higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

AIRCRAFT MAINTENANCE THEORY N3

(11041113)

25 November 2022 (X-paper)
09:00–12:00

This question paper consists of 5 pages.

231Q1E2225

Copyright reserved

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
AIRCRAFT MAINTENANCE THEORY N3
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Use only a blue or black pen.
5. Start each question on a new page.
6. Write neatly and legibly.

Copyright reserved

QUESTION 1

1.1 An aircraft like the one illustrated in FIGURE 1 (below) is brought in for a routine calendar inspection.

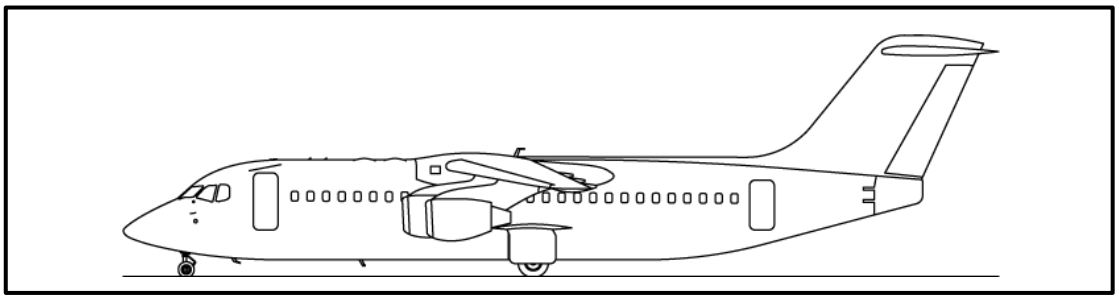


FIGURE 1

During this inspection, several checks and inspections must be carried out. Describe the procedures that will be followed for the following:

1.1.1 A symmetry check (7)

1.1.2 Centre of gravity determination (7)

1.2 An aircraft, such as illustrated in FIGURE 1 above, experienced a hard landing. The whole structure and the systems must be checked for damage. What would the tail plane mounting points on the empennage be examined for?

(4)

1.3 An aircraft's flying control system must be inspected during a routine calendar inspection. One of the items to be inspected is the turnbuckles, like the one illustrated in FIGURE 2 below. List the defects that may be found on this component.

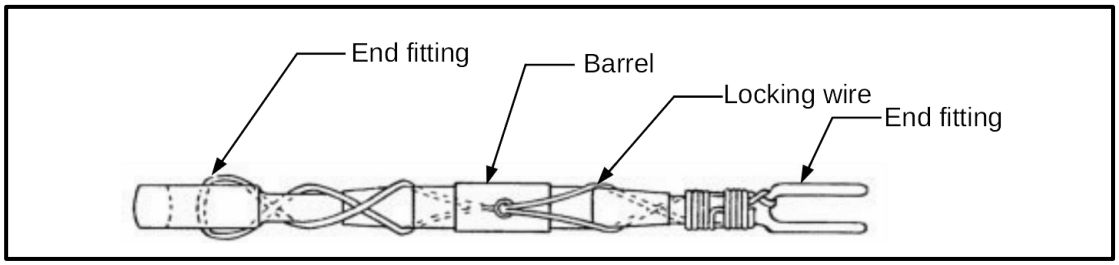


FIGURE 2

(5)
[23]

Copyright reserved

QUESTION 2

A light aircraft like the one illustrated in FIGURE 3 below has been brought in for its annual inspection. Answer the following questions relating to this inspection:

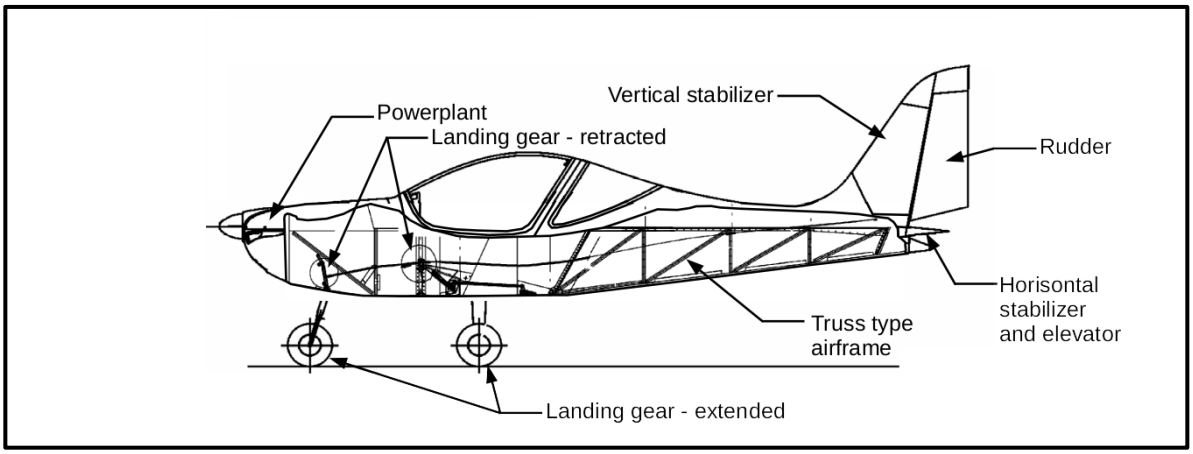


FIGURE 3

2.1 The condition of the instruments must be checked. What would be included in the check? (4)

2.2 The brake casing/housing/calliper must be inspected. Give a list of defects that may be found. (6)

2.3 The oil filter must be inspected. It is cut open and the filter element spread open to inspect. Give all the faults and defects that can be found on the entire filter. (5)

2.4 During the inspection of the aircraft, a cluster on the airframe is found to be dented like the one in FIGURE 4 below. Explain how this can be repaired.

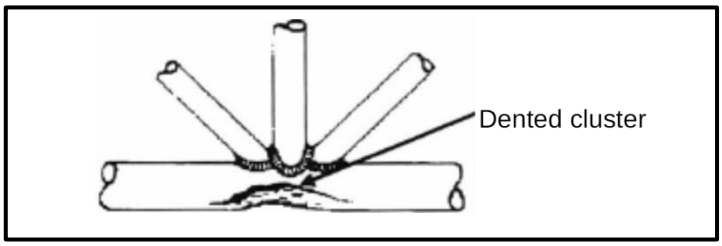


FIGURE 4

(8)

[23]

QUESTION 3

A light twin engine aircraft is brought in for its annual service. During the service, various inspections will be carried out. Discuss the following inspections that will be carried out on the engines of the aircraft:

3.1 An injection nozzle fuel-flow check (8)

3.2 Inspection of the magneto impulse coupling (5)

3.3 Inspection of the radiator of the supercharger intercooler. (6)
[19]

QUESTION 4

4.1 An aircraft turbocharger system must be inspected during a routine inspection. Describe how the pressure test of the waste gate is done to check for correct functioning. (8)

4.2 The engine control system of an aircraft must be checked during a routine inspection. State how the conduit and casing are to be examined during this inspection. (4)

4.3 An overhauled engine must be placed in storage until required for use. To protect the engine against deterioration of all kinds, a preservation treatment is applied to the engine. Describe an interior treatment procedure that will be used to preserve the engine. (10)
[22]

QUESTION 5

5.1 The throttle control of an aircraft needs to be attached and adjusted after installation on the airframe of the aircraft. Explain this procedure. (8)

5.2 A piston engine logbook indicates that the engine overheats during flights. Briefly discuss what could cause the fault. (5)
[13]

TOTAL: 100

Copyright reserved