

2506/307

AIRFRAME SYSTEMS II AND  
AIRFIELD SAFETY III

Oct./Nov. 2017

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AERONAUTICAL ENGINEERING  
(AIRFRAMES AND ENGINES OPTION)

MODULE III

AIRFRAME II SYSTEMS AND AIRFIELD SAFETY III

3 hours

### INSTRUCTIONS TO CANDIDATES

*The candidate should have the following for this examination:*

*Non-programmable scientific calculator;*

*Drawing instruments.*

*This paper consists of EIGHT questions in TWO sections; A and B.*

*Answer THREE questions from section A and TWO questions from section B 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 3 printed pages.**

**Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.**



## SECTION A: AIRFRAME SYSTEMS II

Answer **THREE** questions from this section.

1. With the aid of a labelled sketch, describe the operation of an aircraft two shot fire extinguishing system. (20 marks)
2. (a) Highlight the trouble shooting procedure of at typical aircraft system. (14 marks)  
(b) Differentiate between the two methods of ice detection systems. (6 marks)
3. With the aid of labelled sketches:  
(a) explain the sealing of the aircraft fuel integral tank during manufacture. (11 marks)  
(b) describe the jet pump. (9 marks)
4. (a) Outline **six** methods of inspection used to trace defects in an aircraft. (3 marks)  
(b) With the aid of labelled sketches, explain how the current flow magnetic particle NDT method is used to:  
(i) Detect flaws;  
(ii) Highlight the testing procedure. (17 marks)
5. (a) Highlight the basic procedure of disinfecting aircraft passenger water system. (8 marks)  
(b) Outline the safety requirements of aircraft passenger and crew seats in accordance with aviation regulations. (8 marks)  
(c) Describe each of the following hydraulic power assisted system components:  
(i) actuator;  
(ii) selector. (4 marks)



## SECTION B: AIRFIELD SAFETY III

Answer *TWO* questions from this section.

6. Highlight typical tie-down procedures for each of the following aircraft types:
- (a) heavy aircraft; (8 marks)
  - (b) helicopters. (10 marks)
  - (c) Explain each of the following standard taxiing signals:
    - (i) flashing green;
    - (ii) steady green;
    - (iii) flashing red;
    - (iv) flashing white. (2 marks)
7. A heavy aircraft has developed an engine malfunction on the taxiway after landing. Outline the typical precautions to be observed when moving it to the hangar. (20 marks)
8. (a) Highlight the basic procedure applied in aircraft stores. (10 marks)
- (b) Explain each of the following terms as applied in aircraft maintenance:
  - (i) quality control;
  - (ii) quality assurance. (2 marks)
- (c) Explain the roles of each of the following with respect to quality control and assurance:
  - (i) manufacturer;
  - (ii) aircraft operator;
  - (iii) engineers;
  - (iv) regulatory authority. (8 marks)

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