THE TECHICAL 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

<u>**Instructions to Candidates:**</u>
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^2)

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^3
Density of sand	1500kg/m^3
Density of aggregate	1500kg/m^3
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)**