



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA BUILDING AND CIVIL ENGINEERING

**EBC 2308 : ESTIMATING AND COSTING OF BUILDING & CIVIL
ENGINEERING WORKS**

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

- Pocket calculator

This paper consists of **FIVE** questions. Attempt any **THREE** questions.

Do not write on the question paper.

Mobile phones are not allowed in the examination room.

Question ONE

- State FIVE sources of cost information to an estimator (2 ½ marks)
- Outline any FOUR elements of unit rate (2 marks)
- Using the data given below build up a unit rate for basement excavation commencing from ground level and not exceeding 1.50m deep (per m³)

Data

Basement size 40m x25mx5m

Purchase price of 0.50m³ capacity excavator = ksh 6.0 million

Interest @ 15% per annual of initial cost

Insurance @ 6% per annum of initial cost	
Maintenance @ 25% of annual of initial depreciation	
Tyres @ 405 of annual depreciation	
Licenses and taxes @20% of annual depreciation	
Cycle time of excavator	85%
Economic working life of plant	5 years
Working hours per annum	1800 hours
Use straight method of depreciation	
Diesel consumption per day	120 litres @100ksh/litre
Lubricating oil per week	10 litres @ 400 ksh/litre
Skilled labour per hour	@200ksh/hr
Unskilled labour per hour	@100 ksh/hr
Assume any other information not given	(15 ½ marks)

Question TWO

Build up unit rates for

- 200mm thick solid concrete block walling in cement sand mortar mix 1:3 **(14marks)**
- 6mm diameter mild steel reinforcement including cutting bending, and tying wires cover blocks (per kg) **(6 marks)**

Data

Block size 390x200x190	sh 90
Cement 50kg bag	sh 700
Sand per tonne	sh 1500
Cement density	1440kg/m ³
Sand density	1500kg/m ³
Mixing motar	manually
6mm and bar reinforcement	sh 100 each

Weight of 6mm diameter bars per piece	2.5kgs
Tying wires per kg	sh 120/=

Question THREE

Build up a unit rate for concrete mix 1:2:3 the concrete is produced using a 200 litre. Non fitting concrete mixer. The purchase price of the mixer is ksh 600,000 and has a resale value of ksh 100,000 after 4 years.

(20 marks)

Data

Cement 50kg bag	800ksh
Sand 1 tonne	1500ksh
Aggregates 1 tonne	2000ksh
Fuel 1 litre of petrol	120ksh
Lubricant 1 litre	400ksh
Consumption of fuel	50 litres/day
Machine output	0.2m percyle
Machine cycle time	5minutes
Machine efficiency	100%
Interest of capital	15% per year
Insurance on initial capita	3% per year
Maintenance, taxes, licenses	20% of teady
Assume any other information not given	(20 marks)

Question FOUR

- a. Prepare specifications for the following in rigid pavements
 - i. Water proofing underlay
 - ii. Placing concrete and reinforcements
 - iii. Curing of concrete pavements **(12 marks)**

- b. Briefly write specification notes for
 - i. Materials for formwork
 - ii. Dismantling formwork **(8marks)**

Question FIVE

a. Write specification notes for railway track works on

- i. Preliminary works
- ii. Railway track materials
- iii. Laying of track work

(12marks)

b. Prepare brief specification notes on

- i. Roof work
- ii. Plaster to surfaces

(8 marks)