

2506/206
AIRFRAME SYSTEMS I
June/July 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;

Mathematical tables/Non programmable calculator.

*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 indicated.

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.

1. With the aid of labelled sketches, describe the operation of each of the following hydraulic system components:
 - (a) closed center poppet selector valve; (11 marks)
 - (b) vane-type pump. (9 marks)
2. (a) With the aid of a labelled cross sectional sketch, describe the operation of a typical aircraft boosted brake master cylinder. (15 marks)
 - (b) Outline **five** advantages of compressed air over other power systems. (5 marks)
3. (a) With reference to aircraft wheels, highlight the precautions to be observed during each of the following:
 - (i) wheel removal; (4 marks)
 - (ii) tire removal. (5 marks)
 - (b) Highlight the wheel inspection procedure (11 marks)
4. Describe the construction and operation of an aircraft landing gear separated Oleo strut. (20 marks)
5. (a) Explain the requirements of an aircraft air conditioning system. (12 marks)
 - (b) With the aid of a cross-sectional sketch, describe the construction and operation of a combustion heater. (8 marks)
6. Discuss each of the following aircraft electrical system current limiting devices:
 - (a) fuses; (7 marks)
 - (b) circuit breakers. (13 marks)
7. (a) Explain a leak test as applied to gaseous oxygen systems. (10 marks)
 - (b) Highlight the procedure of charging an aircraft oxygen system from an oxygen refill cast. (10 marks)
8. With the aid of a labelled cross sectional sketch, describe the operation of an aircraft pressurization system diaphragm type safety valve. (20 marks)

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