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**CONSTRUCTION MANAGEMENT II,  
ESTIMATING AND COSTING II**

**Oct./Nov. 2017**

**Time: 3 hours**



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**

**DIPLOMA IN BUILDING TECHNOLOGY  
DIPLOMA IN CIVIL ENGINEERING  
DIPLOMA IN ARCHITECTURE**

**MODULE III**

**CONSTRUCTION MANAGEMENT II, ESTIMATING AND COSTING II**

**3 hours**

**INSTRUCTIONS TO CANDIDATES**

*You should have the following for this examination:*

*Answer booklet;*

*Scientific calculator.*

*This paper consists of EIGHT questions in TWO sections; A and B.*

*Answer FIVE questions choosing THREE questions from section A and TWO questions from section B.*

*All questions carry equal marks.*

*Maximum marks for each part of a question are as indicated.*

*Candidates should answer the questions in English.*

**This paper consists of 4 printed pages.**

**Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**

**SECTION A: CONSTRUCTION MANAGEMENT II**

*Answer TWO questions from this section.*

1. (a) State **three** implied responsibilities of each of the following:
  - (i) Lessor;
  - (ii) Lessee. (6 marks)
- (b) Briefly describe **three** types of legal mortgages. (6 marks)
- (c) Explain **two** defences and **two** remedies to an action in tort. (8 marks)
2. (a) Describe procurement process and its documentation. (14 marks)
- (b) State **three** obligations of the employer under the given headings as stipulated in occupational safety and Health Act (OSH):
  - (i) health;
  - (ii) welfare. (6 marks)
3. (a) Explain **five** roles of trade unions. (10 marks)
- (b) Explain **five** reasons for proper keeping of accounting records. (10 marks)
4. **Table 1** comprises of data collected from a calculation sheet of activities to be under taken by a contractor.

**Table 1**

Activity Code	Activity No.	Duration (weeks)
A	0-1	12
B	0-2	6
C	0-3	4
D	1-3	8
E	2-4	10
F	2-5	14
G	3-4	6
H	4-5	4
I	4-6	10
J	5-6	4

- (a) Draw a network diagram using critical path method and show the critical path. (15 marks)
- (b) Prepare an analysis sheet to show the total floats. (5 marks)

SECTION B: ESTIMATING AND COSTING II

Answer TWO questions from this section.

5. (a) Use the data given in Table 2 to build up a unit rate for 420 x 335 mm Mareba concrete roofing tiles with 75 mm head laps and 33 mm side laps fixed on size 50 x 50 mm battens (per m<sup>2</sup>). (12 marks)

**Data**

Skilled labour ----- Ksh 75  
 Unskilled labour ----- Ksh 40  
 Concrete roofing tiles 420 x 335 mm ---- Ksh 80 per each  
 Wire nails per kg ---- Ksh 120  
 Cypress timber battens size 50 x 50 mm ----- Ksh 50 per m<sup>2</sup>  
 Cost of materials as delivered on site.  
 Make reasonable assumptions for information not given.

- (b) Using data given to, build up a unit rate for 12 mm diameter mild steel reinforcement bars including all necessary tying wire and laps (per kg). (8 marks)

**Data**

Skilled labour ----- Ksh 75  
 Unskilled labour ----- Ksh 40  
 12 mm mild steel bars per m ---- 0.888 kg  
 Tying wire ----- Ksh 100 per kg.

6. Use the data to determine the rate for load and remove surplus excavated material from site (per m<sup>3</sup>). (20 marks)

**Data**

Skilled labour ----- Ksh 75  
 Unskilled labour ----- Ksh 40  
 Purchase price of 5m<sup>3</sup> capacity lorry -----Ksh 6,000,000  
 Economic working life of lorry ----- 5 years  
 Working hours per annum ---- 1,800  
 Salvage value of lorry ----- Ksh 500,000  
 Average interest per annum ----- 18% of investment  
 Licence and insurance per annum ---- 5% of purchase price  
 Total maintenance and repairs ---- 12% per annum.  
 Diesel consumption ---- 45 litres per day @ Ksh 110 per litre  
 Efficiency of lorry ---- 90%  
 Hauling distance ----- 5 km  
 Average empty haul of lorry -- 40 km/hr  
 Average loaded outward haul ---- 30 km/hr  
 Tipping time ----- 3 minutes  
 Loading of lorry ---- manual by 4 No. loaders  
 Tyres - 3 sets of six tyres @Ksh 150,000 per set during economic life.



7. Use the data given to build up a unit rate for sawn formwork to vertical sides of columns (per  $m^2$ ). (20 marks)

**Data**

Skilled labour ----- Ksh 75

Unskilled labour ----- Ksh 40

Sawn timber per  $m^3$  ---- Ksh 23,000

Wire nails per kg ----- Ksh 140

Size of column 400 x 250 x 3000 mm high

8. Build up a unit rate for making and fixing a framed, ledged, braced and battened door size 850 mm x 2100 mm with 100 x 50 mm stiles and top rail, 200 x 50 mm middle rail, 150 x 50 mm bottom rail, 100 x 30 mm braces and 5 x 20 mm T and G battens (per  $m^2$ ). Cost of timber is Ksh 23,000 per  $m^3$ . (20 marks)

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