

2705/304

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CONSTRUCTION MANAGEMENT II,
ESTIMATING AND COSTING II

Oct./Nov. 2021

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 TWO questions from each section A and B, and another ONE question from either 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 7 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 at least TWO questions from this section.

1. (a) Explain the term 'project'. (1 mark)
 - (b) Differentiate between 'program' and 'programme'. (4 marks)
 - (c) Outline the **four** phases of project life cycle. (15 marks)

 2. (a) (i) Differentiate between pretender report and method statement.
 - (ii) Prepare a method statement for the activities listed below:
 - (i) excavation;
 - (ii) concrete works.(10 marks)

 - (b) (i) Explain 'Normalising' as used in work study.
 - (ii) An element has taken 1.4 min. to conclude and is given a rating of 90. Determine the Basic time. (4 marks)

 - (c) Outline the documentation of materials supply. (6 marks)
3. Using the data given in **table 1**;
- (a) draw an arrow network diagram showing the critical path.
 - (b) determine the project duration.
 - (c) determine the earliest and latest start and finish times of every activity.
 - (d) calculate the total float. (20 marks)

Activity	Event	Duration in weeks
A	1 - 2	2
B	1 - 3	3
C	1 - 4	4
D	2 - 5	5
E	3 - 5	6
F	4 - 7	7
G	4 - 6	8
H	5 - 7	5
I	7 - 8	9
J	6 - 8	0
K	6 - 9	9
L	8 - 10	11
M	9 - 10	12

14. (a) Explain each of the following as used in Human resource management:

- (i) discipline;
- (ii) recruitment;
- (iii) management.

(6 marks)

(b) **Table 2** shows a trial balance of medico limited company for the year ending 31st December 2015.

- (i) Prepare a trading, profit and loss account for the year ending 31st December 2015;
- (ii) Prepare a balance sheet as at 31st December 2015.

(14 marks)

Table 2 Trial Balance

	Sh	Sh
T.P. ✓ Purchases ✓	770,000	
T.P. ✓ Stock as (1st January 2015) ✓	34,800	
B.S. ✓ Land ✓	280,000	
B.S. ✓ Equipment ✓	140,000	
B.S. ✓ Sales ✓		202,390
B.S. ✓ Capital ✓		1,184,000
B.S. Depreciation of property	8,400	
B.S. Depreciation of equipment	35,000	
T.P. ✓ Discount allowed	28,000	
T.P. ✓ Discount received		1,250
T.P. ✓ Returns outwards ✓		35,200
B.S. ✓ Wages and salaries ✓	86,800	
B.S. ✓ Debtors ✓	31,600	
B.S. ✓ Creditors		5,700
B.S. ✓ Cash in hand ✓	1,040	
B.S. ✓ Drawings ✓	35,900	
B.S. ✓ Bank overdraft ✓		5,800
B.S. ✓ Loan balance ✓		40,000
B.S. ✓ General expenditure	22,800	
TOTAL	1,474,340	1,474,340

The value of stock at hand on 31 December 2015 was Ksh.40,320.00.

5. (a) Differentiate between 'leasehold' and 'freehold' in land ownership. (5 marks)
- (b) Outline **four** ways of contracting land. (12 marks)
- (c) Explain 'Vicarious liability' as applied in law of tort. (3 marks)

SECTION B: ESTIMATING AND COSTING II

Answer at least TWO questions from this section.

46. Using the data given below, build up a unit rate for 12 mm thick terazzo paving (1:1 $\frac{1}{2}$) mix including grinding and polishing surfaces per m². (20 marks)

Data

Skilled labour per hour	Kshs 50.00
Unskilled labour per hour	Kshs 25.00
Cost of white cement per 50 kg bag	Kshs 1,200.00
Cost of terazzo chippings per 50 kg bag	Kshs 900.00
Density of cement	1440 kg/m ³
Density of chippings	1400 kg/m ³
Colouring pigment per kg	Kshs 300.00
Density of pigment	10 kg/m ³
Polish $\frac{1}{2}$ kg per m ²	Kshs 1000 per kg
Hire rate of grinding machine	
All inclusive per day	Kshs 4500.00

Make reasonable assumption where necessary.

7. Using the data given below, build-up a unit rate for 150 mm thick natural store walling in cement sand mortar (1:3) per m². (20 marks)

Data

Skilled labour per hour	Kshs 50.00
Unskilled labour per hour	Kshs 25.00
Cement per 50 kg bag	Kshs 680.00
Sand per tonne. ✓	Kshs <u>1200.00</u>
Natural stone per 7 tonne lorry	Ksh 9000.00
Density of sand ✓	1600 kg/m ³
Density of cement ✓	1440 kg/m ³
Bulking of sand ✓	25%
Size of natural stone	300 x 200 x 150 mm thick
Cost of materials is as per delivered to site	

Make reasonable assumptions for information not given.

8. Using the data given below, build-up unit rate for 'general excavation, top soil, rock or artificial hard material maximum depth 0.5 - 1.00 m. (per m³)'. (20 marks)

Data

Skilled labour per hour	Kshs 50.00
Unskilled labour per hour	Kshs 25.00
Purchase of excavator	Ksh 10 million
Bucket capacity	0.45 m ³
Resale value after 5 years	2.00 million
Efficiency of excavator	90%
Working hours per year	2000 hours
Cycle time	6 min
Total interest	40% of purchase price
Diesel consumption	50 litres per day
Maintenance and repairs per year	35% of purchase price

Insurance and licence per year	3% of purchase price
Oil and grease per hour	Kshs100.00
Total haulage to and fro site	Ksh 70,000 per year
Cost of diesel	Kshs 95 per litre

Make reasonable assumptions for information not given.

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