2705/304
2707/304
2709/304
2710/304
CONSTRUCTION MANAGEMENT II,
ESTIMATING AND COSTING II
Oct./Nov. 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 from sections; **A** and **B**.*
*Answer **FIVE** questions; choosing at least **TWO** questions from each section.*
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 8 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 in this section.*

1. (a) Illustrate the hierarchy of courts in Kenya, highlight the jurisdiction of each. (10 marks)

   (b) Outline **four** remedies of trespass to land. (6 marks)

   (c) Briefly describe vicarious liability citing two examples. (4 marks)

2. (a) Explain the **two** branches of work study. (3 marks)

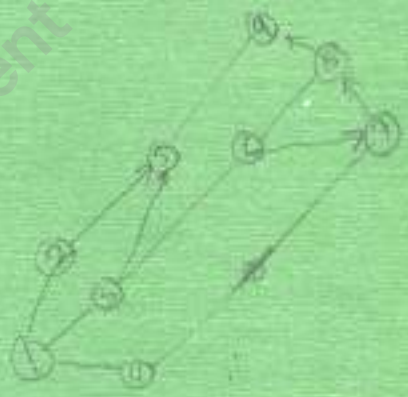
   (b) Use the data in **table 1** to prepare;

   (i) a critical network diagram showing the critical path;

   (ii) a tabulated analysis of the floats. (17 marks)

Table 1

Activity	Event	Duration (weeks)
A	1 - 2	4
B	1 - 3	3
C	1 - 4	2
D	2 - 5	2
E	3 - 5	2
F	3 - 6	3
G	4 - 7	2
H	5 - 9	4
I	6 - 7	0
J	6 - 8	4
K	7 - 8	5
L	8 - 9	1



3. (a) Highlight **three** regulations governing employment in construction industry. (6 marks)

(b) Explain **two** methods of contract programming. (6 marks)

(c) A ground floor slab measuring 20 x 15m is to be concrete. As a contractor you are required to establish the amount of materials required to complete the job for procurement purpose. Use the data given in **table 2** to calculate;

(i) cement in 50Kg bags;
(ii) ballast and sand in tonnes.

Table 2

Concrete mix	1: 2: 4
Density of cement	1440kg/m^3
Density of sand	1600kg/m^3
Density of ballast	1500kg/m^3
Thickness of bed	150mm
Bulking of sand	20%
Wastage	5%
Shrinkage of concrete	40%

(8 marks)

4. (a) Outline **two** advantages and **two** disadvantages of arbitration over litigation. (6 marks)

(b) Explain the **two** types of notices which may be issued to a contractor for contravening the provisions of Occupational Safety and Health Act (2007) (5 marks)

(c) Use the information given in **table 3** to draw up a trading, profit and loss account for XYZ Limited for the year ended 31st December, 2011. (9 marks)

TRIAL BALANCE

Table 3

	Dr. Kshs.	Cr. Kshs.
Stock 1st January 2012	2,761	
Purchases	11,874	
Sales		18,600
Salaries and Wages	3,862	
Rent	304	
Insurance	78	
Motor expenses	664	
Office expenses	216	
Lighting and heating expenses	166	
Premises	5,000	
Motor vehicles	1,800	
Fixtures and fittings	350	
Debtors	3,896	
Creditors		1,731
Cash at bank	482	
Drawings	1,200	
Capital		12,636
General expenses	314	
	32,967	32,967
Stock at 31 December 2011	2,946	

SECTION B: ESTIMATING AND COSTING II

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

5. (a) It is not always advisable to award a tender to the lowest bidder. Justify this statement. (5 marks)

(b) Using the data given in **table 4**, build up a unit rate for 50mm thick granolithic screed. (per m^2).

Table 4

Skilled labour per hour.	Kshs. 80
Unskilled labour per hour.	Kshs. 50
6mm grano chippings per tonne.	Kshs.
Cement per 50kg bag.	4,000
All in hire rate of $5m^3$ mixer per hour.	Kshs. 800
Density of cement.	Kshs. 320
Density of grano chippings.	$1440kg/m^3$
Cost of sand per tonne.	$1350kg/m^3$
	Kshs.
	1,300
Cost of materials as delivered to site. Make reasonable assumptions for information not given.	
Density of sand - $1600kg/m^3$ Bulking of sand - 20%	

(15 marks)

6. Using the data given in **table 5**, build up a unit rate for reinforced concrete (1: $1\frac{1}{2}$: 3) in 200 mm thick basement walling (per m^2).

(20 marks)

Table 5

Skilled labour per hour	Ksh. 80
Unskilled labour per hour	Ksh. 50
Purchase price of 200 litre capacity mixer.	Kshs. 520,000
Insurance per year.	2% of purchase price.
Transport to and from site per annum.	Kshs. 40,000
Cycle time.	3 minutes
Efficiency of the mixer.	80%
Interest on capital per annum.	15%
Diesel per litre	Kshs. 110
Ballast per tonne	Kshs. 1,400
Sand per tonne	Kshs. 1,300
Bulking of sand	20%
Cement per 50kg bag	Kshs. 800
All in hire rate poker vibrator per day	Kshs. 2,500
General maintenance and repair	25% depreciation
Salvage value	Kshs. 120,000
Usiful life mixer	5 years
No. of working hours per year	2 000
Density of ballast.	1,500kg/m^3
Density of sand.	1,600kg/m^3
Density of cement.	1,440/m^3
Cost of materials as delivered to site	
Make necessary reasonable assumptions for information not given.	

7. (a) Outline **four** factors which the cost of excavation work. (6 marks)

(b) Using the data given in **table 6**, build up a unit rate for excavating trench not exceeding 1.50m average 1.25m deep for 150mm diameter drain pipe (per m).

(14 marks)

Table 6

Unskilled labour per hour.	Kshs. 50
All in hire rate for $0.25m^3$ bucket capacity excavator and operator per hour.	Kshs. 5,000
Output of excavator 'per hour'.	$5m^3$
Make reasonable assumptions for information not given.	

8. (a) Using the data given in **table 7**, build up a unit rate for cart away surplus excavated material from site (per m^3).

Table 7

Skilled labour per hour.	Kshs. 75
Unskilled labour per hour.	Kshs. 50
Capacity of loader bucket.	0.75m3
Cycle time of loader.	3 minutes
Hire rate of a loader per day.	Kshs. 28,000
Hire rate of tipper per hour.	Kshs. 2,000
Capacity of tipper truck.	4.5m3
Average speed of tipper truck.	45Km/hr
Bulking of soil.	25%
Distance to tip.	10Km
Tipping charge per tipper load.	Kshs. 500
Make reasonable assumptions for information not given.	

(11 mark)

(b) Using the data given in **table 8**, build up a unit rate for 12mm diameter mild steel reinforcement including cutting, tying wire, all as necessary (per Kg).

Table 8

Skilled labour per hour.	Kshs. 75
Unskilled labour per hour.	Kshs. 50
12mm diameter mild steel per full length	Kshs. 830
Mass of 12mm diameter bar per kg.	0.888kg/m
Tying wire per kg.	Kshs. 80
Mass of tying wire	3% of mass of bars
Cost of materials as delivered to site. Assume any other information not given.	

(9 marks)

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