



TECHNICAL UNIVERSITY OF MOMBASA

**Faculty of Engineering & Technology  
in Conjunction with  
Kenya Institute of Highways and  
Building & Technology (KIHBT)**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING  
HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBE 3312: ESTIMATING & COSTING

END OF SEMESTER EXAMINATION

SERIES: APRIL 2015

TIME ALLOWED: 2 HOURS

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Pocket Calculator*

This paper consists of **FIVE** questions. Answer question **ONE (Compulsory)** any other **TWO** questions  
Maximum marks for each part of a question are as shown  
Use neat, large and well labeled diagrams where required  
This paper consists of **THREE** printed pages

**Question One (Compulsory)**

- a) Briefly explain the FIVE sources used to obtain information when pricing a bill of quantities **(7 marks)**
- b) Name and explain any FIVE discrepancies or disparities which should be analyzed carefully when using data from secondary sources **(7 marks)**
- c) Using hypothetical example price the preliminary item water for the work **(6 marks)**

**Question Two**

- a) Briefly describe ‘Labour Constants’ and state what the labour constants must allow for **(8 marks)**
- b) With the aid of sketches, explain how the following design variables affect the cost of a building:
  - (i) Plan shape
  - (ii) Size of the building
  - (iii) Water-cement ratio
  - (iv) Storey height

**Question Three**

Using the data given build up a unit rate for vibrated reinforced concrete (1:2:4) in 150mm thick slab **(20 marks)**

**Appendix**

Cost of sand	-	shs 1000/= per m <sup>3</sup>
Cost of Cement	-	shs 700/- per 50kg bag
Cost of ballast	-	8000/= per m <sup>3</sup>
Density of ballast	-	1600kg/m <sup>3</sup>
Hire rate for mixer	-	5000/= per day
Bucket capacity of mixer	-	400 litres
Mixing cycle	-	3 minutes
Skilled labour	-	shs 1000/= per day
Unskilled labour	-	shs 600/= per day
Assume any other necessary information		
Density of sand	-	1600kgs/m <sup>3</sup>

**Question Four**

- a) Briefly explain the “All-in labour rates” used in construction projects **(12 marks)**
- b) Using assumed rates price the preliminary item “Temporary sheds on site” **(8 marks)**

### Question Five

Using the data given build up a unit rate for 38mm thick granolithic paving (1:3) mix (per m<sup>2</sup>)  
(20 marks)

- Cost of cement – shs 700/= 50kg bag
- Density of sand – 1600kg/m<sup>3</sup>
- Cost of colouring = 500/= per 10kg bag
- Skilled labour – shs 1000/= day
- Unskilled labour – shs 600/= per day
- Assume any other information not given