

2506/204

2507/204

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

Oct./Nov. 2017

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

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

MODULE II

AIRFIELD AND SAFETY PROCEDURES II AND RESEARCH METHODS

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Mathematical tables/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 indicated.

Candidates should answer the questions in English.

This paper consists of 3 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. Explain:
 - (a) **eight** requirements for goods to be transported by air; (8 marks)
 - (b) **eight** effects of overloading an aircraft; (8 marks)
 - (c) special precautions to be observed when raising an aircraft on jacks. (4 marks)
2.
 - (a) Outline the roles of the quality department in relation to legal and mandatory aspects of an aircraft. (8 marks)
 - (b) With the aid of bar charts, differentiate the **three** main models for maintenance checks and inspection. (12 marks)
3. (a) Explain each of the following terms as applied to aircraft weight and balance:
 - (i) basic weight;
 - (ii) basic equipment;
 - (iii) variable load;
 - (iv) disposable load;
 - (v) maximum total weight. (5 marks)
- (b) Outline **seven** mandatory requirements when loading an aircraft. (7 marks)
- (c) Highlight the procedure for loading an aircraft. (8 marks)
4. (a) Describe **six** types of signs that may be found at a typical runway. (12 marks)
- (b) Explain the function of each of the following airport lighting:
 - (i) omni directional taxiway;
 - (ii) clearance bar;
 - (iii) runway guard;
 - (iv) obstruction. (8 marks)

SECTION B: RESEARCH METHODS

Answer at least TWO questions from this section.

5. (a) Outline **four** importance of research. (4 marks)
- (b) Explain **four** ways of coming up with a hypothesis. (4 marks)
- (c) Explain the **six** considerations when selecting a sample design. (12 marks)
6. (a) Explain **four** qualities of a good research. (8 marks)
- (b) Describe each of the following quantitative approaches to research:
- (i) inferential;
 - (ii) experimental;
 - (iii) simulation. (6 marks)
- (c) Outline **six** considerations when preparing a research design. (6 marks)
7. Discuss ten challenges encountered when conducting research in Kenya. (20 marks)
8. (a) Outline **seven** best practices with regards to scientific method of data collection. (7 marks)
- (b) Highlight **four** characteristics of a good sample design. (5 marks)
- (c) Describe the **four** main components of a research final report. (8 marks)

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