higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

MAINTENANCE MANAGEMENT: FARMING N5

22 NOVEMBER 2018

This marking guideline consists of 7 pages.

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QUESTION 1

1.1
1.1.1 F
1.1.2 D
1.1.3 A
1.1.4 B

(4 × 1) (4)

1.2
1.2.1 False
1.2.2 True
1.2.3 False
1.2.4 False
1.2.5 True
1.2.6 True
1.2.7 True
1.2.8 True
1.2.9 False
1.2.10 True

(10 × 1) (10)

1.3
A – Venturi
B – Float
C – Fuel enter
D – Needle✓ and seat✓
E – Fuel

(6 × 1) (6)
[20]

QUESTION 2

2.1 2.1.1
- Excessive input shaft end play
- High gear synchronizer worn or broken
- Worn front case bearing
- Shift linkage not fully engaging
- Worn shift forks (Any ONE)

2.1.2
- Shift linkage worn or maladjusted
- Insufficient spring tension on detent springs
- Misaligned or loose transmission or bell housing
- Pilot bushing badly worn
- Shift fork, lever or shaft is bent or badly worn
- Badly worn bearings
- Worn synchronizer hub or broken keys (inserts)
- Excessive main shaft play
- Bad transmission/engine mounts (Any ONE)

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2.1.3
- Clutch free travel excessive
- Clutch does not release fully
- Sliding gears or synchronizer rings binding
- Synchronizers worn or damaged
- Damaged teeth caused by insufficient clutch disengagement, bad blocking rings or damaged slider
- Shift mechanism binding, worn or out of adjustment
- Low lubrication level or incorrect (to thick) lubricant
- Bell housing misaligned (Any ONE)

2.1.4
- Clutch not releasing
- Synchronizer has worn blocking rings and/or cone surface
- Broken blocker rings
- Excessive output shaft end play
- Detent springs weak or broken
- Gears seizing on main shaft
- Input shaft binding in pilot bearing (Any ONE)

2.1.5
- Worn gear
- Broken main shaft gear or counter gear
- Cracked gear/s
- Incorrect or inadequate lubricant (Any ONE)

(5 × 1) (5)

2.2
2.2.1 Engine
2.2.2 Clutch
2.2.3 Transmission or gearbox
2.2.4 Prop shaft
2.2.5 Final drive or differential
2.2.6 Rear axle shaft
2.2.7 Wheel

(7 × 1) (7)

2.3
- Air brakes
- Exhaust brakes
- Magnetic/electric brakes
- Parking brakes (4)

2.4
- Drop centre rim
- Single piece flat base rim
- Two piece semi drop centre rim
- Three piece flat base rim (4)

[20]

QUESTION 3

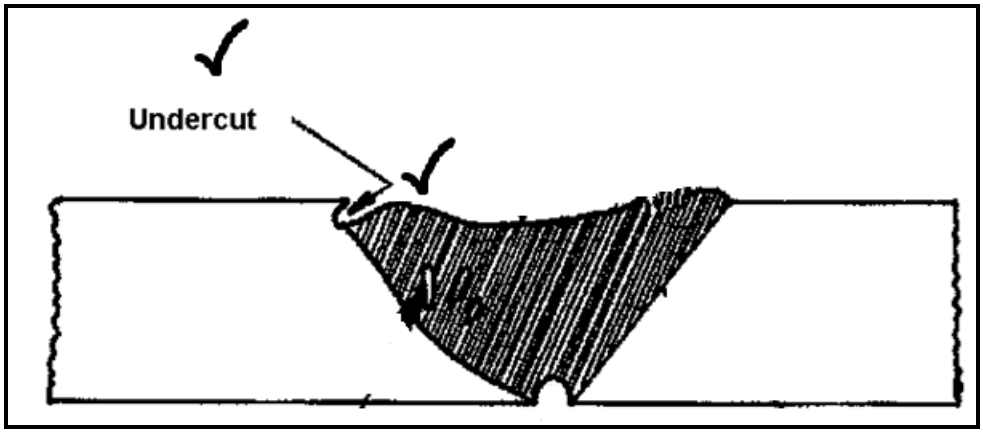
3.1
- The SMAW electrode transfers electricity for the arc,✓ but the OAW filler rod does not transfer electricity.✓
- The SMAW electrode is a flux-coated electrode,✓ but the OAW filler rod is a bare electrode.✓

NOTE: To explain the 'difference', the student will need to explain the difference between 'one concept' at a time and not merely list the characteristics of electrodes and filler rods separately) (Any applicable 2 × 2) (4)

3.2
- Make sure all the valves are closed (torch and cylinders)
- Turn the torch's valves open (a little)
- Turn the cylinders' valves open (a little)
- Turn the regulator valve open to set the correct pressure (welding -60 Kpa and cutting -200 Kpa)
- Close the torch valves after the pressure is set
- Open the acetylene valve (red) on the torch a little bit
- Ignite the acetylene gas with the flint lighter
- Increase the acetylene so that there is no dark smoke with light feathers
- Open the oxygen (black)
- Until the neutral flame is set for welding (10)

3.3
- Different metals can be joined
- Metals of different thicknesses can be joined
- Very thin metals can be joined at low heat
- Less heat input in joint
- Less pre-heat treatment involved
- Less warpage of joint (Any 2 × 1) (2)

3.4



(2)

3.5
- Use the correct equipment for the job.
- Use the correct size cutting nozzle for the thickness of the metal.
- Use the correct pressure setting for gas cutting.
- Hoses are in good condition and joints and valves do not leak.
- You follow the correct start-up and lighting-up procedures.
- Wear eye and face protection. (Any applicable 2 × 1) (2)

[20]

QUESTION 4

4.1
- Shorted cell due to failure of the separator between the positive and negative plates
- Shorted cell or cells due to build-up of shed plate material below the plates of the cell
- Broken internal connections due to corrosion
- Broken plates due to vibration and corrosion
- Low electrolyte level
- Cracked or broken case
- Broken terminals
- Sulphating after prolonged disuse in a low or zero charged state

(Any 5 × 1) (5)

4.2
4.2.1 20–25A
4.2.2 10–15A
4.2.3 2,5 mm
4.2.4 1,5 mm
4.2.5 Earth leakage

(5 × 1) (5)

4.3
4.3.1 B
4.3.2 D
4.3.3 A

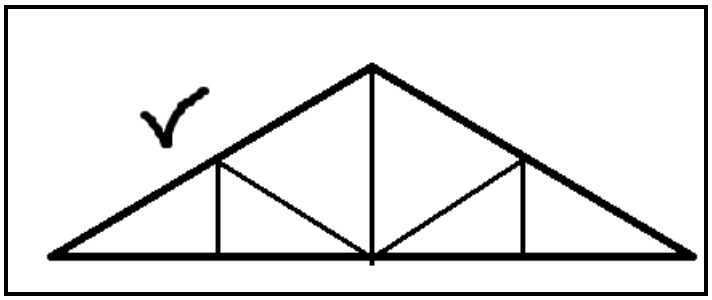
(3 × 1) (3)

4.4
4.4.1 False
4.4.2 False

(2 × 1) (2)
[15]

QUESTION 5

5.1 5.1.1



5.1.2 114 mm × 38 mm

5.1.3 152 mm × 38 mm

5.1.4 152 mm × 38 mm

5.1.5 Double-pitched roof

(5 × 1) (5)

5.2 5.2.1 $\frac{200}{2} = 100\ m^2$ (2)

5.2.2 125 mm × 100 mm (1)

5.2.3 100 mm × 100 mm (1)

5.2.4 Rectangular gutter (1)

5.3
- The drain pipes must be laid in a straight line.
- With a uniform slope between inspection chambers.
- The slope of the pipes should be not less than 1:40 or 2,5% or more than 1:6.
- Joints should be made according manufacturers' instructions.
- And must be watertight.
- Bell ends of pipes must face upstream.
- Lay pipes in builders' sand. (Any 5 × 1) (5)

5.4
- Hot water cylinders, tanks and pipes must be insulated to prevent heat loss and save costs.
- Pre-treat water to prevent incrustation by lime deposits.
- The system must be flushed every six months to remove sediments and improve heat transfer.
- The water temperature must be set between 55 °C and 60 °C, and at 80 °C for dairies.
- Put metal screen at the end of outlets to prevent insects from making nests. (5)

5.5
- Most electrical appliances are manufactured with the correct size and type of motor.
- When the motor must be changed the new motor must be of the same size and type as the previous one unless the load or speed is going to change.
- Motors with a high capacity are more efficient than motors with a low capacity. It is better to use a high capacity motor to do several tasks at once than to use several small low capacity motors.
- You can swap a high capacity motor with a low capacity motor if you reduce the speed or volume of load. To use a low capacity motor change the pulleys to reduce the speed.
- If you need to use an electrical motor for hand-powered tools, the electrical motor can be 200 watt as long as the speed doesn't change.
- If a motor gets warm to the touch while working, the load is too big, the speed is too high or the motor's capacity is too low. It can also be an electrical fault and an electrician needs to look at it before it overheats and burns. (Any 5 × 1) (5)

[25]

TOTAL: 100

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