2705/304 2707/304
2709/304 2710/304
CONSTRUCTION MANAGEMENT II,
ESTIMATING AND COSTING
Oct./Nov. 2016
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

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
Answer booklet;
Pocket 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 **20** marks each.*
Maximum marks for each part of a question are as shown.
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

*Answer **THREE** questions from this section.*

1. (a) Explain the use of the following documents in materials supply:

(i) advice note;
(ii) delivery note;
(iii) invoice;
(iv) requisition.

(8 marks)

(b) State **six** objectives of method study. (3 marks)

(c) Compare **four** properties of the critical path method (CPM) and programme evaluation and review technique (PERT). (4 marks)

(d) Explain how material control can be maintained on site. (5 marks)

2. (a) State **six** steps in pre-tender planning. (6 marks)

(b) (i) Explain the purpose of recruiting workers.

(ii) Describe **three** leadership styles.

(10 marks)

(c) List **four** activities expected at the closing phase of a project. (4 marks)

3. (a) Explain **three** methods of disciplining employees in an organization. (6 marks)

(b) With reference to the 'factories act', explain the precautions that must be taken to safeguard workers against the following:

(i) dermatitis;
(ii) silicosis;
(iii) asbestosis;
(iv) bronchitis.

(8 marks)

(c) Differentiate between improvement notice and prohibitive notice. (6 marks)

4. (a) **Table 1** represents activities to be undertaken by a contractor on site.

(i) Draw a network diagram and indicate the critical path;
(ii) Prepare analysis sheet.

(14 marks)

Table 1

ACTIVITY	DAYS
1 - 2	8
2 - 3	12
2 - 4	18
2 - 5	4
3 - 5	6
3 - 7	16
4 - 6	20
5 - 7	4
6 - 7	8
7 - 8	6

(b) Explain the following terms as used in law:

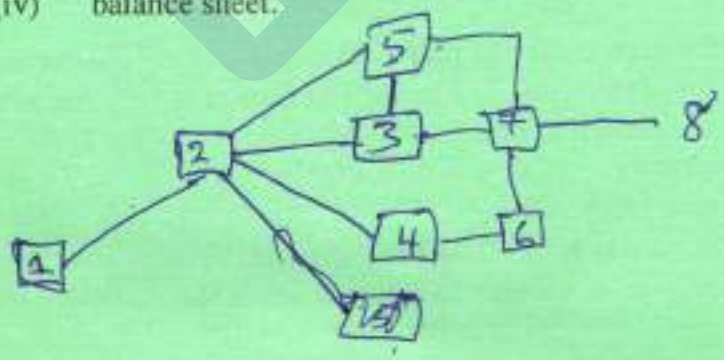
(i) vicarious liability;
(ii) negligence;
(iii) trespass.

(6 marks)

5. (a) Explain the following terms used in accounts:

(i) ledger accounts;
(ii) trial balance;
(iii) final accounts;
(iv) balance sheet.

(8 marks)



(b) Using the trial balance given below for A.N Stores, prepare profit and loss account for the year ending 31st December, 2011. Showing net profit. (12 marks)

	DR	CR
	Kshs	Kshs
Stock 1st January 2011	50,000	
Freehold premises	240,000	
Bills receivable	30,000	
Purchases	280,000	
Salaries and wages	35,000	
Sales		520,000
Fixtures and fittings	25,000	
Discount allowed	7,500	
Discount received		4,500
Plant and machinery	140,000	
Rates	5,600	
Advertising	10,400	
Insurance	3,800	
General expenses	7,200	1,800
Provision of bad debts		
Sundry debtors	60,000	
Bills payable		15,000
Sundry creditors		43,000
Cash in hand	2,400	
Bank overdraft		18,600
Drawings	6,000	
Capital account		300,000
	902,900	902,900

Additional information:

Provide for depreciation of plant and machinery at 10% per annum.
Provide for depreciation of fixtures and fittings at 15% per annum.
Increase the provision of bad debts to an amount equal to 4% of sundry debtors.
Prepaid insurance amounts to Ksh. 500.
Rates accrued Ksh. 400.
Closing stock was Ksh. 60,000.
During the year A.N Stores took goods worth Ksh. 2000 for his personal use.

SECTION B: ESTIMATING AND COSTING

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

6. (a) Build up unit rate for the following item 'Half brickwall in common' laid in stretcher bond and bedded in cement sand mortar (1:4) (per m^2). (13 marks)

(b) Build up unit rate for extra over wall in (6a) in fair face finish (per m^2). (7 marks)

DATA

Cost of cement per 50 kg bag	-	Ksh 820.00
Density of cement	-	1440 kg/ m^3
Cost of sand per tonne	-	Ksh 800.00
Cost of common bricks per 1000	-	Ksh 15,000.00
Cost of selected bricks per 1000	-	Ksh 18,000.00
Skilled labour per hour	-	Ksh 50.00
Unskilled labour per hour	-	Ksh 25.00
Hire of mixer per 8 hr day	-	Ksh 5000.00
Output of mixer is 2.5 m^3/hr		
Mixed mortar in 1m^2	-	0.018 m^3

Assume any other necessary information.

7. (a) Using the data given, calculate the unit rate for excavating basement over 3.0 m but not exceeding 4.50 m deep from ground level (per m^3). (16 marks)

DATA

Purchase price of excavator	-	KSh 8,000,000.00
Resale value after 5 years	-	Ksh 1,000,000.00
Average interest on capital per year	-	10% or purchase price
Repairs and renewals per year	-	15% of purchase price
Operators pay per hour	-	Ksh 80.00
Banksman pay per hour	-	Ksh 50.00
Fuel consumption per day	-	45 litres @ 100 per litre
Lubricating oil consumption per day	-	2 litres @ Ksh 200 per litre
Insurance per annum	-	5% of the purchase price
Bucket capacity of excavator	-	0.75 m^3
Maximum output of excavator per hour	-	15 m^3
Efficiency of excavator	-	90%
Hours worked per year	-	2000 hrs
Hours worked per day	-	8 hrs
Licence per year	-	Ksh 10,000

(Reasonable assumptions to be made for information not given)

(b) Explain the term 'Plant Matching' giving **two** examples. (4 marks)

8. Using the data given, build up a unit rate for vibrated reinfo[illegible] in 150 mm thick suspend slab (per m^2) (20 marks)

DATA

Cement per 50 kg bag	-	Ksh 820.00
Sand per tonne	-	Ksh 700.00
Ballast per 7 tonne lorry	-	Ksh 10,500.00
Hiring of 0.28/0.20 mixer per day	-	Ksh 8000.00
Cycle time of mixer	-	5 min
Mixed is 85% efficient	-	0.018 m^3
Density of cement	-	1440 kg/m^3
Density of sand	-	1500 kg/m^3
Density of ballast	-	1600 kg/m^3

$\frac{1}{7} \times 1.725 = 0.2464 m^3 \times$

$d = \frac{m}{V}$

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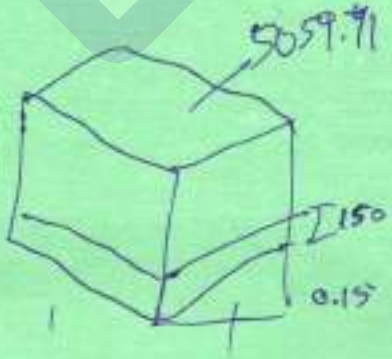

1 – 60

10.147 X

= 608

608 609 min

1X1X1 → 5059.71

1X1X0.15