



**THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

(A Constituent College of JKUAT)

# **Faculty of Engineering & Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**DIPLOMA IN BUILDING & CIVIL ENGINEERING  
[Institutional Based Programmes]**

EBE 2322: MEASUREMENT ESTIMATING & COSTING FOR CIVIL ENGINEERING  
WORKS

**END OF SEMESTER EXAMINATION**

**SERIES: DECEMBER 2012**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Scientific Calculator*

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 pages

**Question One (20 marks)**

- a) Briefly explain the essence of measurement and estimation as applied in civil engineering works. **(4 marks)**
- b) Describe the principle units of measurements as applied in costing and measurements. **(6 marks)**
- c) The contract document is an important consideration that will guarantee a successful project, briefly describe any **FIVE** documents that must form every part of construction contract. **(10 marks)**

**Question Two (20 marks)**

- a) Calculate the quantity of material used for the following items:

- (i) Concrete class 1:2:4 for 20m<sup>3</sup> of work
- (ii) Concrete class 1:3:6 for 15m<sup>3</sup> of work

Take: 1m<sup>3</sup> wet concrete 1.52m<sup>3</sup> dry concrete  
Specific weight of concrete = 1440kg/m<sup>3</sup>

**(8 marks)**

- b) Prepare the bar bending schedule for the reinforced concrete beam element shown in figure 7. **(12 marks)**

**Question Three (20 marks)**

- a) Highlight **FIVE** items that lead to lack of quality of bill rates. **(5 marks)**
- b) Briefly explain sources of costing in civil engineering works. **(10 marks)**
- c) Define the following terms as applied in costing and estimation.
  - (i) Unit rate
  - (ii) Labour constant
  - (iii) All-in-labour rates
  - (iv) Profit
  - (v) Overheads**(5 marks)**

**Question Four (20 marks)**

- a) The width of a road embankment is 10m the side slopes are 2:1. The depth along the centerline of road at 50m intervals are 1.25, 1.10, 1.5, 1, 1.0, 1.1, 1.5m. Calculate the quantity of earth work using prismatic rule. **(12 marks)**
- b) Define the following terms as applied in bills of quantities.
  - (i) Contingency sum
  - (ii) Provisional sum
  - (iii) Prime cost sum****(8 marks)**

**Question Five (20 marks)**

- a) State **FOUR** functions of the bills of quantities. **(4 marks)**
- b) Briefly describe the **FOUR** columns of a dimension paper. **(6 marks)**
- c) Briefly explain the following:
- (i) Taking off
  - (ii) Contingency sum
  - (iii) Provision sum
  - (iv) Working up **(10 marks)**