

2506/307

**AIRFRAME SYSTEMS II
AND AIRFIELD SAFETY III**

June/ July 2018

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

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

MODULE III

AIRFRAME SYSTEMS II AND AIRFIELD SAFETY III

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 **THREE** questions from section **A** and **TWO** 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 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: AIRFRAMES SYSTEMS II

Answer **THREE** questions from this section.

1. (a) List **four** areas requiring ice protection on an aircraft. (2 marks)
- (b) With the aid of labelled sketches, describe each of the following aircraft ice and rain protection windscreen systems:
 - (i) anti-ice temperature control;
 - (ii) wash and rain repellent. (18 marks)
2. (a) Explain the reasons for the application of jet A - 1 fuel additives. (15 marks)
- (b) With the aid of a labelled schematic diagram, show the layout of a typical fuel system of a light twin engine aircraft. (5 marks)
3. Highlight the aircraft fire extinguishing system maintenance practices. (20 marks)
4. (a) With the aid of a block diagram, show a typical aircraft water waste system. (10 marks)
- (b) Highlight the health maintenance procedure for aircraft galleys. (10 marks)
5. With the aid of a labelled schematic diagram, describe a typical fly by wire pitch control system. (20 marks)

SECTION B: AIRFIELD SAFETY PROCEDURES III

Answer **TWO** questions from this section.

6. With reference to aircraft technical stores:
 - (a) Differentiate between quarantine and bonded stores. (4 marks)
 - (b) Outline:
 - (i) **four** advantages of decentralization of stores; (4 marks)
 - (ii) **two** functions of bin cards. (2 marks)

- (c) Explain:
- (i) **four** requirements for store certification conformity in accordance with the Kenya civil aviation authority regulations. (4 marks)
 - (ii) **six** reasons for aircraft modifications. (6 marks)
7. (a) Outline **seven** mandatory documents carried in the aircraft during flight. (7 marks)
- (b) Outline **five** freedoms of the aircraft in flight. (5 marks)
- (c) Explain **four** requirements of issuance and continued validity of a certificate of airworthiness in accordance with ICAO annex 8. (8 marks)
8. Discuss each of the following types of aircraft maintenance:
- (a) preventive; (15 marks)
 - (b) corrective; (3 marks)
 - (c) contingency. (2 marks)

THIS IS THE LAST PRINTED PAGE.