2107/305
AIRFRAME TECHNOLOGY
Oct./Nov. 2018
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AERONAUTICAL ENGINEERING (AIRFRAMES AND ENGINES OPTION)

AIRFRAME TECHNOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
Answer booklet;
Drawing instruments.
*This paper consists of **EIGHT** questions.*
*Answer **FIVE** questions in the answer booklet provided.*
All questions carry equal marks.
Maximum marks for each part of a question are as shown.
Candidates should answer the questions in English.

This paper consists of 2 printed pages.

Candidates should check the question paper to ascertain that both pages are printed as indicated and that no questions are missing.

Turn over

1. With the aid of a labelled circuit diagram, describe the thermal switch fire detection system. (20 marks)

2. With reference to aircraft fluid ice protection systems:

   (a) outline the components of a typical control panel; (8 marks)

   (b) highlight **six** maintenance practices; (6 marks)

   (c) Describe each of the following:

   (i) proportioning units;
   (ii) filter. (6 marks)

3. (a) Explain each of the following requirements for the powered flight control system:

   (i) sensitivity;
   (ii) stability;
   (iii) irreversibility;
   (iv) feel;
   (v) back-up.

   (15 marks)

   (b) With respect to flight control systems, highlight:

   (i) **two** operational instances that must necessitate rigging checks; (1 mark)

   (ii) **eight** general rigging procedure for both manually operated and powered flying control systems. (4 marks)

4. (a) Explain the functions of each of the six fuel sub-systems. (9 marks)

   (b) With the aid of labelled sketches, explain the process of sealing an aircraft fuel integral tank. (8 marks)

   (c) Outline **six** advantages of the aircraft pressure refuelling method. (3 marks)

5. (a) Explain each of the **three** airframe structure classifications. (3 marks)

   (b) Highlight the general aircraft structural repair procedure. (17 marks)

6. With the aid of a labelled schematic diagram, show a typical layout of an aircraft cabin temperature control system. (20 marks)

7. Discuss the typical construction features for an aircraft tire. (20 marks)

8. With the aid of a labelled sketch, explain the construction and operation of the hydraulic system automatic cut-out valve. (20 marks)

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