



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

MAINTENANCE MANAGEMENT: FARMING N4

22 October 2020

This marking guideline consists of 5 pages.

QUESTION 1

1.1	1.1.1	B		
	1.1.2	D		
	1.1.3	C		
	1.1.4	B		
	1.1.5	A		
	1.1.6	C		
	1.1.7	D		
	1.1.8	B		
	1.1.9	B		
	1.1.10	C		
			(10 × 1)	(10)
1.2	1.2.1	True		
	1.2.2	True		
	1.2.3	False		
	1.2.4	False		
	1.2.5	True		
			(5 × 1)	(5)
1.3	1.3.1	A Cover or shield B Stone or grinding stone C Tool rest		
			(3 × 1)	(3)
	1.3.2	• The stone must be free from cracks. • Use the rotational speed with the maximum speed of the stone. • Do not put too much pressure on the stone while grinding. • Do not grind non-metal items on the stone. • Do not grind too heavy metals on the stone. • Dress the stone regularly to keep the front flat. • Do not grind on the side of the stone.	(Any relevant 2 × 1)	(2)
				[20]

QUESTION 2

2.1	2.1.1	During compression stroke the intake of air and fuel is compressed.✓ The air and fuel mixture is ignited and a sudden increase in pressure occurs.✓ (Any relevant ONE)
	2.1.2	Friction is a force that acts in an opposite direction to movement.✓ Friction is a force that holds back the movement of a sliding object.✓ (Any relevant ONE)
	2.1.3	Heat energy occurs when the air-fuel mixture is squeezed into the combustion chamber during compression stroke.✓ Heat happens during combustion stroke.✓ (Any relevant ONE)

- 2.1.4 Most engine components will expand in size✓ as a result of friction,✓ heat and the burning of fuel (combustion process).
(Any relevant ONE)
- 2.1.5 Excessive engine temperature decreases oil clearances✓ as engine components heat up and expand. Oil will not be able to flow between and around components to remove heat and to reduce friction.✓
(Any relevant ONE)
(5 × 2) (10)
- 2.2 2.2.1 A Intake valve
B Spark plug
C Exhaust valve
D Combustion chamber/Compressed air-fuel mixture
E Piston
(5 × 1) (5)
- 2.2.2 • Both valves are closed.
• The piston moves upward.
• The air-fuel mixture is compressed. (Any relevant 3 × 1) (3)
- 2.2.3 360 degrees (1)
- 2.2.4 Compression stroke (1)
- 2.3
- Check the engine coolant level daily.
 - Test the coolant condition for freeze protection.
 - Check the operation temperature of the system, sensors, functionality of the temperature gauge and sending unit and determine needed action.
 - Inspect and reinstall or replace pulleys, tensioners and drive belts.
 - Inspect and adjust drive belts and check alignment.
 - Inspect seals for leaks and replace as needed.
 - Inspect radiator hoses for condition or leaks and replace as needed.
 - Flush and refill the cooling system with recommended coolant.
 - Inspect, clean and pressure test the radiator, pressure cap, tank(s) and recovery systems.
 - Inspect the water pump for leaks and extraordinary noises and replace as needed.
 - Inspect the thermostatic cooling fan system (hydraulic, pneumatic and electronic) and fan shroud and replace as needed.
 - Replace antifreeze every at least every two years. (Any relevant 5 × 1) (5)
- [25]**

QUESTION 3

- | | | | | |
|-----|-------|---|---------|-----|
| 3.1 | 3.1.1 | D | | |
| | 3.1.2 | C | | |
| | 3.1.3 | E | | |
| | 3.1.4 | B | | |
| | 3.1.5 | F | | |
| | 3.1.6 | A | | |
| | | | (6 × 1) | (6) |
-
- | | | | | |
|-----|-------|------------------------|---------|-----|
| 3.2 | 3.2.1 | Occupational | | |
| | 3.2.2 | employer | | |
| | 3.2.3 | employee/worker/welder | | |
| | 3.2.4 | gloves | | |
| | 3.2.5 | spats | | |
| | | | (5 × 1) | (5) |
-
- | | | | | |
|-----|--|--|----------------------|-------------|
| 3.3 | • Waste avoidance, prevention and minimisation | | | |
| | • Thermal conductivity | | | |
| | • Thermal expansion | | | |
| | • Surface condition | | | |
| | • Change in microstructure | | (Any relevant 4 × 1) | (4) |
| | | | | [15] |

QUESTION 4

- | | | | | |
|-----|------------------------|--|--|-----|
| 4.1 | Waste Act✓ 59 of 2008✓ | | | (2) |
|-----|------------------------|--|--|-----|
-
- | | | | | |
|-----|---------------------------------|--|-------------|-----|
| 4.2 | • Melting point | | | |
| | • Recovery, recycling and reuse | | | |
| | • Treatment and handling | | | |
| | • Thermal expansion | | | |
| | • Storage and final disposal | | (Any 4 × 1) | (4) |
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- | | | | | |
|-----|----------------------------|--|----------------------|-------------|
| 4.3 | • Building materials | | | |
| | • Scrap metal | | | |
| | • Rubber | | | |
| | • Fuel (diesel and petrol) | | | |
| | • Used engine oil | | (Any relevant 4 × 1) | (4) |
| | | | | [10] |

QUESTION 5

- 5.1 A Force direction
 B Magnetic field
 C Current direction
(3 × 1) (3)
- 5.2 As a conductor moves✓ inside a magnetic field, cutting the magnetic lines✓, a current is induced inside the conductor or wire.✓
(Any relevant 3 × 1) (3)
- 5.3 • Type of conductor metal
 • Thickness of wire or conductor
 • Strength of the magnetic field
 • Total windings on the spool
 • Speed by which the spool cuts the magnetic field (Any relevant 4 × 1) (4)
[10]

QUESTION 6

- 6.1 6.1.1 D
 6.1.2 B
 6.1.3 C
 6.1.4 A
(4 × 1) (4)
- 6.2 6.2.1 True
 6.2.2 True
 6.2.3 False
 6.2.4 False
 6.2.5 False
(5 × 1) (5)
- 6.3 6.3.1 50
 6.3.2 clay
 6.3.3 largest/biggest
 6.3.4 more
 6.3.5 60
(5 × 1) (5)
- 6.4 6.4.1 D
 6.4.2 I
 6.4.3 B
 6.4.4 A
 6.4.5 F
 6.4.6 C
(6 × 1) (6)
[20]

TOTAL: 100