4.8.2 Aviation Technology Paper 2 (450/2)

STATION 1

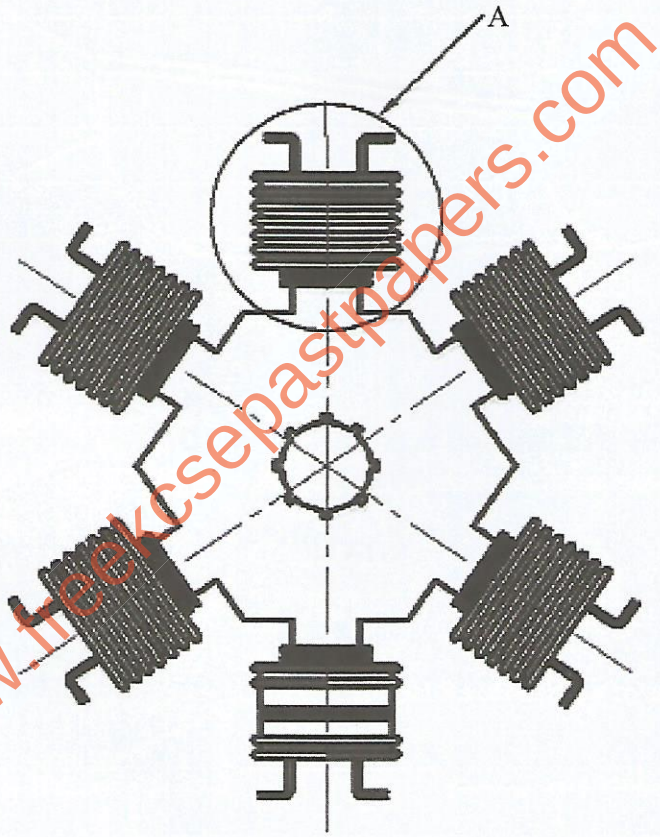
INSTRUCTIONS

Figure 1 shows an aircraft engine assembly.

In the space provided: (10 marks)

(a) Sketch the pictorial assembly of the part labelled A.

(b) Label **eight** parts of the assembly in (a).



STATION 2

INSTRUCTIONS

Using the tools and materials provided, fabricate the aircraft engine exhaust duct as shown in **Figure 2**.
(10 marks)

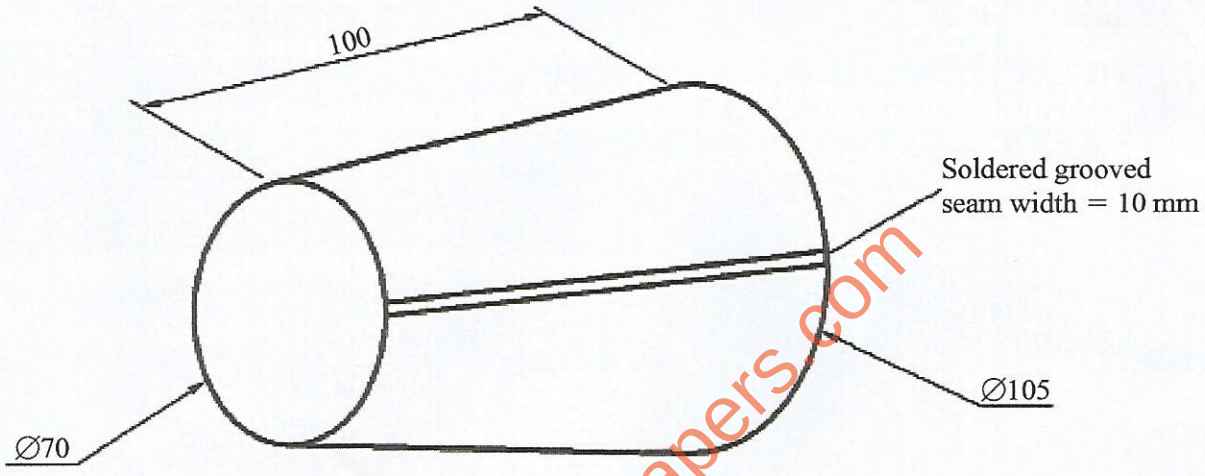


Figure 2

Let the examiner check your work.

STATION 3

INSTRUCTIONS

(a) Identify the parts of the crankshaft labelled red, blue, green and yellow.

Red .....

Blue .....

Green .....

Yellow .....

(2 marks)

(b) Measure and record the following:

(i) Inside diameter of part painted red .....

(ii) Diameter of part painted black .....

(iii) The angle of the part painted white .....

(iv) Depth of the end painted white .....

(v) The size of threads on the threaded part .....

(vi) Size of the con bearing .....

(6 marks)

(c) State **four** maintenance checks that must be carried out to ensure serviceability of the part painted yellow.

(i) .....

(ii) .....

(iii) .....

(iv) .....

(2 marks)

STATION 4

INSTRUCTIONS

Using the tools and materials provided, carry out each of the following task then complete **Table 1**:

(a) Apply sample 1 on the part labelled 6.

Carefully look for evidence of letters showing through the white paint then record the following in **Table 1**:

(i) The hiding results
(ii) Most appropriate area of use on an aircraft after repair

Clean and dry the patch plate using the thinner, brush and rug provided.

(b) Repeat step (a) for each of the samples 2, 3, 4 and 5 and complete **Table 1**.

Table 1

Sample	Hiding results	Appropriate area of use on an aircraft
1.		
2.		
3.		
4.		
5.		

(10 marks)

STATION 5

INSTRUCTIONS

Using the tools and battery provided, perform each of the following tasks:

(a) Identify the tool labelled A

Tool A .....

(½ mark)

(b) Measure and record the voltage across positive and negative terminals of the battery labelled B

Voltage .....

(½ mark)

(c) Measure and record the specific gravity then determine the condition and state the corrective procedure for results obtained on each of the cells as marked C, D, E, F, G and H on various batteries.

Complete **Table 2.**

Table 2

Cell	Specific gravity	Condition	Corrective procedure
C			
D			
E			
F			
G			
H			

(9 marks)

STATION 6

INSTRUCTIONS

(a) Study the set up provided and carry out each of the following:

(i) Record the reading of the spring balance without load.

Reading .....

(ii) Hook the spring balance to the set up and select switch 1 to **ON** position.
Record the observation and reading on the spring balance.

Observation .....

Reading .....

(iii) Select switch 2 to **ON** position.
Record the observation and reading on the spring balance.

Observation .....

Reading .....

(iv) Select switch 3 to **ON** position.
Record the observation and reading on the spring balance.

Observation .....

Reading .....

(3½ marks)

(b) State **four** reasons behind the observations in (a) (i) to (iv).

Reasons .....

(2 marks)

(c) State the Law and the Principle behind your observations.

Law .....

Principle .....

.....

(2 marks)

(d) Identify **one** aircraft system which utilises this Principle. (1 mark)

(e) Relate your observations at each switch position in (a) to an aircraft operation. (1½ marks)

STATION 7

INSTRUCTIONS

Using the tools and materials provided, carry out each of the following tasks:

(a) (i) Suck the water from the container provided using the syringe marked **J**, gradually and record your observation.

Observation .....

(ii) Repeat step (i) using the syringe marked **K** and record your observation.

Observation .....

(iii) State the reasons behind your observations in (i) and (ii).

Reasons

(iv) Relate the observations in (i) to two aircraft systems.

Aircraft systems (4 marks)

(b) (i) Hold syringe **J** above the water level and gradually discharge the water into the container provided. Record your observations.

(ii) Repeat step (i) using the syringe marked **K**.
Record the observations.

(iii) Give the cause of the observations in (ii) above.

(iv) State **one** application of the Principle in (b) (i) to an aircraft engine.

(2 marks)

(c) (i) Suck the water from the container using the syringe marked **L**. Hold it above the water level. Record the observations.

(ii) Explain the reason for the observation.

(iii) State **two** applications of the observations in c (i) to aircraft systems.

(4 marks)

STATION 8

INSTRUCTIONS

Using the tools, equipment and parts provided, demonstrate to the examiner the procedure of replacing the piston rings. (10 marks)

Let the examiner check your work.

STATION 9

INSTRUCTIONS

Using the model provided, demonstrate to the examiner the procedure of performing mouth to mouth and mouth to nose respiration to a person who has suffered from electrical shock resulting in respiratory stoppage in a workshop. (10 marks)

STATION 10

INSTRUCTIONS

Using the materials and the tools provided, carry out each of the following tasks and complete **Table 3**.

(a) (i) Hold the material labelled **L** half way on the bench vice. Using the tool labelled **R**, bend the material at equal strokes until it breaks. Record the number of strokes in **Table 3**.

(ii) Repeat (a) (i) with materials M, N, P and Q.

(b) Cut each of the materials L, M, N, P and Q using the hacksaw at equal strokes. Record the number of strokes in **Table 3**.

(c) Hammer **five** equal strokes on one end of each of the materials L, M, N, P and Q. Record the diameter of the head formed in **Table 3**.

Table 3

Material	No. of Bending strokes	No. of cutting strokes	Diameter	Application
L				
M				
N				
P				
Q				

(10 marks)