase price of 200 litre mixer	Ksh. 420,000
Resale value after 4 years	Ksh. 60,000
Interest on investment	10% of purchase
Insurance, taxes, tyres, maintenance	30% of purchase price annually

Assume any other necessary information.

**(15 marks)**