higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

AIRCRAFT MAINTENANCE THEORY N1

23 November 2022

This marking guideline consists of 6 pages.

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QUESTION 1

1.1 C
1.2 B
1.3 A
1.4 A
1.5 B
1.6 B
1.7 C
1.8 A
1.9 B
1.10 A

(10 × 1) **[10]**

QUESTION 2

2.1 False
2.2 True
2.3 False
2.4 True
2.5 True

(5 × 1) **[5]**

QUESTION 3

3.1 C
3.2 D
3.3 B
3.4 A
3.5 G

(5 × 1) **[5]**

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QUESTION 4

4.1
- Adequate cleaning of aircraft
- Thorough periodic lubrication
- Detailed inspection for corrosion
- Prompt treatment of corrosion
- Keeping drain holes clean
- Daily drainage of water in fuel cells
- Daily wipe down of exposed critical areas
- Sealing of aircraft against water
- Making maximum use of protective covers (Any 5 × 1) (5)

4.2 **Advantages**
- Fairly light in weight
- Easy to repair
- Well streamlined
- Can support enormous load
- Very strong (Any 3 × 1)

Disadvantages
- Construction is more difficult
- Easier to damage because of thin material
- More structural members that could be damaged (Any 2 × 1) (5)

4.3
- Parasite drag – Any exposed object
- Profile/form drag – Shape of the aerofoil/aircraft
- Skin friction – Surfaces that are not smooth/uneven (3 × 2) (6)

4.4

(4)
[20]

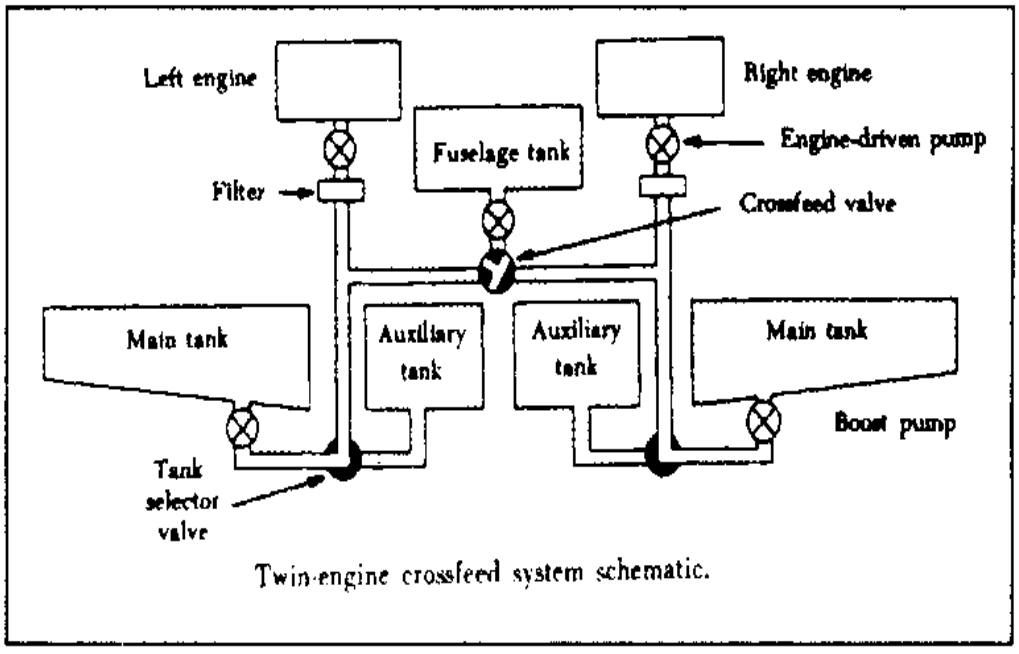
QUESTION 5

5.1
- Light weight
- Simplicity of installation
- Simplicity of inspection
- Minimum maintenance requirements
- Almost 100% efficient
- Very low fluid friction
- Pipes can be bent around obstructions

One source can operate many units
Requires little effort from the pilot
High power to weight ratio
Action is instantaneous
Self-lubricating (Any 5 × 1) (5)

5.2
Reservoir
Standpipe
Filter
Pressure regulator
Accumulator
Hand pump
Check valve
Rotary selector valve
Pressure relief valve
Actuator (10)

5.3



Twin-engine crossfeed system schematic.

(Sketch 5 × 1)
(Labelling 5 × 1) (10)
[25]

QUESTION 6

6.1
- Main rotor head
- Main rotor drive shaft
- Swash plate
- Main rotor gearbox
- Main rotor blades
- Engine
- Tail rotor drive shaft
- Tail rotor gear box
- Tail rotor head
- Tail rotor blades (10)

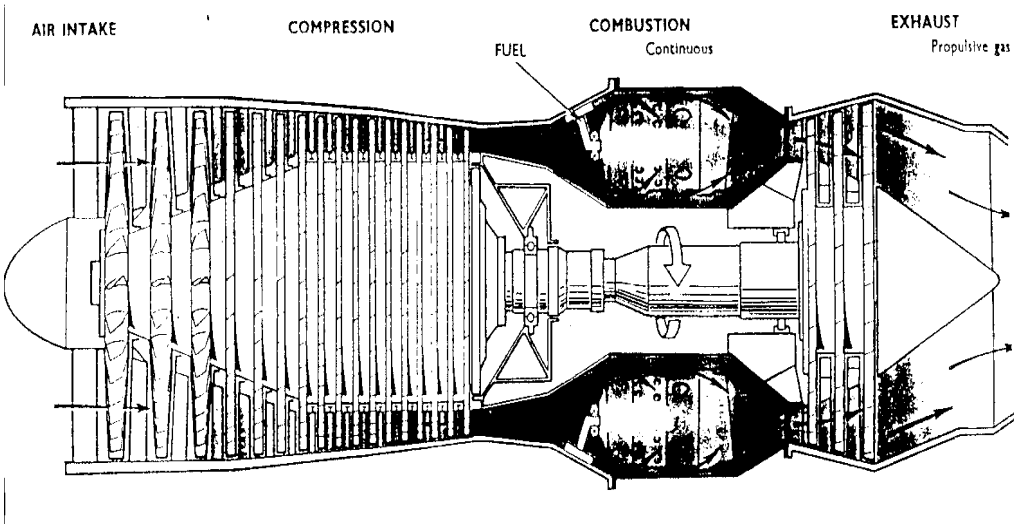
6.2 **Sections**
- Nose section
- Power section
- Supercharger section
- Accessory section

Parts
- Inlet valve
- Exhaust valve
- Cylinder
- Piston
- Connecting rod
- Crankshaft (10)

[20]

QUESTION 7

7.1 Single-stage gas-turbine engine



(Sketch 6 × 1)
(Labelling 4 × 1) (10)

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7.2 **Advantages of centrifugal GTE**

- Hire pressure rise per stage
- Good efficiency over wide range of speeds
- Simplicity of manufacture
- Low cost (Any 3 × 1)

Disadvantage of centrifugal GTE

- Large frontal area, thus more drag
- More than two stages are not practical
- High energy loss due to change in direction of airflow (Any 2 × 1) (5)

[15]

TOTAL: 100

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