



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

AIRCRAFT MAINTENANCE THEORY N1

8 April 2020

This marking guideline consists of 9 pages.

QUESTION 1

- 1.1 True
- 1.2 False
- 1.3 False
- 1.4 False
- 1.5 True
- 1.6 True
- 1.7 False
- 1.8 False
- 1.9 True
- 1.10 True
- 1.11 False
- 1.12 True
- 1.13 False
- 1.14 True
- 1.15 False

(15 × 1) [15]

QUESTION 2

- 2.1 2.1.1 One of several types of publications issued by airframe, engine and component manufacturers with instructions concerning repair, time to repair/modification and cost of work to be done
- 2.1.2 Detail instructions by the manufacturer about maintenance of systems and components fitted on aircraft
- 2.1.3 Contains information and detailed step-by-step instructions for work performed on components away from the aircraft

(3 × 2) (6)

- 2.2 When – work was carried out on all flying controls and adjustments to engines

Why – Ensure the safety of the system

- Full and free movement

- No binding

- Correct routing

- Correct vertical travel

- Correct synchronisation

- All safety devices are safe

- Correct alignment

Who – Certified and checked by one qualified inspector

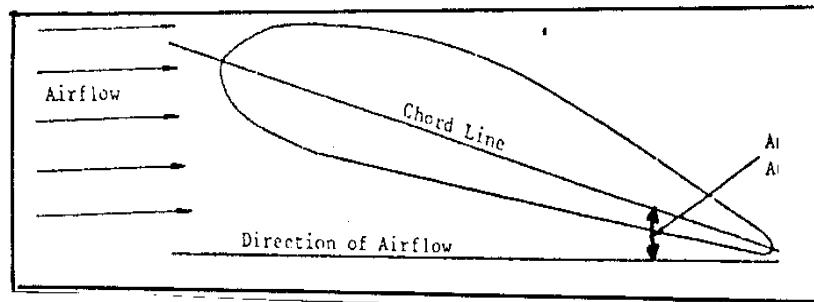
- Certified and checked by another qualified inspector, neither of whom did the actual work

(3 × 2) (6)

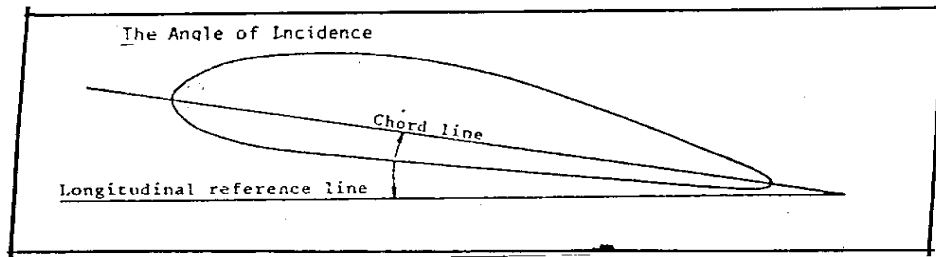
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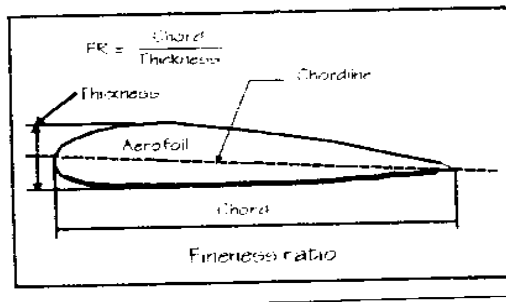
2.3 2.3.1



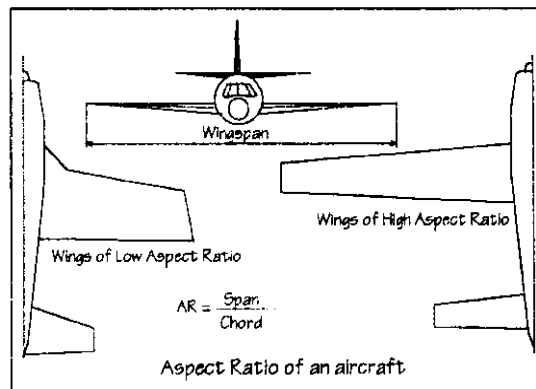
2.3.2



2.3.3



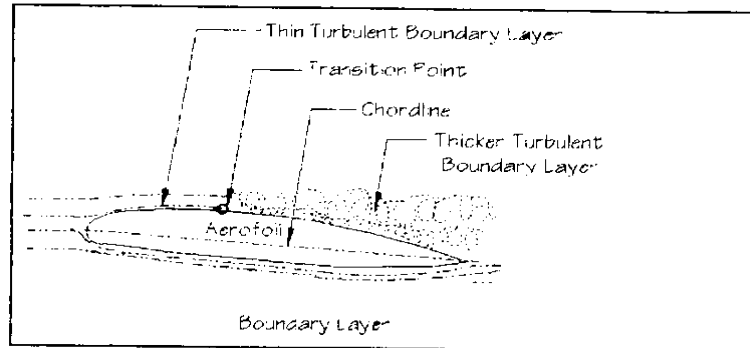
2.3.4



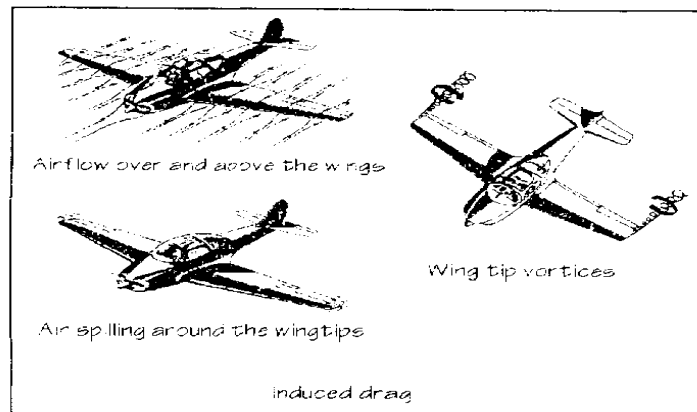
(4 × 2) (8)
[20]

QUESTION 3

3.1 3.1.1 Is the layer or layers of air in which the shearing action takes place



3.1.2 Wing-tip vortices



(2 × 2) (4)

- 3.2
- Toilets and drains
 - Exhaust trail areas
 - Wheel well areas
 - Wheel rims
 - Engine bay
 - Engine frontal areas
 - Flying control recesses
 - Battery racks
 - Metal fuel tanks

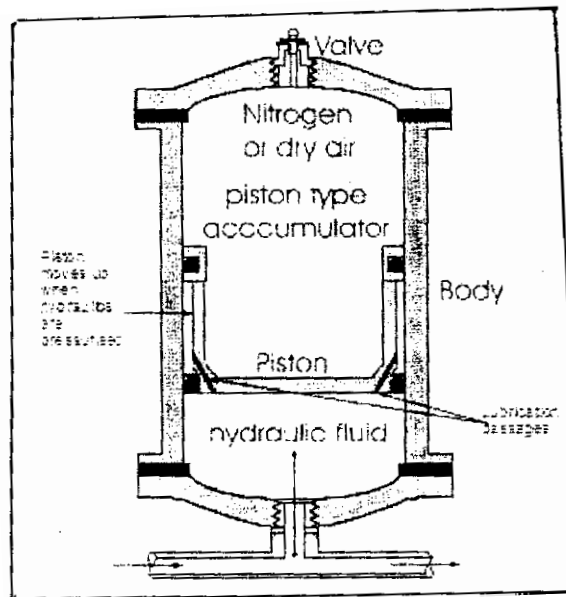
(Any 3 × 1) (3)

- 3.3
- Compression
 - Tension
 - Torsion
 - Bending
 - Shear

(Any 3 × 1) (3)
[10]

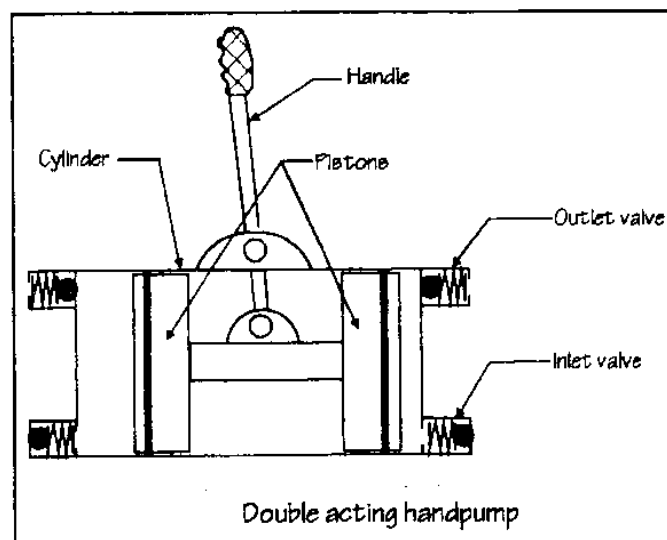
QUESTION 4

4.1



(5)

4.2

(5)
[10]**QUESTION 5**

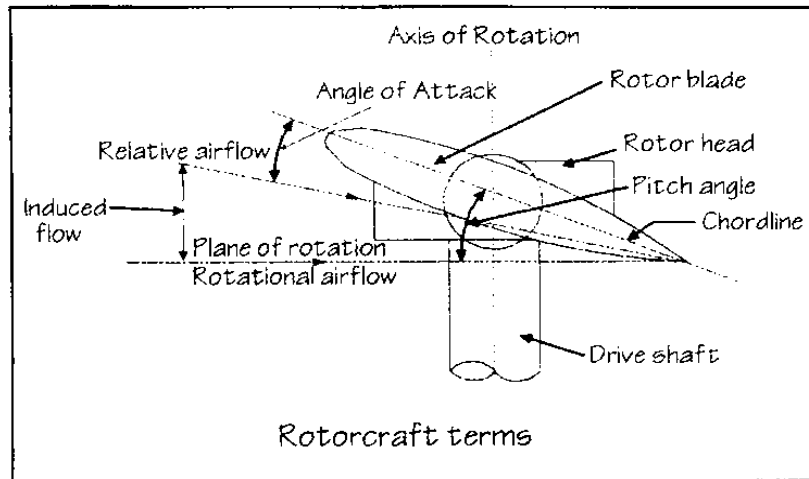
- 5.1
- Tanks
 - Booster pumps
 - Selector valves
 - Cross feed valves
 - Fuel manifolds
 - Fuel manifold valves
 - Refuelling receptacles
 - Tank shut-off valves

(Any 5 × 1) (5)

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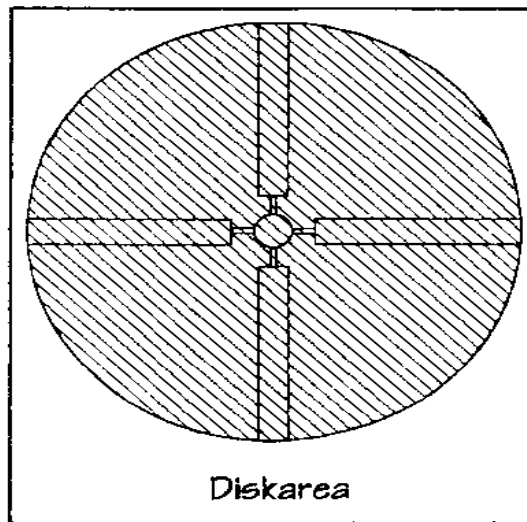
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5.2 5.2.1
&
5.2.2



(4)

5.2.3



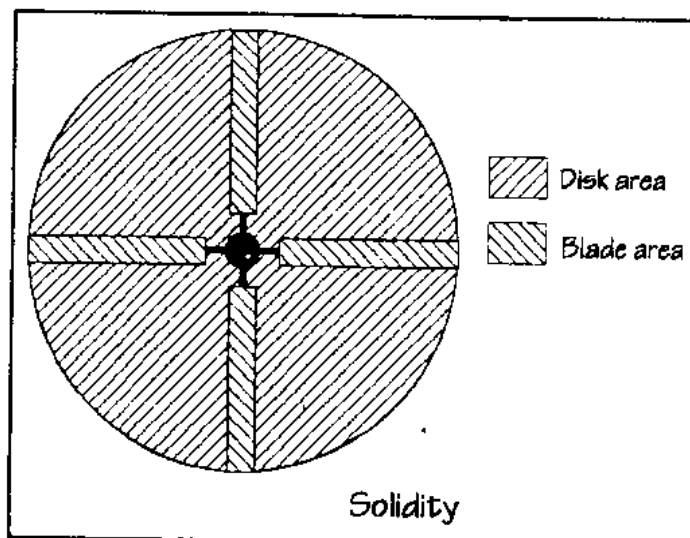
(2)

5.2.4 Disk loading

$$\text{Blade loading} = \frac{\text{Weight}}{\text{Blade area}}$$

(2)

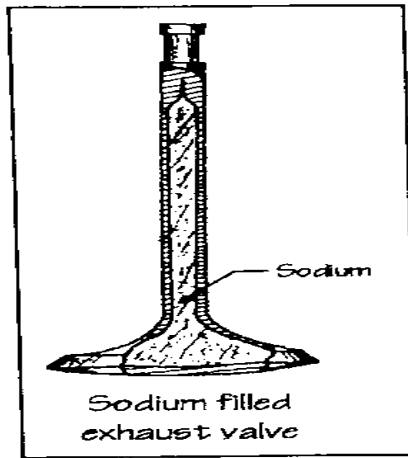
5.2.5



(2)
[15]

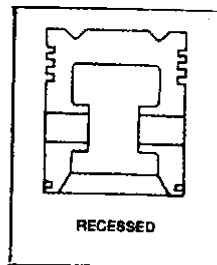
QUESTION 6

6.1



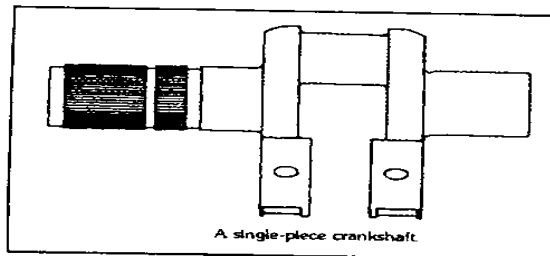
(3)

6.2



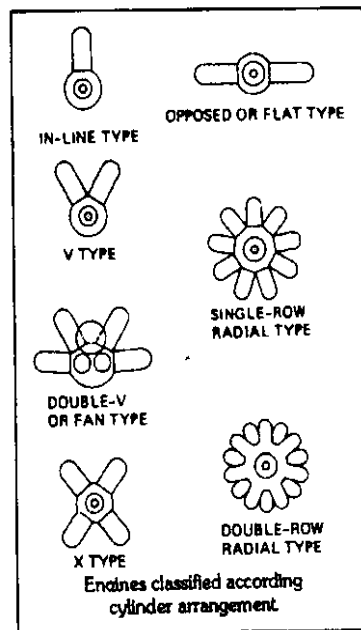
(3)

6.3



(5)

6.4
&
6.5

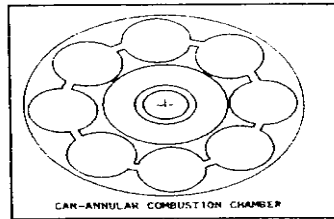
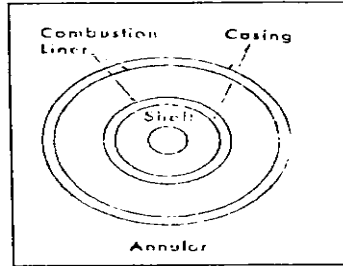
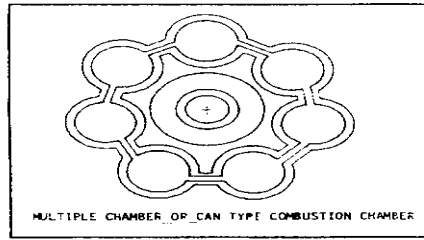


(4)
[15]

QUESTION 7

- 7.1
- Entrance section – An aerodynamically shaped divergent duct to supply the compressor section with the correct mass of air.
 - Compressor section – It consists of stators and rotors. The compressor compresses the mass of air and reduces its volume with an increase in pressure.
 - Combustion section – Fuel is added to the area in the chamber. Combustion takes place when mixture is ignited, and heat energy causes the air to expand.
 - Turbine section – Consists of a stator and rotor. The hot gases expand over the blades converting the air velocity into mechanical energy to drive the compressor section.
 - Exhaust section – It is a convergent duct. It accelerates the hot exhaust gasses and increases the kinetic energy creating rearward thrust to propel the air rearwards.
- (5 × 2) (10)

7.2



(5)
[15]

TOTAL: 100