2107/305
AIRFRAME TECHNOLOGY
Oct./Nov. 2017
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AERONAUTICAL ENGINEERING (AIRFRAMES AND ENGINES OPTION)

AIRFRAME TECHNOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of **EIGHT** questions.*
*Answer any **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 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.

1. (a) (i) Outline **four** factors that affect creep in aircraft structures. (2 marks)

(ii) Explain **four** factors that act on aircraft structures in flight. (4 marks)

(b) Explain each of the **three** aircraft structural classifications. (6 marks)

(c) Explain each of the following terms as applied to aircraft structures:

(i) safe life;

(ii) fail safe structure;

(iii) damage tolerant structure;

(iv) servicing cycle. (8 marks)

2. (a) Describe with specific examples, the structural repair manual numbering system. (6 marks)

(b) Highlight the typical aircraft damage repair procedure. (8 marks)

(c) Highlight the preparation procedure prior to carrying out corrosion removal on an aircraft structure. (6 marks)

3. (a) Describe a typical light aircraft high wing mechanical aileron system. (10 marks)

(b) With the aid of sketches, describe each of the following flying control hardware.

(i) swaged eye end;

(ii) American type turn-buckle. (10 marks)

4. (a) With the aid of a labelled cutaway sketch, describe the operation of a centrifugal fuel pump. (13 marks)

(b) Highlight the procedure for changing a canister type pump. (7 marks)

5. Using a cross-sectional diagram:

(a) show the construction features of a typical hydraulic pressure reservoir; (16 marks)

(b) explain the operation of a hydraulic pressure reservoir. (4 marks)

6. Explain **ten** inspections carried out on wheels removed from an aircraft. (20 marks)

7. With the aid of a labelled schematic diagram, show a typical twin engine air conditioning cooling system pack layout. (20 marks)

8. (a) Outline **ten** causes of aircraft fire system false warning or failure to operate on test. (10 marks)

(b) Explain **ten** precautions to be observed during the installation of continons element detector system. (10 marks)

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