

2506/206

AIRFRAME SYSTEMS I

Oct./Nov. 2021

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. (a) With the aid of a labelled diagram, describe the operation of a typical aircraft hydraulic landing gear system incorporated with a manual control valve. (15 marks)
(b) Explain **five** considerations when installing hydraulic rig lines. (5 marks)
2. With the aid of a labelled cross-sectional sketch of a hydraulic landing gear power pack system:
(a) show the parts; (11 marks)
(b) describe the operation. (9 marks)
3. (a) With the aid of a labelled cross-sectional sketch, describe the construction and operation of a segmented rotor multiple disc brake system. (14 marks)
(b) Outline the procedure of performing gravity bleeding on a typical brake system. (6 marks)
4. (a) Explain the conditions that determine whether an aircraft tire can be retreaded or scrapped. (13 marks)
(b) Highlight the damages that render a tire irreparable. (7 marks)
5. (a) With reference to aircraft electrical system, highlight the maintenance inspections performed on each of the following components:
(i) generator; (6 marks)
(ii) battery. (4 marks)
(b) Explain the function of each of the following generator control systems:
(i) voltage regulations;
(ii) overvoltage protection;
(iii) parallel generator operations;
(iv) differential voltage. (10 marks)
6. With the aid of a labelled schematic diagram, describe the operation of a hydraulic nose wheel steering system. (20 marks)
7. With the aid of a labelled flow diagram, describe the operation of a typical bleed air conditioning system. (20 marks)
8. (a) Highlight the precautions to be observed when working on a typical oxygen system. (6 marks)
(b) With the aid of a labelled block diagram, describe the construction and principle of operation of a continuous flow oxygen system. (14 marks)

THIS IS THE LAST PRINTED PAGE.