

2107/308
AIRFIELD AND SAFETY PROCEDURES
Oct./Nov. 2009
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL
DIPLOMA IN AERONAUTICAL ENGINEERING
(AIRFRAMES AND ENGINES OPTION)

AIRFIELD AND SAFETY PROCEDURES

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination

Answer booklet

Drawing instruments

Mathematical tables/Non-programmable calculator

Answer any FIVE of the EIGHT questions in this paper.

ALL questions carry equal marks.

Maximum marks for each part of a question are as indicated.

This paper consists of 4 printed pages.

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

1. ~~(a)~~ Outline the maintenance tasks carried out on an aircraft after a night stop. (5 marks)
- ~~(b)~~ Differentiate between the following types of aircraft maintenance:
(i) rectification and modification;
(ii) scheduled and unscheduled;
(iii) service A and service B. (6 marks)
- (c) State any **six** information contents contained in each of the following aircraft documents:
(i) flight manual;
(ii) initial provisioning document;
(iii) illustrated parts catalogue. (9 marks)
2. (a) Outline the roles of an air traffic controller at an aerodrome. (5 marks)
- (b) Describe how a marshaller signals the aircraft flight crew at night on the following:
(i) shut down no 4 engine;
(ii) chocks removed;
(iii) aircraft to come forward. (6 marks)
- (c) (i) Explain the **three** factors that would cause an aircraft defect not to be rectified in transit.
(ii) Discuss briefly how the situation in c(i) could be certified to enhance airworthiness of the aircraft. (9 marks)
3. ~~(a)~~ Outline the functions of inventory in an aircraft technical stores. (5 marks)
- (b) Differentiate between the following terms as applied to technical stores:
(i) nil stock and alternative issues;
(ii) expedite and AOG orders;
(iii) shelf life and lifed stock. (6 marks)
- ~~(c)~~ ~~(i)~~ Compare centralized and decentralized aircraft technical stores.
(ii) List the advantages of decentralized stores over the centralized stores. (9 marks)
4. (a) Identify the location of the following crash and rescue equipment carried in an aircraft:
(i) fire extinguisher;
(ii) axe;
(iii) escape chute. (3 marks)

- (b) Explain the function of each of the following aircraft emergency equipment:
- (i) dinghy;
 - (ii) life jacket;
 - (iii) first aid kit. (3 marks)
- (c) Write a report to advise a Navy team on precautions to be taken when a fighter aircraft has crashed. (14 marks)
5. (a) Outline the **five** privileges (freedom) of flight in accordance to I.C.A.O requirements. (5 marks)
- (b) Discuss an aircraft "service bulletin" from origination to effecting on an aircraft. (6 marks)
- (c) (i) Explain the air navigation act requirement chapter 394 as applied to the Kenya laws;
- (ii) List all the categories of aircraft licenced engineers in accordance to the Kenya Civil Aviation Authority. (9 marks)
6. (a) Outline the safety precautions to be observed when refuelling a visiting aircraft. (5 marks)
- (b) State the necessary safety precautions to be observed when working on an aircraft fitted with:
- (i) propellers;
 - (ii) expansion brake discs;
 - (iii) main rotor. (15 marks)
7. (a) Outline the national fire protection association recommended markings for fire extinguishers for the **four** classes of fire. (4 marks)
- (b) (i) With the aid of a fire triangle drawing explain the three principles of extinguishing fires.
- (ii) Outline **three** methods of alerting personnel on a fire outbreak in a hangar. (8 marks)
- (c) Explain:
- (i) **two** reasons that warrant CO₂ extinguishers to be equipped with a non-metallic horn;
 - (ii) **four** inspections carried out on CO₂ aircraft engine fire extinguisher bottles in situ. (8 marks)

3. (a) Define the following terms as applied in airfield operations:

- ~~(i)~~ taxiing;
- (ii) deboggy;
- ~~(iii)~~ thresh holding point;
- ~~(iv)~~ apron/ramp.

(4 marks)

~~(b)~~ Outline the safety procedure to be undertaken when driving in an airfield.

(5 marks)

(c) (i) With the aid of a sketch explain the requirements when parking a light aircraft in a stormy weather;

(ii) Explain the information that must be received from the control tower before starting an aircraft engines.

(11 marks)