higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

AIRCRAFT MAINTENANCE THEORY N3

(11041113)

14 April 2020 (X-paper)
09:00–12:00

This question paper consists of 6 pages.

227Q1A2014

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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 black or a blue pen.
5. Write neatly and legibly.

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QUESTION 1

1.1 List any THREE defects that will render the cable pulleys of a rudder control system unserviceable. (3)

1.2 After a heavy landing during a rain storm with a light twin-engine transport aircraft, a heavy landing inspection has to be carried out.

Describe any THREE things that would be inspected specifically regarding the wing fillets during a heavy landing inspection. (3)

1.3 During routine maintenance of the flying instruments the artificial horizon has to be inspected.

What areas should be inspected for serviceability? (3)

1.4 A hydraulically operated synchronisation system for a hydraulic flap operating system must be inspected for its condition during routine maintenance.

1.4.1 Describe THREE main areas where defects could be possible. (3)

1.4.2 Write ONE defect for each area named above next to the area. (3)

1.5 The brake system must be inspected during a routine inspection of the landing gear.

1.5.1 What would the casing of the brakes be inspected for? (2)

1.5.2 What would the brake disks be inspected for? (2)

[19]

QUESTION 2

2.1 A routine inspection is carried out on a light aircraft's landing gear. During this inspection the torque links are inspected.

What defects may be found during this inspection? (3)

2.2 Describe how an acceleration check is done on ONE of the following engines during a ground run:

2.2.1 Piston engine

OR

2.2.2 Gas turbine/turboprop engine (6)

2.3 After an overhaul, a piston engine must be placed in storage until required for use.

Explain the procedures of inhibiting the engine before it is placed in storage. (6)

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2.4 State TWO causes why anyone of the following engines could experience excessive oil consumption:

2.4.1 Piston engine

OR

2.4.2 Gas turbine (2)
[17]

QUESTION 3

3.1 A landing gear door locking mechanism attached to a micro switch labelled A, is shown in the FIGURE below.

State any THREE defects that a micro switch and its connections/area will be inspected for during a routine inspection of the landing gear of an aircraft.

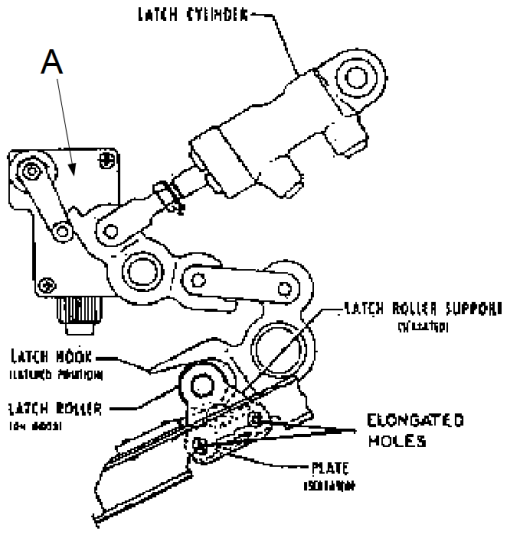


FIGURE (3)

3.2 Explain the inspection of ONE of the following:

3.2.1 Ignition harness of a piston engine

OR

3.2.2 Ignition system leads of a gas turbine engine (5)

3.3 During routine maintenance the induction system has to be inspected.

State THREE items that appear on the inspection checklist of the induction system pipes and hoses. (3)

3.4 A crack has been discovered on the spar of the main wing of a four-engine turbo propeller aircraft.

Explain the procedure that should be followed to restore the wing to its original strength. (8)
[19]

QUESTION 4

4.1 A repair on a metal structure has been done by means of riveting. After the repair has been completed, an inspection of the riveting has to be done.

What would be looked at to declare it a good riveting repair? (4)

4.2 Describe the process of checking a fixed-pitch propeller's blade alignment during routine maintenance of the propeller. (6)

4.3 After completion of disassembling and cleaning an oil cooler, the cooler has to undergo an inspection.

Explain what this inspection would entail to declare it serviceable. (3)

4.4 A rudder control system that is cable-operated is being inspected. During the inspection, the cables are checked for their condition and seem to be a bit worn.

What defects would require a cable replacement? (3)

4.5 State FOUR methods that can be used to weigh an aircraft during its annual inspection. (4)
[20]

QUESTION 5

5.1 Explain how a connecting rod is inspected for straightness and alignment during a piston engine overhaul. (4)

5.2 A flexible push-pull control has to be inspected during a routine inspection of the engine.

What would the cable and/or conduit/casing be inspected for during this inspection? (4)

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5.3 The Pröny brake is an older device used to test actual engine power.

Explain how this device is used to test engine power. (5)

5.4 A routine inspection is done on a variable-pitch propeller. During the inspection the propeller governor (CSU) is also inspected.

Describe the inspection of the propeller governor (CSU). (4)

5.5 A turbocharger has been overhauled and installed on the engine and has to be tested for correct installation and operation.

Describe how this test is performed. (8)
[25]

TOTAL: 100

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