



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

MAINTENANCE MANAGEMENT: FARMING N4

28 May 2021

This marking guideline consists of 7 pages.

QUESTION 1

1.1	1.1.1	C		
	1.1.2	A		
	1.1.3	D		
	1.1.4	C		
	1.1.5	B		
	1.1.6	D		
	1.1.7	B		
	1.1.8	C		
	1.1.9	C		
	1.1.10	D		
			(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 – Stone or grinding stone or cutting stone B – Cover or shield C – Handle or grip		(3)
	1.3.2	• Use safety goggles. • The cutting or grinding disc must be in a good condition. • Safety guards must be in place. • Keep the electrical cable away from the working area. • Do not put too much pressure on the angle grinder for it will cause the stone to break and can damage the electrical motor. • Make sure the electrical cable and plug are in a good condition.	(Any 2 × 1)	(2)
				[20]

QUESTION 2

2.1	2.1.1	• The oil pump circulates engine oil • from the sump to all of the engine components.		
	2.1.2	• It maintains a clean flow of oil to the engine's mechanical parts. • It must absorb and retain all small particles.		
	2.1.3	• The oil lubricates the moving parts of the engine and the sump is the reservoir. • It holds the lubrication oil.		
	2.1.4	• The oil pressure relief valve ensures constant oil pressure to be maintained • during all the different engine speeds and operating conditions.		

	2.1.5	- The oil pump draws up oil through the strainer - to prevent large pieces of debris to enter and damage the oil pump.	(5 × 2)	(10)
2.2	2.2.1	Oil dipstick		(1)
	2.2.2	It measures the oil level in the sump.		(2)
	2.2.3	A – Oil at maximum, ✓ don't overfill. ✓ B – Oil at medium, ✓ don't refill. ✓ C – Oil at minimum, ✓ refill. ✓	(3 × 2)	(6)
	2.2.4	American Petroleum Institute		(1)
2.3		- The clutch engages and disengages the power especially from the driving shaft (crankshaft to flywheel) to the drive shaft (input shaft from gearbox). - The clutch is kept engaged when the vehicle is moving. - The clutch allows the driver to change gears. - The clutch engages and disengages the engine from the transmission when changing gears. - It ensures a gradual increase of engine torque from the engine to the transmission.	(Any relevant 3 × 1)	(3)
2.4		- Helical clutch - Diaphragm clutch		(2)
				[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	Arc		
	3.2.2	Blow		
	3.2.3	Direct/DC		
	3.2.4	Transfer		
	3.2.5	Consumable		
			(5 × 1)	(5)
3.3		- Better penetration is obtained. - The arc is stable and easily controlled. - There is less spatter around the welding. - It gives a neat and smooth weld.		(4)
				[15]

QUESTION 4

- 4.1 4.1.1
 - Give employees training on workshop safety and prevention of fires related to workshop activities.
 - Provide fire detection and warning devices in the workplace.
 - Do not leave a soldering iron on.
 - Do not weld or grind near flammable materials.
 - Remove unnecessary sources of heat from the workplace or replace them with safer alternatives.
 - Prohibit smoking entirely in the workshop.
 - Do not use open flames near gas cylinders.
 - Replace materials and substances with less flammable materials.
 - Store highly flammable materials in fire-resistant stores and containers according to OHSA regulations.
 - Reduce sources of oxygen.
 - Do not store oxidising materials near any heat source or flammable materials.
 - Always have an appropriate fire extinguisher at hand.

(Any 2 × 1) (2)
- 4.1.2
 - Install smoke alarms and make sure to test and change batteries regularly.
 - Never leave the stove unattended.
 - Always use a proper candleholder and keep candles away from draughts or flammables.
 - Keep portable heaters away from furniture, furnishings and flammable items and switch them off every time you leave the house.
 - Use a fixed fire guard to place around an open fire.
 - At night, before you go to bed, unplug all electrical items not in use.
 - Keep ducts and flues clean.
 - Avoid using and overloading multiway plug socket adapters.
 - Never run electrical cables/leads under carpets.
 - Replace naked flame and radiant heaters with fixed ceramic or fan heaters.
 - Ensure that all electrical fuses and circuit breakers are of the correct rating and suitable for its purpose.
 - Ensure that sources of heat do not develop from faulty or overloaded electrical or mechanical equipment.
 - Store highly flammable materials in fire-resistant stores and containers.
 - Store flammable materials in their original containers and not in cool drink containers.
 - Place gas and paraffin stoves on a secure surface.
 - Do not place gas and paraffin stoves on a heated surface as they may explode.

(Any 2 × 1) (2)

- 4.1.3
- Remove alien plants as some contain natural oil that can fuel a fire.
 - Remove branches that could cause power line short circuits and check electrical installations regularly.
 - Restrict the use of farm machinery on days when the fire danger is high.
 - Take great care when using welding, cutting and grinding equipment.
 - Establish firebreaks between your land and roads or railways.
 - Adopt safety standards for smoking, burning rubbish and disposal of hot ash.
 - Make sure all fires are extinguished properly before leaving and never leave a fire unattended.
 - Have your own well-maintained firefighting equipment on the farm.
 - Inform, instruct and train employees in fire precaution and firefighting techniques.
 - Do not burn rubbish on a windy day. (Any 2 × 1) (2)
- 4.2
- Never operate machinery under the influence of drugs or alcohol.
 - Before allowing anyone to use a power tool or piece of equipment the person should have complete training in the item to be used.
 - Additional to training programmes, manuals containing operation instructions should be read from cover to cover.
 - Only use implements and vehicles for their intended purpose.
 - Alert operators of hazards that may occur when misusing implements.
 - Protective clothing should be worn during the operation of farm machinery.
 - Never wear baggy or loose fitting shirts or pants. Loose clothing is easily caught in rotating machine parts.
 - Most farm machinery is designed for one rider, not two or three. This rule should be strictly enforced.
 - Do not allow anyone to ride on machinery except the driver as an extra person may easily fall off the vehicle.
 - Persons should not be allowed to ride in the bucket of loaders, on tow bars between the truck/tractor and the implement or on any implement being towed. In the instance when a rider on an implement such as a hay wagon is necessary, extra precautions should be taken to avoid injury.
 - Keep all people away from work areas and working machinery unless they are actively involved in the work. Many people are needlessly injured when watching and not wearing personal protection.
 - Engines should be shut down of any piece of equipment that is being refuelled. Employees should be instructed on how to properly refuel equipment.
 - No smoking around the fuelling area.
 - Whenever parking or leaving a piece of machinery for any length of time, even to check a malfunction, the motor should always be switched off, brakes engaged, the transmission in park-lock or in gear, keys removed and any attachments (in the case of a baler or mower) disengaged. People are injured or killed when run over by improperly parked tractors, with or without the engine running.

- Safety guards should always be in place when operating any piece of machinery.
- All tractors should be equipped with roll-over protective structures (ROPS). Nearly all tractor flips or roll-overs without ROPS result in fatalities.

(Any 4 × 1)

(4)

[10]**QUESTION 5**

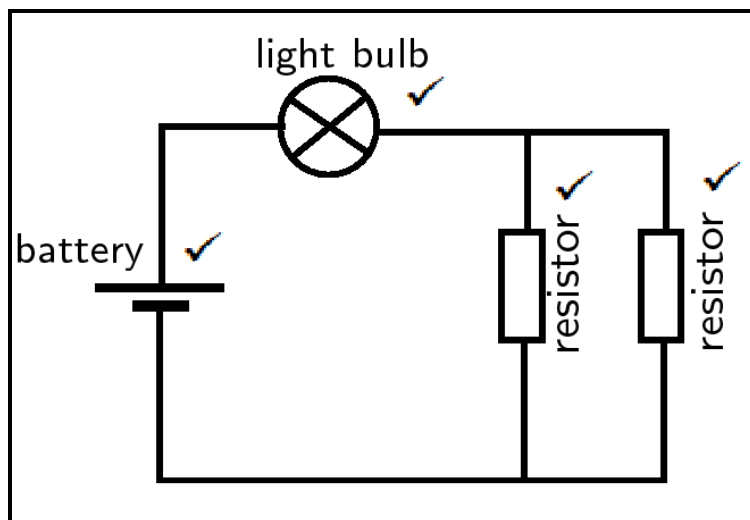
- 5.1 A – Analog multimeter
B – Digital multimeter
C – Tong tester or amp meter

(3)

- 5.2
- Resistance
 - Volts
 - Amperes

(3)

5.3



(4)

[10]**QUESTION 6**

- 6.1
- | | |
|-------|---|
| 6.1.1 | D |
| 6.1.2 | B |
| 6.1.3 | F |
| 6.1.4 | A |

(4 × 1)

(4)

- 6.2
- | | |
|-------|-------|
| 6.2.1 | False |
| 6.2.2 | True |
| 6.2.3 | True |
| 6.2.4 | False |
| 6.2.5 | True |

(5 × 1)

(5)

6.3	6.3.1	Damp		
	6.3.2	Sloped or inclined		
	6.3.3	Level		
	6.3.4	Upright or straight		
	6.3.5	Brick	(5 × 1)	(5)
6.4	6.4.1	5 metres		(1)
	6.4.2	• Use the 3:4:5 method • One side is 3 metres • One side 4 metres • The last side should be 5 metres • This will give a 90° corner		(5)
TOTAL:				100

[20]