TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN CIVIL ENGINEERING

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

END OF SEMESTER EXAMINATION

SERIES –APRIL 2016

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination

- Answer booklet

This paper consists of **FIVE** questions

Answer any **THREE** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed papers.

QUESTION ONE

a) Briefly describe the following terms
   i) Labour constants
   ii) Preliminary items
   iii) All- in labour rates **(4marks)**

b) Using the data given below build up a unit rate for concrete block walling in cement sand motar mix 1:3 (perm^2).

   Data
   Blocks size 200x200x400mm @ ksh 100
   Sand 1 tonne @ ksh 1500
   Cement 50kg bag @ ksh 700
   Density cement 1440kg/m^3
   Density sand 1500kg/m^3
   Assume any other necessary information **(16marks)**

QUESTION TWO

a) State six factors that affect the owning cost of a mechanical plant (**3marks)**

b) Using hypothetical example price the following item, allow for disposal of general surface water from excavation (item) **(7marks)**

c) A proposed storied building has two basements floors size 25x20x4m and 6 upper floor size 20x20x3m calculate the approximate cost of this building using the storey enclosure method. I assume given that unit cost is ksh 10,000/m^2. **(10 marks)**

QUESTION THREE

Use the data given build up unit rate for vibrated reinforced concrete mix (1;2:4) in ground beams (per m^3).

Cost of cement	ksh700/50kg bag
Cost of sand	ksh 1500/per tonne
Cost of aggregate	ksh 2500/per tonne
Density of cement	1440kg/m^3
Density of sand	1600kg/m^3
Density of aggregates	1600kg/m^3
Purchase price of 200 litre mixer	Ksh 300,000
Interest on capital per annum	15% of initial cost
Hours worked in a year	20% of annual depreciation
Maintenance per annum	5% of initial cost

Taxes /licenses etc per annum	20% of annual depreciation
Fuel consumption	5 litrs/hr @ 70kssh /litre
Lubricant	1 litre/day @400ksh /litre
Daily maintenance and greasing	ksh100 per day
Skilled labour	ksh 100/hr
Unskilled labour	ksh 50/hr
Cycle time	5 minutes
Efficiency	90%

Assume any other necessary information **(20marks)**

QUESTION FOUR

Using hypothetic given build up a unit rate for the following preliminary items

i) Site store
ii) Site water
iii) Watchman
iv) Insurance
v) Site temporary power supply **(20marks)**

QUESTION FIVE

Using the data given build up a unit rate for the following item load and transport to deposit, spread and level per m^3 excavated soil.

Data

Purchase price for 10 tonne upper	ksh 10, 000,00
Resale value after 8 years	ksh 1,000,000
Interest on capital	10% per annum
Maintenance and repair	25% of annual depreciation
Insurance	40% of annual depreciation
Hours changed in a year	2000 hrs
Tyres changed once a year	6 no tyres @ 40,000 each
Hire rate of grader	10,000 including per fuel per day 8 hours
Volume deposited	20,000m^3
Capacity of tipper	15m^3
Tipping fee	sh 25/m^3
Distance to tip	10km
Speed when timber is empty	20km/h
Speed of timber when loaded	40km/h
Skilled labour	ksh100/hr
Unskilled labour	ksh 50/hr

Assume any other necessary information **(20marks)**