higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

AIRCRAFT MAINTENANCE THEORY N1

(11041091)

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
AIRCRAFT MAINTENANCE THEORY N1
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. Start each section on a new page.
5. Write neatly and legibly.

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QUESTION 1

Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.1–1.15) in the ANSWER BOOK.

1.1 Inspections are done on aircraft to obtain a roadworthiness certificate.

1.2 Primary inspections are normally done after 25 flying hours.

1.3 Tempering of metal is done both on steel and aluminium alloys.

1.4 Torsional stress is the stress where the force applied causes a twisting action on the material.

1.5 Vegetable hydraulic oil is coloured red.

1.6 Non-return valves allow fluid to flow in both directions.

1.7 A single-acting hand pump is fitted with four flow control valves.

1.8 A booster fuel pump is fitted to the engine fuel system.

1.9 Integral fuel tanks cannot be removed from an aircraft.

1.10 All gyroplanes are fitted with stub wings.

1.11 Helicopters are fitted with yaw pedals.

1.12 The purpose of the crankshaft dampers is to relieve whip caused by the rotation of the crankshaft.

1.13 The turbine section of a gas turbine engine is to transform the kinetic energy of the intake gasses into mechanical energy to drive the compressor section.

1.14 An epicyclical gear drive is one of the types of reduction gears used in propellers.

1.15 Flexible push-pull controls are used for a variety of remote control situations on aircraft.

(15 × 1) **[15]**

QUESTION 2

Explain, with the aid of a sketch, how lift is generated on an aerofoil section. Show the chord line and relative airflow on the sketch. **[10]**

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QUESTION 3

Name 10 components that are used in the hydraulic system in aircraft. **[10]**

QUESTION 4

Name 10 major structural components of a helicopter. **[10]**

QUESTION 5

5.1 Name the FIVE basic parts of a radial piston engine of an aircraft. (5)

5.2 Make a neat, labelled sketch of a petrol engine valve-timing diagram showing the FOUR valve positions. (15)
[20]

QUESTION 6

6.1 Make a neat, labelled sketch of a single-spool, axial flow, gas turbine engine. (15)

6.2 What is the purpose of the accessory section of a gas turbine engine? (2)

6.3 Name the TWO elements of the compressor section. (2)

6.4 Name ONE type of combustion chamber used in gas turbine engines. (1)
[20]

QUESTION 7

7.1 Name 10 basic components of a typical airframe fuel system. (10)

7.2 Explain the following manuals used in the aircraft industry:

7.2.1 Log book

7.2.2 Maintenance manual

7.2.3 Structural repair manual

7.2.4 Parts catalogue

7.2.5 Overhaul manual

(5 × 1) (5)
[15]

TOTAL: 100

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