2705/304 2709/304
2707/304 2710/304
CONSTRUCTION MANAGEMENT II,
ESTIMATING AND COSTING II
June/July 2018
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING CONSTRUCTION
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 **TWO** questions from section **A**, **TWO** questions from section **B** and another **ONE** question from either section.*
All questions carry equal marks.
Maximum marks for each part of a question are indicated.
Candidates should answer the questions in English.

This paper consists of 6 printed pages.

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

Turn over

SECTION A: CONSTRUCTION MANAGEMENT II

*Answer at least **TWO** questions from this section.*

1. (a) (i) Outline **four** sources of law in Kenya.

(ii) Differentiate between public law and private law giving **one** example in each case. (10 marks)

(b) Briefly explain contributory negligence as applied in the law of tort. (2 marks)

(c) (i) Define defamation.

(ii) Highlight **three** defences in defamation.

(iii) Distinguish slander from libel giving **three** distinctions. (8 marks)

2. (a) Explain **three** timing techniques using a stop watch in work measurement. (6 marks)

(b) **Table 1** shows a record of two cycles of time study for handing a matchboarded door size $900 \times 2100 \times 50\,mm$ thick.

Table 1

Element No	Observed Rating (O.R.)	Observed Time (O.T.) (minutes)	Total Relaxation Allowance (%)
Cycle A			
1	90	4.35	24
2	110	6.42	25
3	100	5.07	28
4	105	8.44	30
5	120	7.82	26
Cycle B			
1	95	4.59	24
2	100	5.98	25
3	105	5.65	28
4	110	8.60	30
5	100	8.00	26

If the contingency allowance is 2%, determine the standard time for the operation. (14 marks)

(a) Highlight **five** cases which may lead to misconduct and breach of discipline in construction industry. (5 marks)

(b) Explain **three** leadership styles to be applied in construction industry citing an ideal situation for each. (6 marks)

(c) Explain the following documentation used in material procurement process:

(i) invoice;
(ii) delivery note;
(iii) advice note. (6 marks)

(d) Highlight **three** ways of improving security on a construction site. (3 marks)

4. (a) Outline **four** general defences to an action in tort. (6 marks)

(b) The trial balance in **Table 2** was extracted from the books of Agano Enterprises at the close of business on 31st October 2011.

Table 2

	Dr (Ksh)	Cr (Ksh)
Stock 1 November 2010	29,700	
Purchases	112,800	
Sales		197,400
Salaries and wages	31,800	
Rent	10,200	
Insurance	2,000	
Van running expenses	4,500	
General expenses	6,200	
Office expenses	5,000	
Lighting and heating expenses	1,500	
Premises	10,000	
Motor vehicles	1,800	
Office furniture	14,400	
Debtors	46,500	
Creditors		24,900
Cash at bank	16,400	
Drawings	28,500	
Capital		99,000
	321,300	321,300
Stock at 31 October 2011	35,100	

Draw up:

(i) Trading and profit and loss account for the year ended 31st October 2011.
(ii) Balance sheet as at 31st October 2011. (14 marks)

SECTION B: ESTIMATING AND COSTING II

*Answer at least **TWO** questions from this Section.*

5. (a) The rates quoted in the bills of quantities for similar items by different contractors may not be the same. Justify this statement giving **five** reasons. (10 marks)

(b) (i) State **six** factors to consider when pricing the items in the preliminary bill.

(ii) Using the data given in **Table 3**, cost for a preliminary item "security officer" to be employed on site.

Table 3

Basic salary per month	Ksh 20,000
House allowance per month	Ksh 6,000
Medial allowance per month	Ksh 4,000
Transport allowance per month	Ksh 3,500
Airtime allowance per day	Ksh 50
Insurance per month	Ksh 2,000
Contract period	$1\frac{1}{2}$ years
Working days in a week	6

Make reasonable assumptions for information not given. (10 marks)

6. (a) Explain the term **front loading** as used in tendering. (2 marks)

(b) Using the data given in **Table 4**, build up a unit rate for vibrated reinforced concrete (1:2:4) in 150 mm thick suspended slap (per m^2).

Table 4

Skilled labour per hour	Ksh 75
Unskilled labour per hour	Ksh 50
Cost of cement per 50 kg bag	Ksh 730
Cost of ballast per tonne	Ksh 1,500
Cost of sand per tonne	Ksh 1,200
Density of cement	1440 kg/m^3
Density of ballast	1700 kg/m^3
Density of sand	1600 kg/m^3
Hire rate of mixer and vibrator per day	Ksh 7,000
Output of mixer per hour	2.5 m^3
Shrinkage of concrete	50%
Working hour per day	8 hours

Materials cost as delivered to site.
Make assumptions for information not given. (18 marks)

7. (a) Using declining balance method, determine the resale value of a back actor whose economic working like is 5 years and purchase price is Ksh 10,000,000, considering 25% rate of depreciation. (5 marks)

(b) Using the date given in **Table 5**, build up a unit rate for 1 brick thick wall in English bond in cement sand mortar (1:3) (per m^2).

Table 5

Skilled labour per hour	Ksh 75
Unskilled labour per hour	Ksh 50
Cost of the bricks per each	Ksh 6
Sand per tonne	Ksh 1,300
Bulking of sand	20%
Cement per 50 kg bag	Ksh 730
Density of cement	1440 kg/m^3
Density of sand	1600 kg/m^3
Shrinkage of mortar	15%
Profits and overheads	20%
All in hire rate for 200 litre capacity mixer per day	Ksh 4,500
Cycle time of the mixer	4 minutes
Efficiency of the mixer	85%

Allow 10 mm for mortar joints
Cost of materials as delivered to site.
Make reasonable assumptions for information not given. (15 marks)

8. Using the data in **Table 6**, build up a unit rate for 152 × 152 × 16 *mm* clay quarry tiled paving on 12 mm cement sand screed (1:3) bed (per m²).

Table 6

Skilled labour per hour	Ksh 75
Unskilled labour per hour	Ksh 50
Sand per tonne	Ksh 1,300
Bulking of sand	20%
Cement per 50 kg bag	Ksh 730
Density of cement	1440 kg/m³
Density of sand	1600 kg/m³
Shrinkage of mortar	25%
152 × 152 × 16 *mm* quarry tiles per piece	Ksh 45
Cost of mixer 300 litre capacity	Ksh 750,000
Working hours per annum	2000 hours
Salvage value	Ksh 150,000
Maintenance and repairs	30% of depreciation
Useful economic life	5 years
Insurance	2% of cost price
Interest on capital per annum	12%
Transport to and from site per annum	Ksh 40,000
Cycle time of mixer	3 minute
Efficiency of the mixer	90%
Diesel per litre	Ksh 110
Fuel consumption per day	10 litres

Allow 6 mm for mortar joints.
Cost of materials as delivered to site.
Make reasonable assumptions for information not given. (20 marks)

40.05 tiles

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