

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) rotatable; (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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