

2506/204

2507/204

**AIRFIELD SAFETY AND PROCEDURES II
AND RESEARCH METHODS**

June/July 2022

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN AERONAUTICAL ENGINEERING
(AIRFRAMES AND ENGINES OPTION)
(AVIONICS OPTION)**

MODULE II

AIRFIELD SAFETY AND PROCEDURES II AND RESEARCH METHODS

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Mathematical tables/Non-programmable scientific calculator;

Drawing instruments.

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

Answer FIVE questions by choosing at least TWO questions from each section.

All questions carry equal marks.

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

Candidates should answer the questions in English.

This paper consists of 4 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: AIRFIELD SAFETY AND PROCEDURES II

Answer at least TWO questions from this section.

1. With reference to the civil aviation (security) regulations:
 - (a) differentiate between each of the following terms:
 - (i) unknown stores and unpredictability;
 - (ii) security survey and security test;
 - (iii) 'COMAIL' and 'COMAT';
 - (iv) authorized person and operator. (8 marks)
 - (b) describe six functions of the Kenya Civil Aviation Authority; (6 marks)
 - (c) outline six matters for which the airport security program must provide a contingency plan. (6 marks)

2. (a) With reference to airport signs and markings, complete table 1. (15 marks)

| TYPE OF MARKING | NAME OF MARKING | PURPOSE | LOCATION |
|---|-----------------|---------|----------|
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- (b) Describe each of the following runway incidents:
 - (i) excursion;
 - (ii) overshoot;
 - (iii) incursion;
 - (iv) confusion;
 - (v) undershoot;(5 marks)

3. (a) Outline **four** categories of mandatory occurrence reporting. (4 marks)
- (b) Explain the key voluntary occurrence reporting principles. (16 marks)
4. With reference to aircraft procedures:
- (a) highlight the scheduled maintenance triggers; (5 marks)
- (b) with the aid of a labelled flow chart, show the approved condition monitoring maintenance program; (4 marks)
- (c) outline the maintenance processes which can be carried out with the help of computers; (7 marks)
- (d) differentiate between quality control and quality assurance. (4 marks)

SECTION B: RESEARCH METHODS

Answer at least TWO questions from this section.

5. (a) Highlight **five** motivation points behind conducting a research study. (5 marks)
- (b) Describe **five** components of a research problem. (5 marks)
- (c) Outline the factors to consider when selecting a research problem for research. (6 marks)
- (d) Discuss 'understanding the nature of a problem' as a technique of defining a research problem. (4 marks)
6. (a) Differentiate between each of the following types of research:
- (i) quantitative and qualitative;
- (ii) conceptual and empirical. (8 marks)
- (b) Outline the steps in developing a research question. (12 marks)

7. With reference to data collection tools and methods:
- (a) outline **ten** advantages of using telephone interviews; (10 marks)
 - (b) discuss the differences between questionnaires and schedules. (10 marks)
8. (a) Describe **four** statistical measures of data analysis. (8 marks)
- (b) (i) Differentiate between causal and multi-variate analysis with reference to research data analysis. (2 marks)
 - (ii) Describe **five** types of multi-variate analysis. (10 marks)

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