THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)
Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN CIVIL ENGINEERING WITH CAD (DC 10A)

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBC 10A)

EBC 2324: ESTIMATING & COSTING OF CIVIL ENGINEERING WORKS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: MAY/JUNE 2012

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 any **THREE** questions
Maximum marks for each part of a question are clearly shown
This paper consists of **THREE** printed pages

Use the data in Appendix "A" in addition to the information given in the question for price build-up. Assume any other necessary information

Question 1 (20 marks)

a) Give a brief outline of the following methods of approximate estimating stating the advantages and disadvantages of each method   (10 marks)
   (i)   Cube method
   (ii)   Superficial method

b) Build up a unit rate for the following item:-

Excavate column bases over 3.00m deep but not exceeding 4.50m deep (hand excavation).
                                                                                    (10 marks)
                                                        (SM)

Question 2 (20 marks)

a) Build up unit rates for the following item:-
   150mm thick BRC reinforced concrete 1:3:6 mix oversite floor slab (manual operation).
                                                                                    (10 marks)
b) List and briefly explain **FIVE** items which contribute to the on-costs of a construction firm.
                                                                                    (10 marks)

Question 3 (20 marks)

Build up unit a rate for the following item:-
600mm thick (average) mass concrete 1:2:4 mix 20mm aggregate retaining wall.

Use the following information
   -   300 litre concrete mixer hired at 9,000/= per hour including operator and fuel.
   -   Efficiency of mixer 80 percent
   -   Poker vibrator hired at 2,500/= per hour excluding operator
   -   Concreting gang: unskilled   3 batching, 2 transporting, 1 placing
                       Skilled   1 mason   (CM)   (10 marks0

Question 4 (20 marks)

a) Build up unit a rate for the following item:-
   The contractor shall allow for keeping whole excavation free from general water
   Use the following information:-

   -   Single diaphragm pump used hired at 3,000/= per hour including operator
   -   Pump on site for 450 hours
   -   Pump utilization 60 per cent
   -   Fuel on operation 2 litres per hour at 105/= per litre
   -   Lubrication 300/= for the whole period used   (10 marks)

Question 5 (20 marks)

Build up a detailed hourly All-in-skilled labour rate using the following data   (20 marks)
   -   Working period   45 hours per week
   -   Overtime   4 hours during the week and 4 hours on Sunday
   -   Annual leave with pay   21 days per annum

- Sick leave with pay   14 days per annum
- Basic monthly pay   kshs 15,000.00
- Gazette holidays   10 days per year
- Medical benefits   kshs 18,000 per year
- NSSF Contribution   5% of basic pay per month
- Tool allowance   kshs 35.00 per month
- Assume 52 working weeks and that the workers will be accommodated on site
- Supervision   50 per cent of total time per day