

2521/303, 2602/301

2601/301, 2603/301

**INDUSTRIAL MANAGEMENT, ESTIMATING,
TENDERING AND ENGINEERING SERVICES
CONTRACTS**

June/July 2023

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING
(POWER OPTION)
(TELECOMMUNICATION OPTION)
(INSTRUMENTATION OPTION)
MODULE III**

**INDUSTRIAL MANAGEMENT, ESTIMATING, TENDERING AND
ENGINEERING SERVICES CONTRACTS**

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing instruments;

Non programmable scientific calculator.

*This paper consists of **EIGHT** questions in **TWO** sections, **A** and **B**.*

*Answer **TWO** questions from Section **A** and **THREE** questions from Section **B**.*

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 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.**

SECTION A: INDUSTRIAL MANAGEMENT

Answer any TWO questions from this section.

1. (a) Distinguish between cross elasticity of demand and income elasticity of demand. (4 marks)
- (b) Outline **five** advantages of Management by Objectives (MBO). (5 marks)
- (c) Highlight **five** qualities of an effective purchasing officer. (5 marks)
- (d) Explain **three** merits of an open plan office. (6 marks)
2. (a) Outline **four** functions under Routing Stage of production planning. (4 marks)
- (b) State **four** benefits of performance appraisal to an organization. (4 marks)
- (c) Highlight **four** benefits of method study to an organization. (4 marks)
- (d) Outline **four** differences between attribute Inspection and variable Inspection. (8 marks)
3. (a) Explain each of the following types of costs:
 - (i) Direct material cost;
 - (ii) overhead(4 marks)
- (b) Latex Engineering Company wishes to initiate a preventive maintenance programme in one of its firms. Outline **five** factors taken into consideration when planning to achieve this programme. (5 marks)

- (c) Table 1 shows the activities of a project whose durations are in days.

Table 1

Activity	Preceding Activity	Duration Days
A	none	4
B	none	7
C	A	2
D	A,B	10
E	A,B	3
F	C,D	8
G	C,D	3
H	G	7
I	E,F	10
J	H,I	6

- (i) Draw the project network;
(ii) Determine the:
(I) Critical path;
(II) total float for non-critical activities.

(11 marks)

SECTION B: ESTIMATING, TENDERING AND ENGINEERING SERVICES CONTRACTS

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

4. (a) (i) Explain 'discharge of a contract'.
(ii) Explain **three** ways of discharging a contract (8 marks)
- (b) Outline **three** differences between law of guarantee and law of indemnity. (6 marks)
- (c) Explain each of the following terms as used in tendering contract:
(i) Defects liability period;
(ii) Liquidated damages;
(iii) Retention fee. (6 marks)

5. (a) Explain each of the following terms as used in electrical contracts:
- (i) Lump sum;
 - (ii) Interim payment;
 - (iii) Penalty clause;
 - (iv) Variations. (8 marks)
- (b) State **four** rules that determine consideration of a contract. (4 marks)
- (c) Explain **four** sources of law in Kenya. (8 marks)
6. (a) State **four** types of site overheads. (4 marks)
- (b) (i) Explain negligence as used in law.
(ii) Explain two elements of negligence. (6 marks)
- (c) (i) Explain 'void contract'.
(ii) Outline **four** types of void contracts. (6 marks)
- (d) Describe the following types of building contracts:-
- (i) Lump sum;
 - (ii) Contract based on schedule of rates. (4 marks)
7. (a) (i) Explain the term 'Trade discount'.
(ii) A maisonnette building is to be wired with an electrical installation. The job requires the following materials
- Six rolls of 2.5 mm² cable @Ksh 3500 per roll.
 - Four rolls of 1.5 mm² cable @ Ksh 2000 per roll
 - 10 m of 4.00 mm² cable @ Ksh 150 per meter.
 - 50 conduits gauge 30 @ Ksh 120 per conduit.
 - Complete set of electrical accessories and switch gear @ Ksh 45,000.
- If the labour costs is 30% of the material costs and a cash discount of 10% is given on the materials. Calculate the total cost of the installation. (6 marks)
- (b) Outline **six** roles of a chairperson in a site meeting. (6 marks)
- (c) (i) Define the term law.
(ii) Distinguish between arbitration and injunction. (5 marks)
- (d) State **three** advantages of serial tendering. (3 marks)

8. (a) State **four** objectives of working drawing as a contract document. (4 marks)
- (b) Explain each of the following as used in the law of contract:
- (i) Intent;
 - (ii) Executory contract;
 - (iii) Express contract. (6 marks)

- (c) Table 2 shows activities in a project of putting up an installation work whose activities are in days

Table 2

Activity Description	Duration in Days
Installing conduits	2
Installing sub-main cables	1
Installation main switch gear	4
Installing wiring connections	3
Installing lighting fittings	2
Installing accessories and connections	1
Testing and Commissioning	1

- (i) Construct bar-chart for the project;
- (ii) Determine the project duration. (10 marks)

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