2506/206
AIRFRAME SYSTEMS I
Oct./Nov. 2023
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AERONAUTICAL ENGINEERING (AIRFRAMES AND ENGINES OPTION)

MODULE II

AIRFRAME SYSTEMS I

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
Answer booklet;
Drawing instruments.
*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 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.

Turn over

1. (a) Highlight **six** system alerts displayed on the Engine Indicating and Crew Alerting Systems (EICAS). (6 marks)

(b) Outline **five** advantages of pneumatic systems over other heavy duty power systems. (5 marks)

(c) With the aid of a labelled schematic sketch, describe the operation of an aircraft pneumatic de-icer system. (9 marks)

2. (a) Outline the procedure for bleeding brakes using each of the following methods:

(i) gravity;

(ii) induced pressure. (14 marks)

(b) Highlight **six** damages that render a tyre irreparable. (6 marks)

3. (a) Explain each of the following terms with reference to aircraft pressurization system:

(i) cabin altitude;

(ii) cabin differential pressure;

(iii) cabin rate of climb. (3 marks)

(b) With the aid of labelled sketches, explain the operation of each of the following with reference to turboprop aircraft pressurization:

(i) jet flow multiplier; (9 marks)

(ii) turbo compressor. (8 marks)

4. (a) Describe the operation of an aircraft diluter-demand oxygen system. (8 marks)

(b) Outline the procedure for servicing an aircraft oxygen demand flow system. (12 marks)

5. With the aid of a schematic diagram, describe the operation of a typical high pressure pneumatic system.. (20 marks)

6. (a) With the aid of schematic diagrams, differentiate between the operation of series and shunt d.c motors. (17 marks)

(b) Highlight **six** inspection checks carried out on a generator installed on an aircraft. (3 marks)

7. (a) Explain the basic operation principles of an aircraft air conditioning system. (5 marks)

(b) With the aid of a labelled sketch, describe the operation of a typical aircraft air conditioning system. (15 marks)

8. With the aid of a labelled sketch, describe the construction and operation of an aircraft landing gear oleo strut. (20 marks)

THIS IS THE LAST PRINTED PAGE.