2506/307
AIRFRAME SYSTEMS II
AND AIRFIELD SAFETY III
Oct./Nov. 2019
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.
*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: AIRFRAME SYSTEMS II

*Answer **THREE** questions from this section.*

1. (a) Outline **four** advantages of aircraft rigid fuel tanks. (4 marks)

   (b) With the aid of a labelled schematic diagram, explain the operation of a pressure feed fuel system. (16 marks)

2. (a) Outline **ten** requirements for air transport aircraft doors. (10 marks)

   (b) Explain **four** design principles of a typical aircraft water and waste system. (10 marks)

3. Discuss **five** causes and corrective action for each of the following de-ice system problems:

   (a) slow boot inflation; (5 marks)
   (b) system will not cycle; (3 marks)
   (c) boots do not inflate; (7 marks)
   (d) slow deflation; (2 marks)
   (e) no vacuum boot; (2 marks)
   (f) boots do not deflate during cycle. (1 mark)

4. (a) Discuss each of the following with reference to riveting:

   (i) rivet length;
   (ii) rivet spacing;
   (iii) edge distance;
   (iv) rivet pitch.

   (12 marks)

   (b) Discuss each of the following classes of aircraft structural damage:

   (i) negligible;
   (ii) repairable by patching.

   (8 marks)

5. (a) Explain the **four** classes of fire. (4 marks)

   (b) Describe each of the following conditions loop aircraft fire detection system:

   (i) kiddle;
   (ii) fenwal.

   (16 marks)

SECTION B: AIRFIELD SAFETY PROCEDURES III

Answer TWO questions from this section.

6. (a) Outline **seven** roles of an aircraft maintenance stores inspector. (7 marks)

(b) Discuss each of the following maintenance inventories:

(i) rotable; (6 marks)

(ii) repairable. (7 marks)

7. (a) Outline **six** reasons as to why a defect is deferred during aircraft line maintenance. (6 marks)

(b) With reference to KCAR's, outline **seven** requirements for issuance of each of the following:

(i) certificate of airworthiness; (7 marks)

(ii) export certificate of airworthiness. (7 marks)

8. Outline **five** precautions observed when using each of the following aircraft crash and rescue equipment:

(a) electrical tools;

(b) hydraulic powered;

(c) compressed air;

(d) self-powered.

(20 marks)

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