3.22.2 Aviation Technology Paper 2 (450/2)

STATION 1

INSTRUCTIONS

Figure 1 shows a pictorial view of a hydraulic system selector valve. In the space provided, sketch in good proportion the cross-sectional view of the selector valve and label **six** parts.

(10 marks)

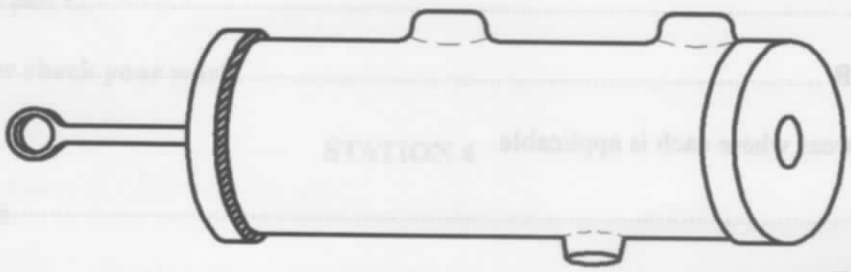

Figure 1

STATION 2

INSTRUCTIONS

Using the tools, equipment and materials provided, fabricate the latch as shown in **Figure 2**.

(10 marks)

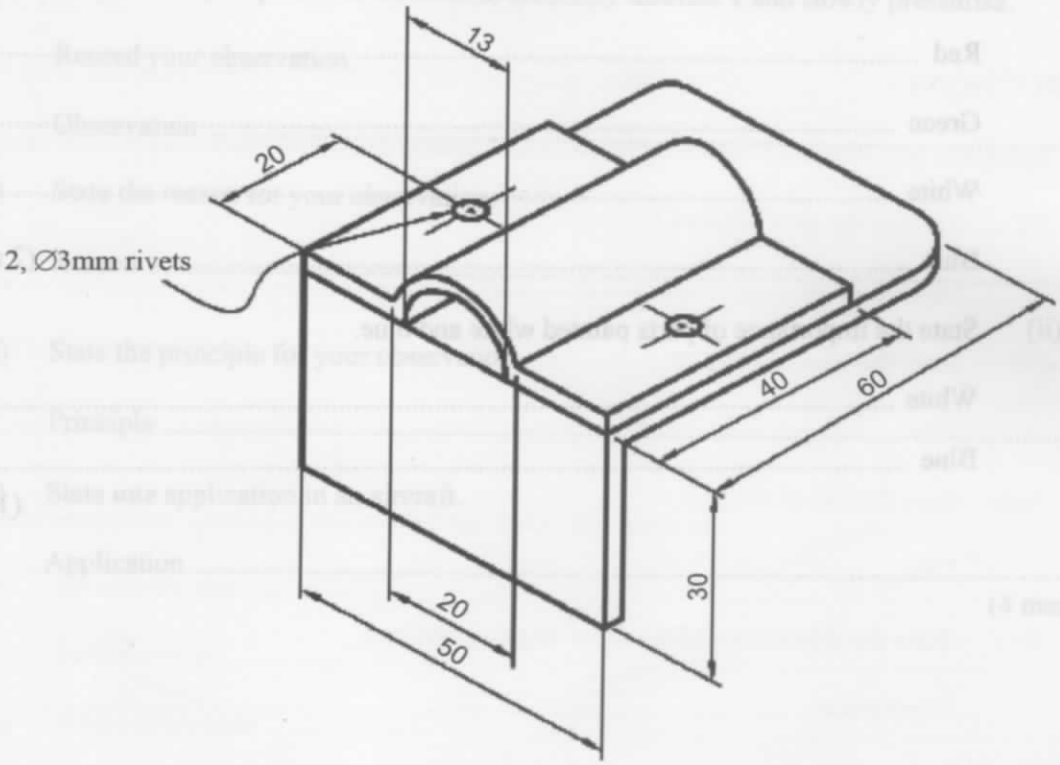

Figure 2

Let the examiner check your work.

STATION 3

INSTRUCTIONS

Using the tools, equipment and materials provided, perform the following tasks:

(a) Identify the part and material labelled **A** and **B**.

Part **A** .....

Material **B** ..... (1 mark)

(b) Identify areas where each is applicable.

Part **A** .....

Material **B** ..... (1 mark)

(c) Study the assembly labelled **C** and answer the following questions:

(i) Identify the part .....

(ii) State type ..... (1 mark)

(d) (i) Dismantle the part labelled **C**. Examine and record the defects on each of the parts painted red, green, white and blue.

Red .....

Green .....

White .....

Blue ..... (2 marks)

(ii) State the importance of parts painted white and blue.

White .....

Blue .....

(1 mark)

(e) Record **two** daily checks and **two** rejections criteria for the assembly.

Checks .....

Rejection .....

.....

(2 marks)

(f) Assemble part **C**. (2 marks)

Let the examiner check your work.

STATION 4

INSTRUCTIONS

(a) Study the instrument labelled **1** and identify the following:

(i) Principle of operation .....

(ii) Aircraft system used .....

(1 mark)

(b) Using the pump and instrument assemblies marked **2** and **3** carry out the following tasks:

(i) Connect the pump and the instrument assembly labelled **1** and slowly pressurise.

Record your observation.

Observation .....

(ii) State the reason for your observation.

Reason .....

(iii) State the principle for your observation.

Principle .....

(iv) State **one** application in an aircraft.

Application .....

(4 marks)

(c) (i) Repeat (b)(i) using the assembly labelled **2**.

Record your observation.

Observation .....

(ii) State the reason for your observation.

Reason .....

(iii) State the principle underlying your observation.

Principle .....

(iv) State **one** application in an aircraft.

Application .....

(4 marks)

(d) Compare the pressure requirement from observations in (b) and (c).

Comparison .....

(1 mark)

STATION 5

INSTRUCTIONS

(a) Using the part labelled **E** and the precision instruments provided, carry out the following tasks:

(i) Identify the part labelled **E**.

Identification .....

(ii) State the type of the part.

Type .....

(iii) Give the use of the part.

Use .....

(iv) State the importance of the taper angle on the part.

Importance .....

(2 marks)

(b) Measure and record the following:

(i) Outside diameter of outer race .....

(ii) Width of the outer race .....

(iii) Bore .....

(iv) Gap between inner and outer race .....

(v) Taper angle .....

(vi) Thickness of the face .....

(6 marks)

(c) State **four** rejection criteria for the part.

(i) .....

(ii) .....

(iii) .....

(iv) .....

(2 marks)

STATION 6

INSTRUCTIONS

Using the parts and tools provided, carry out the following tasks.

(a) Study the tool provided and state the following:

(i) Name .....

(ii) Use .....

(iii) Maintenance check required .....

(iv) Type .....

(2 marks)

(b) Study component labelled **F** and answer the following questions:

(i) Identify the part .....

(ii) State the type .....

(iii) Where applicable .....

(1½ marks)

(c) (i) Dismantle the component labelled **F**. Examine and identify parts labelled **G**, **H**, **J**, **K** and **L**.

(ii) State the importance of parts painted white and blue.

White .....

Blue .....

(1 mark)

(iii) Examine the parts **G**, **J**, **K** and **L** and state maintenance checks for each to determine serviceability.

G .....

J .....

K .....

L .....

(2 marks)

(d) Record **two** failure indications during engine ground run.

Failures:

(i) .....

(ii) .....

(1 mark)

STATION 7

INSTRUCTIONS

Using the tools and component **M** provided, carry out the following tasks:

(a) Study component **M** and identify the following:

(i) Component .....

(ii) Type .....

(iii) System used .....

(iv) Type of aircraft where used .....

(2 marks)

(b) (i) Dismantle the component **M** and let the examiner check your work. (1 mark)

(ii) Identify the parts painted white, blue, red and green.

White .....

Blue .....

Red .....

Green .....

(2 marks)

(iii) Examine the component **M** and identify two defects.

Defects: (1 mark)

1. .....

2. .....

(iv) Assemble component **M**. **Let examiner check your work.** (2 marks)

(c) State **four** routine checks to be carried on component **M**.

Routine checks:

1. .....

2. .....

3. .....

4. .....

(2 marks)

STATION 8

INSTRUCTIONS

Using the parts and tools provided, carry out the following tasks:

(a) Strip the cable provided then sketch and label to show the layers. (4 marks)

(b) Solder the parts labelled **N** and **P**. (5 marks)

Let the examiner check your work.

(c) State **two** applications of the cable on an aircraft:

Applications:

1. .....

2. ..... (1 mark)

STATION 9

INSTRUCTIONS

Using the material labelled **Q** and hardware labelled **R**, perform the following tasks:

(a) Study material labelled **Q** and do the following:

(i) Identify the material .....

(ii) State the reason why it is used in aircraft construction .....

.....

(iii) Draw and label the cross-section through the material. (4 marks)

(b) Study the hardware labelled **R** and do the following:

(i) Identify the hardware .....

(ii) State its condition .....

.....

(iii) Sketch and label **six** parts of the thread profile. (6 marks)

STATION 10

INSTRUCTIONS

Using tools and materials provided, perform the following tasks:

(a) Weigh the parts labelled **S** and **T** and record their weights.

Part **S** .....

Part **T** .....

(2 marks)

(b) (i) Fill the jar marked **U** with water. Position the empty graduated jar labelled **V** at a position possible to collect all the water from jar **U**. Immerse part **S** into jar **U**. Take and record the volume of water collected in the jar marked **V**.

Volume .....

(ii) Repeat (b)(i). Immerse part **T** into jar **U**. Take and record the volume of water collected in the jar **V**.

Volume .....

(3 marks)

(c) Relate the observations in (a) and (b)(i), (ii). Record the observation.

Observation:

(a) .....

(b)(i) and (ii) .....

(2 marks)

(d) (i) State and explain the principle underlying your observation.

Principle .....

(ii) State the application in the theory of flight.

Application .....

.....

(3 marks)