

3.22 AVIATION TECHNOLOGY (450)

3.22.1 Aviation Technology Paper 1 (450/1)

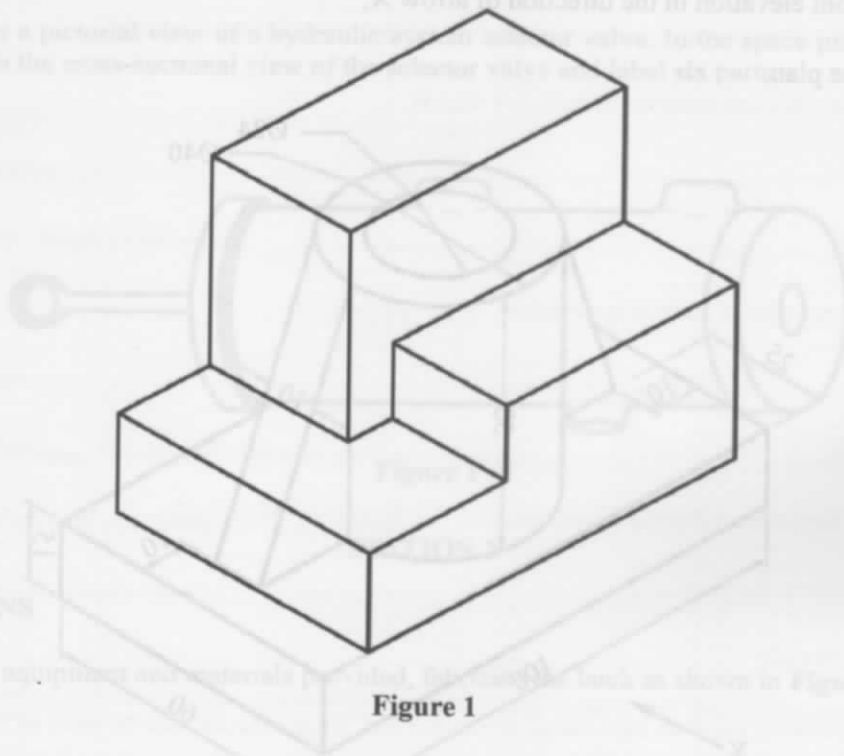
SECTION A (44 marks)

Answer all questions in this section in the spaces provided.

1. State **three** requirements for one to undertake a pilot's certificate course. (3 marks)
2. State **four** safety precautions to be observed prior to starting an aircraft. (4 marks)
3. Outline **three** roles of tower controllers in airport operations. (3 marks)
4. State **four** places a lock washer should never be used on an aircraft. (4 marks)
5. Describe each of the following types of drag: (6 marks)
  - (a) Form;
  - (b) Skin friction.
6. Use a labelled sketch to show the main regions of an aircraft tyre. (4 marks)
7. With respect to aircraft propellers, describe blade twist stating its significance in aircraft performance. (6 marks)
8. Explain **five** methods of directional control on an aircraft during taxiing. (5 marks)
9. Outline the procedure of carrying out a finishing process on an aircraft part made of aluminium alloy. (4 marks)

10. **Figure 1** shows an aircraft undercarriage bracket drawn in isometric projection. In good proportion, draw the **three** orthographic views of the bracket in third angle projection.

(5 marks)



**Figure 1**

**SECTION B (56 marks)**

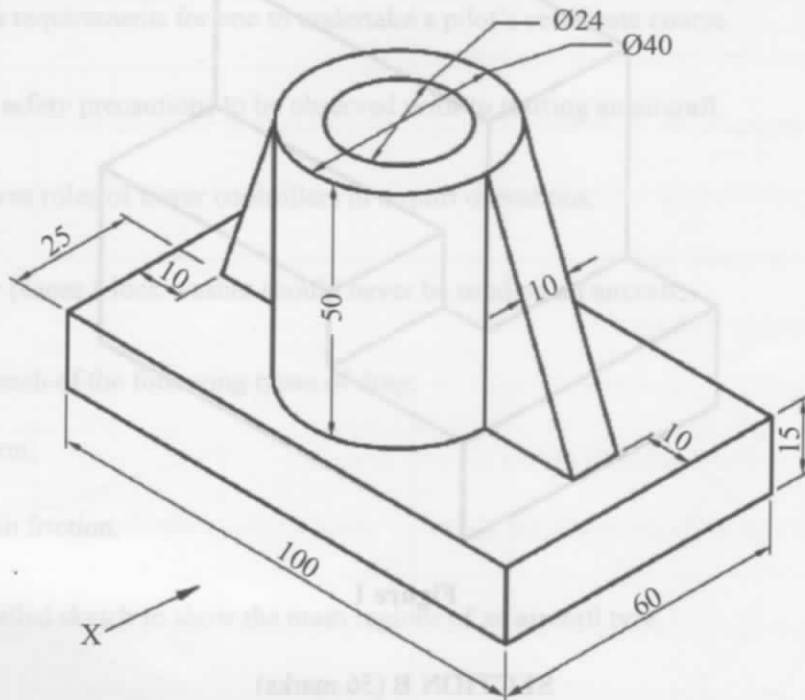
*Answer any four questions from this section in the spaces provided.*

11. (a) With respect to structural integrity, describe each of the **three** aircraft structures. (6 marks)
- (b) Use a labelled cross sectional sketch to show the nomenclature of an aircraft wing. (3 marks)
- (c) Explain how a cambered airfoil generates lift. (5 marks)
12. (a) Outline **four** design requirements for air transport undercarriages. (6 marks)
- (b) With the aid of labelled sketches, explain the operational difference between simple acting and double acting linear actuators. (8 marks)
13. Describe the operation of an aero turbojet engine. (14 marks)

Let the examiner check your work.

14. **Figure 2** shows an aircraft door bracket drawn in isometric projection. In first angle projection, draw **Full Size** the following views:

- (a) Front elevation in the direction of arrow X;
- (b) The plan. (14 marks)



**Figure 2**

*(Use the A3 paper provided)*

- 15. (a) State **four** safety precautions to be observed in order to prevent fuel contamination. (4 marks)
- (b) Explain how each of the following clouds can be identified: (5 marks)
  - (i) Cumulus
  - (ii) Stratus
  - (iii) Cirrus
  - (iv) Nimbus
  - (v) Alto
- (c) State **five** effects of lightning on an aircraft in flight. (5 marks)