higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

AIRCRAFT MAINTENANCE THEORY N2

(11041102)

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This question paper consists of 4 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
AIRCRAFT MAINTENANCE THEORY N2
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. Drawings must be done in pencil and be properly labelled and large enough to show all details.
5. Work neatly.

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QUESTION 1

1.1 Make neat, labelled drawings to demonstrate the difference between the lift created by a flat plate and that created by an aerofoil. (6)

1.2 Make a neat, labelled drawing to show how drag changes with a change in the angle of attack by means of a drag curve. (3)

1.3 Explain what effect shear force has on an assembled structure. (3)

1.4 A cluster of a truss-type welded tubular construction has been seriously damaged, but a patch plate repair can be done.

Make a neat, labelled drawing of what the completed repair would look like after the plate has been welded in place. (4)

1.5 Explain the function of the reservoir of a hydraulic system. (4)
[20]

QUESTION 2

2.1 Name TWO types of positive-displacement cabin superchargers for pressurisation systems with which some aircraft are equipped. (2)

2.2 Make a neat, labelled drawing of a thermal anti-icing system using a piccolo tube to distribute hot air through the leading edge of the wing structure. (6)

2.3 Explain the function of the pressure-regulating valve in a pneumatic system. (2)

2.4 What is the purpose of checking the incidence angle on an aircraft during airframe rigging checks? (1)

2.5 State FOUR possible causes of stiff controls during operation of a light aircraft. (4)

2.6 Explain the purpose of annealing mild steel. (2)

2.7 Explain the process taking place in QUESTION 2.6. (2)

2.8 Briefly explain the cause of stress corrosion. (2)
[21]

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QUESTION 3

3.1 How can intercrystalline corrosion on an aircraft structure or component be treated? (2)

3.2 Briefly distinguish between *pre-ignition* and *surface ignition*. (4)

3.3 To what does viscosity refer with reference to liquids? (2)

3.4 State FOUR advantages of an injection carburettor compared to a float-type carburettor. (4)

3.5 Draw a neat, labelled, simple diagram to illustrate the fuel control unit of a basic gas-turbine engine. (6)

3.6 Make a simple, labelled drawing of a turbocharger, showing its components. (4)

[22]

QUESTION 4

4.1 Explain constant-speed propellers. (4)

4.2 What does brake horse-power (B.H.P.) mean? (2)

4.3 Describe how an acceleration check is done on an engine during a ground run. Indicate whether the procedure is for a piston or a gas-turbine engine. (6)

4.4 Briefly explain the inspection of landing gear units of light commercial aircraft during minor inspections. (4)

4.5 State FOUR factors that may affect the thrust output of a gas-turbine engine. (4)

[20]

QUESTION 5

5.1 Make a neat, labelled drawing of a turbopropeller engine containing centrifugal compressors. (8)

5.2 Explain the function of the tail rotor gearbox of a helicopter and state its location. (4)

5.3 What does autorotation mean? (3)

5.4 Define *plane of rotation*. (2)

[17]

TOTAL: 100

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