

2506/307

AIRFRAMES SYSTEMS II
AND AIRFIELD SAFETY III

Oct./Nov. 2018

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) Outline **seven** requirements for vents of un-pressurized aircraft fuel tanks. (7 marks)
- (b) With the aid of labelled sketches, describe the operation of each of the following fuel tanks:
 - (i) hand;
 - (ii) vane. (13 marks)
2. (a) Describe aircraft chemical anti-icing system. (4 marks)
- (b) Outline **five** precautions to be observed in order to prolong the life of aircraft deicer boots. (5 marks)
- (c) Explain the requirements of an ideal fire detection system. (11 marks)
3. With the aid of a labelled schematic diagram, describe the operation of an aircraft three-axis autopilot system. (20 marks)
4. With the aid of labelled sketches, describe each of the following with respect to power control systems:
 - (a) power assisted; (10 marks)
 - (b) fully powered. (10 marks)
5. (a) Describe **three** causes of each of the following aircraft painting defects:
 - (i) pin holes;
 - (ii) orange peels;
 - (iii) blushing;
 - (iv) spray dust. (12 marks)
- (b) Highlight the procedure of preparing for repair of a damaged skin after a bird strike. (5 marks)
- (c) Explain each of the following types of defects on aircraft parts:
 - (i) brinelling;
 - (ii) burnishing;
 - (iii) corrosion. (3 marks)

SECTION B: AIRFIELD SAFETY III

Answer *TWO* questions from this section.

6. (a) Highlight **ten** requirements for operating an aircraft in the commercial air transport category. (5 marks)
- (b) Outline **six** roles of the lead accident investigator. (6 marks)
- (c) Describe the function of each of the following in reference to maintenance stores:
- (i) quarantine;
 - (ii) bonded;
 - (iii) incoming certificate area. (9 marks)
7. (a) Highlight **six** contents of the final report of an accident investigation. (7 marks)
- (b) With reference to aircraft accident investigations, differentiate between rights and obligations. (4 marks)
- (c) Explain the format of writing an accident investigation report. (9 marks)
8. (a) Outline the requirements that an aircraft can fly on a special flight permit with reference to KCARS. (10 marks)
- (b) Outline the requirements for the registration of an aircraft in Kenya on behalf of an owner. (10 marks)

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