



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

MAINTENANCE MANAGEMENT: FARMING N4

28 May 2024

This marking guideline consists of 6 pages.

QUESTION 1: LAYOUT AND HOUSEKEEPING

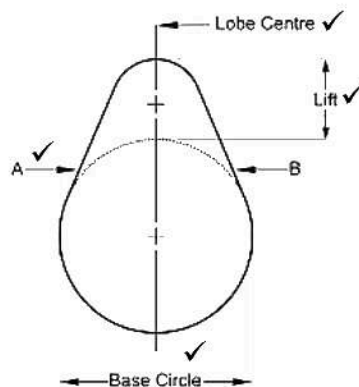
- 1.1 1.1.1 Ventilation keeps the air fairly clean✓ and controls temperature inside the building.✓ (2)
- 1.1.2 • Windows
• Electric extractor fans
• Air conditioning
• Tornado extractor fans (Any relevant 4 × 1) (4)
- 1.2 1.2.1 To prevent lowering of the drill assembly✓✓
- 1.2.2 To hold the drill bit✓✓
- 1.2.3 To hold the table in position✓✓
- 1.2.4 To lower the chuck assembly✓✓ (4 × 2) (8)
- 1.3 • Use safety goggles.
• Make sure the electrical cable and plug are both in good condition.
• Make sure the cutting or grinding disc is in good condition.
• Safety guards must be in place.
• Keep the electrical cable away from the work area.
• Do not put too much pressure on the angle grinder for it will cause the stone to break and this can damage the electrical motor. (Any relevant 4 × 1) (4)
- 1.4 • Always wear safety glasses.✓✓
• Always use tools for the jobs for which they are intended.✓✓
• Always adhere to correct body positioning when using tools.✓✓ (3 × 2) (6)
- [24]**

QUESTION 2: VEHICLES AND IMPLEMENTS

- 2.1 2.1.1 A car engine is called an internal combustion engine because fuel is burned inside✓ the engine above the pistons✓ and the heat energy is changed into mechanical energy.✓ (3)
- 2.1.2
- Pressure
 - Expansion
 - Friction
 - Heat
 - Wear
- (5)
- 2.2 2.2.1
- To seal the combustion space
 - To control lubrication of the cylinder wall
 - To transfer heat from the piston to the cylinder wall
 - To improve compression ratios
 - To create a vacuum in the engine cylinder during intake stroke
 - To compress the air during compression stroke
 - To force exhaust gases out of the cylinder into exhaust system
 - To transfer combustion pressure to the connecting rod and crankshaft during combustion (Any relevant 3 × 1)
- (3)
- 2.2.2
- Compression rings
 - Oil rings
- (2)

2.3

CAM OR LOBE



(4)

- 2.4
- Low water level
 - Slipping fan belt
 - Faulty thermostat
 - Faulty radiator pressure cap
 - Worn-out water pump
 - Cylinder head gasket blown
 - Radiator core clogged with insects, grass or mud
 - Radiator blocked internally
 - Binding brakes
 - Over-rich fuel mixture
- (Any relevant 2 × 1)

QUESTION 3: SAFETY AND POLLUTION PREVENTION

- 3.1 3.1.1 False
 3.1.2 False
 3.1.3 False
 3.1.4 True
 3.1.5 False
 3.1.6 True

(6 × 1) (6)
- 3.2
 - Taking shortcuts to save time
 - Not trained to use vehicles or implements
 - Failing to read and follow operator's instructions
 - Ignoring a warning
 - Failing to follow safety rules
 - Improper or lack of maintenance of vehicle and implements

(Any 5 relevant × 1) (5)
- 3.3
 - Waste avoidance, prevention and minimisation
 - Recovery, recycling and reuse
 - Treatment and handling
 - Storage and final disposal

(Any relevant 4 × 1) (4)
- 3.4
 - The site must be situated outside a water resource and above the 150 years flood line.
 - The site must be adequately fenced to prevent entry by people and animals.
 - The site should not overlay an area with shallow or emergent water tables.
 - The burning of waste must not cause any nuisance conditions to neighbours.
 - The waste must not cause any nuisance conditions due to the breeding of flies or other vermin.
 - Some waste material can be recycled, thus saving money and protecting the environment.

(Any relevant 5 × 1) (5)
- [20]**

QUESTION 4: BASIC WELDING TECHNIQUES

- 4.1 4.1.1 J
 4.1.2 I
 4.1.3 H
 4.1.4 G
 4.1.5 F
 4.1.6 A
- (6 × 1) (6)
- 4.2
 - Tack weld the workpiece at the ends and in the middle.
 - Use a short arc as the magnetic power has less effect on a short arc.
 - Change the position of the workpiece ground clamp.
 - Change the electrode angle from 45° closer to 90°.
 - Use less arc current or amperage.
 - Change to AC welding.
- (6)
- 4.3 In alternate current, the flow of electrons changes direction✓ all the time with a maximum and minimum voltage and amperage value.✓ In direct current the flow of electrons is only in one direction✓ and at a constant voltage.✓ (2 + 2) (4)
- 4.4 Shielded-metal arc welding✓✓ (2)
- [18]**

QUESTION 5: ELECTRICITY AND BUILDING TECHNIQUES

- 5.1
- Energy source like a battery
 - Conductors or wires
 - Control devices such as a switch
 - Loads (light motor or any other appliances)
- (4)
- 5.2
- Cross flow
 - Pressure differential
- (2)
- 5.3
- Roads
 - Buildings
 - Trees
 - Telephone poles
 - Electric cables
 - Septic tanks
 - Pipelines
 - Watering points
 - French drains
- (Any relevant 6 × 1) (6)
- 5.4
- Answer = $45 \times 100 = 4\,500 \text{ mm}$
- $$= \frac{4\,500 \text{ mm}}{1\,000 \text{ mm}}$$
- $$= 4,5 \text{ m} \checkmark \checkmark$$
- (2)
- 5.5
- $$\frac{1}{R_t} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} \checkmark$$
- $$\frac{1}{R} = \frac{1}{10} + \frac{1}{20} + \frac{1}{30} + \frac{1}{40} \checkmark$$
- $$\frac{1}{R} = \frac{12}{120} + \frac{6}{120} + \frac{4}{120} + \frac{3}{120} \checkmark$$
- $$\frac{1}{R} = \frac{25}{120}$$
- $$\frac{R}{1} = \frac{120}{25} \checkmark$$
- $$R_t = 4,8 \, \Omega \checkmark$$
- (5)

[19]

TOTAL: 100