

2506/307

AIRFRAMES SYSTEMS II
AND AIRFIELD SAFETY III

June/July 2019

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AERONAUTICAL ENGINEERING
(AIRFRAMES AND ENGINES OPTION)

MODULE III

AIRFRAMES SYSTEMS II AND AIRFIELD SAFETY III

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 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) Explain the principle of operation of each of the following fire detection methods:
 - (i) light refraction; (4 marks)
 - (ii) ionization. (3 marks)
- (b) Outline **three** requirements of aircraft fire extinguishing agents. (13 marks)
- (c) With the aid of a labelled circuit diagram, explain the operation of a thermocouple fire detection system. (6 marks)
2. (a) Outline **six** advantages of aircraft pressure refuelling. (14 marks)
- (b) With the aid of labelled sketches, describe gravity feed fuel system. (5 marks)
3. (a) Highlight the procedure for removing a universal head rivet from an aircraft skin. (10 marks)
- (b) With the aid of sketches, highlight the procedure for insertion of a patch repair on a non-pressurized aircraft skin. (5 marks)
- (c) Outline **five** characteristics of a good aircraft weld. (7 marks)
4. With the aid of labelled sketches, describe each of the following aircraft control 'Q' feel system:
 - (a) basic; (10 marks)
 - (b) hydraulic. (10 marks)
5. (a) Outline **seven** precautions to be observed in a paint shop. (7 marks)
- (b) Describe each of the following methods of applying paint on an aircraft:
 - (i) dipping; (2 marks)
 - (ii) brushing; (3 marks)
 - (iii) spraying. (8 marks)

SECTION B: AIRFIELD SAFETY PROCEDURES III

Answer TWO questions from this section.

6. With reference to aircraft accident investigations:
- (a) Explain each of the following terms:
 - (i) flight recorder;
 - (ii) incident;
 - (iii) investigations;
 - (iv) lead investigator;
 - (v) accident.

(5 marks)
 - (b) Highlight conditions to which an injury is regarded 'serious'. (5 marks)
 - (c) Outline the access rights and powers given to the lead investigator. (6 marks)
 - (d) Outline **four** roles of an expert contracted to participate in investigations. (4 marks)
7. (a) With reference to aircraft maintenance store procedures, outline **five** objectives. (5 marks)
- (b) With the aid of a labelled block diagram, highlight the stores process from supplier to user of an aeronautical product. (15 marks)
8. Discuss the mandatory maintenance incidences reportable to KCAA. (20 marks)

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