

SECTION A: (Airframes structures)

Section A- Answer any **THREE** question of the **FOUR** questions

- 1 (a) Describe FIVE structural loads applied to aircraft structures. **(5marks)**
- (b) With aid of a labelled sketch, explain the functions of the structural members used in semi-monocoque fuselage construction. **(15 marks)**
- 2 (a) Give **THREE** different materials used in landing gear construction and state where each is used. **(6 marks)**
- (b) Outline any **FIVE** functions of an aircraft landing gear. **(5 marks)**
- (c) Explain **THREE** categories of flying control surfaces giving examples and location of each. **(9 marks)**
- 3 (a) Discuss **FOUR** types of aircraft structural repairs. **(12 marks)**
- (b) Explain the contents and applications of the following aircraft manuals.
- i. Maintenance manual
 - ii. Illustrated parts catalogue
 - iii. Structural repair manual
 - iv. Overhaul manual
- (8 marks)**
- 4 (a) Explain the operation of the following flying control systems: -
- (i) Fully powered
 - (ii) Power assisted
- (10 marks)**
- (b) Discuss FIVE maintenance tasks which should be carried out in flying control system. **(10 marks)**

SECTION B:(AERODYNAMICS)

Answer **ONE** question from this section

5. (a) Explain THREE forms of profile drag.

(12marks)

(b) Explain the term induced.

(3marks)

(c) State FIVE methods of minimizing induced drag.

(12 marks)

2. (a) With aid of a labelled sketch, explain the principle of operation of a gas turbine engine.

(10marks)

(b) State FIVE methods of increasing a propeller efficiency stating their limitations .

(10marks)

SECTION C (AIRFIELD AND SAFETY PROCEDURES)

Answer **ONE** question from this section.

7 (a) Explain the following as applied to Air Law: -

- (i) Paris convention (1919)
- (ii) Chicago convention (1944)

(4marks)

(b) Outline the conditions, circumstances, validity and issuing authority for each of the following: -

- (i) Certificate of fitness for flight (C of FF)
- (ii) Certificate of release to service (CRS)
- (iii) Certificate of airworthiness (Cof A)
- (iv) Certificate of registration (Cof R)

(16marks)

8. (a) List FIVE categories of aircraft maintenance engineers licenses issued by the KCAA.

(5 marks)

(b) Describe a type certificate.

(2marks)

(c) Explain how a holder of a type certificate keep it valid.

(5marks)

(d) List EIGHT functions of the Kenya Civil Aviation Authority.

(8marks)