

2506/206

AIRFRAME SYSTEMS I

Oct./Nov. 2022

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 sketch, describe the construction and operation of a typical aircraft gear type pumping system. (20 marks)
2. With the aid of a labelled block diagram, explain the operation of an aircraft mechanical antiskid system. (20 marks)
3. (a) With the aid of a labelled cross-sectional sketch, explain the construction and operation of an unseparated aircraft oleo pneumatic strut. (14 marks)
- (b) Discuss the aircraft landing gear safety switches. (6 marks)
4. (a) With reference to aircraft environmental control systems, explain each of the following:
 - (i) cabin explosive; (4 marks)
 - (ii) rapid decompression. (5 marks)
- (b) With the aid of a labelled cross-sectional sketch, describe the operation of a passenger oxygen generator. (11 marks)
5. (a) Explain the basic principles of aircraft air conditioning system. (5 marks)
- (b) With the aid of a labelled schematic diagram, describe the operation of a bleed air bootstrap air conditioning system. (15 marks)
6. (a) With the aid of labelled schematic diagrams, describe the difference between series and shunt DC motors. (17 marks)
- (b) Highlight six inspection checks carried out on a generator installed on an aircraft. (3 marks)
7. (a) With the aid of a labelled sketch, describe the four regions of a tyre. (7 marks)
- (b) With reference to aquaplaning:
 - (i) explain the three forms in terms of occurrence; (3 marks)
 - (ii) outline ten remedial actions during landing. (10 marks)
8. (a) Discuss a typical aircraft pneumatic power system maintenance practices. (8 marks)
- (b) With the aid of a labelled cross-sectional sketch, explain the operation of a vane-type air pump. (12 marks)



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