

2506/204

2507/204

**AIRFIELD SAFETY PROCEDURES II
AND RESEARCH METHODS**

Oct./Nov. 2021

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

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

MODULE II

AIRFIELD SAFETY PROCEDURES II AND RESEARCH METHODS

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing instruments.

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

*Answer **TWO** questions from section **A**; **TWO** questions from section **B** and **ONE** question from either section **A** or **B**.*

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 PROCEDURES II AND RESEARCH METHODS

Answer at least TWO questions from this section.

1. With reference to Civil Aviation (Security) regulations:
 - (a) differentiate between each of the following terms:
 - (i) security control inspection;
 - (ii) sabotage and screening;
 - (iii) mishandled and unidentified baggage;
 - (iv) airside and landside. (8 marks)
 - (b) (i) define 'acts of unlawful interference'. (1 mark)
 - (ii) describe the acts as defined in b (i). (11 marks)
2. (a) Explain **eight** types of runway lights. (16 marks)
- (b) Differentiate between each of the following radio-telephony standard words:
 - (i) roger and report;
 - (ii) read back and re-cleared. (4 marks)
3. With reference to flight safety:
 - (a) explain 'FOD'; (2 marks)
 - (b) describe **four** methods of controlling FOD; (8 marks)
 - (c) discuss **five** methods of controlling tools in the aviation hangar. (10 marks)
4. With reference to aircraft maintenance procedures:
 - (a) describe the unscheduled maintenance triggers; (10 marks)
 - (b) (i) outline the basic philosophies of a maintenance program; (2 marks)
 - (ii) describe the requirements for an effective on-condition monitoring maintenance process. (3 marks)

- (c) With reference to aircraft statistical reliability measurements:
- (i) list the units of measurement; (3 marks)
 - (ii) define alert level. (2 marks)

SECTION B: RESEARCH METHODS

Answer at least TWO questions from this section.

5. (a) Highlight **four** objectives of conducting a research. (4 marks)
- (b) Explain **four** requirements of a research problem. (4 marks)
- (c) Discuss each of the following techniques involved in defining a research problem:
- (i) statement of the problem in a general way;
 - (ii) surveying the available literature. (12 marks)
6. (a) Differentiate between each of the following types of research:
- (i) descriptive and analytical; (8 marks)
 - (ii) applied and fundamental. (2 marks)
- (b) (i) Describe the research question. (10 marks)
- (ii) Explain the key characteristics of a good research question. (2 marks)
7. (a) Outline **ten** advantages of using personal interviews as a method of collecting data. (5 marks)
- (b) Discuss each of the following indirect methods of collecting primary data:
- (i) use of mechanical devices;
 - (ii) consumer panels. (15 marks)

8. With reference to data analysis:

- (a) highlight the rules observed when working with percentages;
- (b) outline the general acceptable principles of tabulation.

(20 marks)

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