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

June/July 2016

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

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

CONSTRUCTION MANAGEMENT II AND ESTIMATING AND COSTING II

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Mathematical tables/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** in the answer booklet provided.*

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

Candidates should answer the questions in English.

This paper consists of 5 printed pages.

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

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SECTION A: CONSTRUCTION MANAGEMENT II

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

1. (a) Define 'project management'. (2 marks)
- (b) List the **four** elements of project management. (2 marks)
- (c) Outline any **five** characteristics of a project. (10 marks)
- (d) Explain the following stages of a project life cycle:
- (i) conception;
- (ii) feasibility;
- (iii) planning. (6 marks)
2. (a) Outline the procedures of establishing standard time of a job to be carried out. (7 marks)
- (b) Table 01 shows time measurements observed and recorded by a work study officer. Using fly back technique, make necessary adjustments to these time and determine the basic times for each element of work. (13 marks)

Table 1

| ELEMENT | RATING | WATCH READING | OBSERVED TIME | ADJUSTED OBSERVED TIME | BASIC TIME |
|----------------------------|--------|---------------|---------------|------------------------|------------|
| Check time | | 2.4 | | | |
| Load brick | 90 | 0.8 | | | |
| Lift onto shoulder | 100 | 0.24 | | | |
| Walk to stairs | 80 | 0.30 | | | |
| Climb stairs | 110 | 0.60 | | | |
| Walk to point of operation | 95 | 0.46 | | | |
| Unload | 105 | 0.35 | | | |
| Studies the scenery | 17 | 1.00 | | | |
| Walk back to stairs | 90 | 0.33 | | | |
| Descend to stairs | 85 | 0.50 | | | |
| Walk to brick stack | 90 | 0.24 | | | |
| Check time | - | 1.35 | | | |

Start of study - 11.00 am

End of study - 11.53 am

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3. (a) Outline the activities at the following stages of a contract:
- (i) tender planning;
 - (ii) contract planning.
- (10 marks)
- (b) Explain any **five** purposes of the following on site:
- (i) job layout;
 - (ii) signs and notices.
- (10 marks)
4. (a) State any **six** objectives of human resource planning in an organisation.
- (9 marks)
- (b) List any **five** factors that determine the supply of labour in each of the following:
- (i) internal supply;
 - (ii) external supply.
- (5 marks)
- (c) Explain any **three** advantages of arbitration over court actions.
- (6 marks)
5. The following is the trial balance extracted from the books of Sole trader, A. K. David as at 31st December 1989.

| | Dr Sh. | Cr Sh. |
|------------------------------|-----------|-----------|
| Stock as at 1st January 1989 | 50,000 | |
| Free hold 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 | |
| Provision for bad debts | | 1,800 |



| | | |
|------------------|----------------|----------------|
| 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 |
| | <u>902,900</u> | <u>902,900</u> |



Additional information:

- (a) Prepaid insurance - Ksh. 500
 (b) Rates accrued - Ksh. 400
 (c) Closing stock - Ksh. 60,000
 (d) Mr. A. K. David took goods worth Ksh. 2,000 for personal use during the year.

Prepare:

Trading, Profit and loss account.

(20 marks)

SECTION B: ESTIMATING AND COSTING II

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

6. (a) Using the information given below, build up cost for preliminary item 'water for the works'. (7 marks)

Information

- Skilled labour - Ksh. 50 per hr
- Unskilled labour - Ksh. 25 per hr
- Duration of contract - 50 weeks
- Cost of pipework, fittings and tap - Ksh. 15,000
- Connection to mains - Ksh. 6,000
- Estimated consumption per month - Ksh. 3,600

- (b) Using the data given below, build up a unit rate for the following item:
 'Half brick wall in commons laid in stretcher bond and bedded in cement sand mortar (1:4) per m².'

(13 marks)

Data

- Cost of cement - Ksh 820 per 50 kg bag
- Density of cement - 1440 kg/m³
- Cost of common bricks - Ksh. 10,000 per 1000 batch on tipper lorry

| | | |
|------------------|---|--------------------|
| Hire of mixer | - | Ksh. 5,000 per day |
| Skilled labour | - | Ksh. 50 per hour |
| Unskilled labour | - | Ksh. 25 per hour |

7. (a) Define the term 'unit rate'. (2 marks)
- (b) Using a hypothetical example show the price of disposal of general surface water. (7 marks)
- (c) Using the data given below, build up hourly labour rate for a skilled labour. (11 marks)

Data

| | | |
|----------------------|---|--------------------------|
| - Working period | - | 40 hrs per week |
| - Overtime | - | 2 hrs on weekend |
| - Annual leave | - | 30 days per year |
| - Sick leave | - | 14 days per year |
| - Basic hourly rate | - | Ksh. 50 per hour |
| - Medical benefit | - | Ksh. 120,000 per year |
| - Redundancy payment | - | 30% of basic hourly rate |
| - Trade supervision | - | Ksh. 10 per hour |
| - NSSF | - | 5% of direct earning |

Workers are accommodated on site.

- * 8. (a) Using the data given below, build up a unit rate for 150 mm thick vibrated reinforced concrete (1:2:4) in suspended floor slab (per m²). (20 marks)

Data

| | | |
|----------------------------|---|------------------------|
| Skilled labour | - | Ksh. 50.00 |
| Unskilled labour | - | Ksh. 25.00 |
| - Cement per 50 kg bag | - | Ksh. 820.00 |
| - Sand per tonne | - | Ksh. 2,000.00 |
| - Ballast per tonne | - | Ksh. 1,500.00 |
| Hire of mixer and vibrator | - | Ksh. 8,000.00 |
| Output of mixer | - | 2.5 m ³ /hr |

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