

2506/206  
AIRFRAME SYSTEMS I  
March/April 2024  
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.*  
*Answer any FIVE of the following EIGHT questions.*  
*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 cross-sectional sketch, describe the operation of solid pack oxygen generator. (11 marks)
- (b) Differentiate between cabin explosive and rapid decompression. (9 marks)
2. With the aid of sketches:
- (a) show **three** types of check valves; (3 marks)
- (b) describe the operation of a typical hydraulic power pack on aircraft landing gear during extension. (17 marks)
3. (a) With the aid of a labelled exploded view of a single disc brake:
- (i) show the component sequence of assembly;
- (ii) describe the construction. (12 marks)
- (b) Explain the typical maintenance checks carried out on aircraft brakes. (8 marks)
4. (a) Highlight the typical maintenance checks done on aircraft d.c motors. (8 marks)
- (b) With the aid of labelled sketches, differentiate between a relay and a solenoid. (12 marks)
5. With the aid of labelled schematic diagrams, describe the operation of:
- (a) two-stage piston type pneumatic compressor; (11 marks)
- (b) a typical aircraft pneumatic brake emergency system. (9 marks)
6. With the aid of labelled sketch, explain the operation of a ram air muffler type heat exchanger. (20 marks)
7. (a) Show and explain each region of an aircraft tyre. (7 marks)
- (b) With reference to aquaplaning:
- (i) explain the **three** types;
- (ii) highlight actions taken to minimize it on landing. (13 marks)
8. Using a labelled schematic diagram, describe the operation of:
- (a) a hydraulic operated nose wheel steering system; (15 marks)
- (b) a nose wheel shimmy damper. (5 marks)

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