



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

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

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

BRIDGING HIGHER DIPLOMA II

EBC 2324: ESTIMATING & COSTING OF BUILDING WORKS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY/MARCH 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions

Answer question **ONE (COMPULSORY)** from **SECTION A** and any other **TWO** questions from **SECTION B**

Maximum marks for each part of a question are clearly shown

This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question 1

- a) Build up unit rates for the following item:-
- (i) Excavate over site to remove vegetable soil average 150mm thick and deposit on site in spoil heaps as directed. (5 marks)
 - (ii) Build up a unit rates for the following item:-
Excavate Pit for column base not exceeding 1.50m deep (CM) (10 marks)
 - (iii) Calculate the output of a 0.75 CM capacity Back-actor excavating a trench in ordinary soil and loading directly onto Lorries, with a time cycle of 3 minutes. (5 marks)

SECTION B (Answer any TWO questions from this section)

Question 2

Build up a detailed hourly All-in labour rate for a skilled tradesman, using the following data. (20 marks)

- Working period 45 hours per week
- Overtime 5 hours during the week and 2 on Sunday
- Annual leave with pay 14 days per annum
- Basic daily wage Ksh. 700.0
- Gazette holidays 10 days per year
- Medical Benefits Ksh. 15,000.00 per year
- Tools Allowance Ksh. 800.00 per month
- Trade Supervision Ksh. 15.00 per hour
- NSSF Contribution 5% of basic pay per month
- Assume 52 working weeks and that the workers will be accommodated on site.

Question 3

- a) Briefly explain **FIVE** factors which may affect the prices to be quoted for concrete works. (10 marks)

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

Reinforced concrete: 1:2:4 mix in foundation trench (250 mm thick.) [CM] (10 marks)

Question 4

- a) Give a brief outline of the following methods of approximate estimating stating the advantages and disadvantages of each method (12 marks)
- (i) Superficial area method
 - (ii) Approximate quantities method
 - (iii) Cube method
- b) Build up unit rates for the following items:

250mm thick bed of broken stone hardcore watered and rolled to receive Blinding (measured separately) (SM) (8 marks)

Question 5

- a) Differentiate between Overheads and Profit as used in the buildup of unit rates (10 marks)
- b) Briefly explain FIVE items that constitute the ON-costs of a Construction firm (10 marks)

ADDITIONAL DATA FOR USE IN ESTIMATING AND COSTING

All-in skilled labour rate per hour sh. 95.00
All-in skilled labour rate per hour sh. 85.00

Labour constants

Excavate top soil average 150mm deep per SM 0.35 hrs
Excavate foundation trench not exceeding 1.50m deep per CM 3.25hrs
Excavate pit for isolated base not exceeding 1.50m deep per CM 5.00hrs
Off loading cement in 50kg. Bags per ton 1.50 hrs
Mixing, transporting, placing and compacting concrete in foundation 250mm thick bed of hardcore 1.50 hrs

Costs in Materials

Cement in 50kg. Bags delivered to site sh. 800.00
Fine aggregate (sand) per ton delivered to site sh.1, 500.00
Ballast per ton delivered to site sh. 2,100.00
Broken stone hardcore per 7 ton lorry delivered to site sh. 4,500.00

Density of cement 1442kg/cm
Density of Sand 1600kg/cm
Density of Ballast 1550kg/mm
Density of broken stone hardcore 2500kg/cm

Waste on concrete materials 10%
Shrinkage and voids in concrete 45%

Overheads and profit 25%