higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

WELDING
NQF LEVEL 4

22 November 2024

This marking guideline consists of 5 pages.

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QUESTION 1

1.1
1.1.1 A✓✓
1.1.2 B✓✓
1.1.3 A✓✓
1.1.4 A✓✓
1.1.5 D✓✓

(5 × 2) (10)

1.2
- Do not touch live electrical wires. ✓
- Wear dry, hole-free insulating gloves and body protection. ✓
- Do not use AC output in damp areas if there is danger of the equipment falling. ✓
- Properly install, ground and operate the welding equipment according to the manufacturer's manual as well as national and international safety codes. ✓
- Turn off all equipment if you are not using it. ✓
- Make sure that equipment cables are not worn or damaged. ✓
- Use only well-maintained equipment. ✓

(Any 5 × 1) (5)

1.3
- The ends of the pipes must be parallel✓
- Remove grease and paint from the inside and outside of welding area✓
- Ensure that the groove angle is sufficient✓
- The welded area must be free from moisture✓
- Tack weld the pipes in the correct position✓ (5)

[20]

QUESTION 2

2.1
- Chipping hammers✓
- Files✓
- Clamps✓
- Wire brushes✓
- Squares✓ (5)

2.2
2.2.1
A – Welding helmet✓
B – Ear muffs✓
C – Breathing respirator/Respirator✓
D – Skull cap/Cap/Welding cap ✓
E – Safety boots✓ (5)

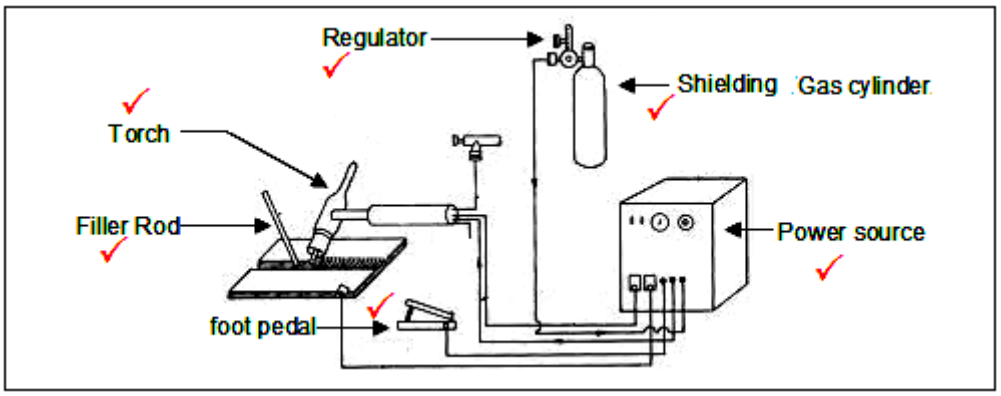
2.2.2
A – Prevents arc rays from damaging eyes/prevents arc eyes✓
B – Prevents hearing loss/blocks out noise ✓
C – Prevents one from inhaling harmful fumes✓
D – Prevents hot pieces of metal from burning one's head ✓
E – Protects feet from hot and sharp objects✓ (5)

2.3
- Check the thickness of the pipe, which will determine the size of the electrode and the current to be used✓
- Ensure the area to be welded is clean✓
- Ensure that the pipe does not contain flammable substances✓
- Ensure that the groove angle is correct/sufficient✓
- Ensure that the pipe is stable✓ (5)

[20]

QUESTION 3

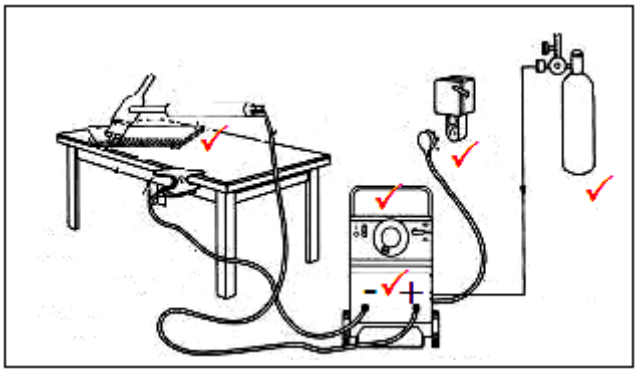
3.1



(6)

3.2 The welding area is in an upright position.✓ The weld is usually started at the bottom of the joint with the filler rod added from above.✓ The travelling directions is upwards.✓ With this position a previous dab of filler metal solidifies✓ and becomes support for the next filler metal dab to rest on.✓ (5)

3.3



(5)

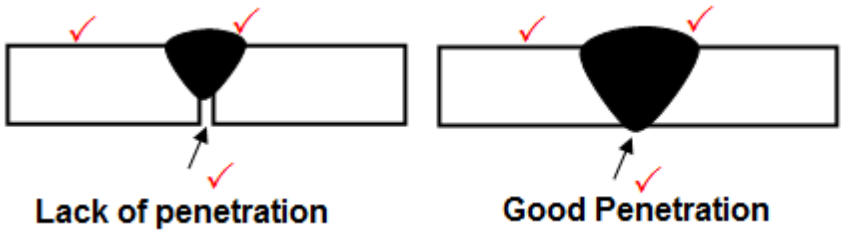
3.4
A Pressure gauge✓
B Cylinder valve✓
C Cylinder✓
D Pressure regulator✓ (4)

[20]

QUESTION 4

4.1
- Ensure that the cylinders are chained✓
- Do not store cylinders in areas of excessive heat✓
- Store cylinders in an up-right position✓
- Empty cylinders must be stored separately✓
- Do not store cylinders in areas of excessive vibration✓
- Do not store cylinders in areas exposed to electrical circuits✓
- Store cylinders in a dry, ventilated area✓ (Any 5 × 1) (5)

4.2



(6)

4.3
- Pure tungsten✓
- Ceriated✓
- Lanthanated✓
- Zirconiated✓
- Thoriated✓ (5)

4.4
4.4.1 Inclined position✓
4.4.2 Horizontal rolled✓
4.4.3 Vertical position✓
4.4.4 Horizontal fixed✓

(4 × 1) (4)
[20]

QUESTION 5

5.1
- Poor penetration✓
- Irregular bead shape✓
- Excessive spatter✓
- Overheating✓
- Difficulty in controlling the arc✓ (5)

5.2
- The alloy used to produce the wire electrode✓
- The thickness of the material that needs to be welded✓
- The welding position✓
- What happens to the gas when it comes into contact with the molten weld pool✓
- How the gas transfers heat✓
- The cost of the gas✓ (Any 5 × 1) (5)

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5.3
- Thickness of metal✓
- Type of metal✓
- Type of joint✓
- Welding position✓
- Type of shielding gas✓
- Wire diameter✓
- Wire feed speed✓ (Any 5 × 1) (5)

5.4 Switch off the machine at the power supply and unplug the power cable.✓ Turn all dials and knobs to the off position.✓ Turn off the shielding gas supply by closing the valve on the gas cylinder.✓ Roll up the cables and hoses. Store the cylinder away from flammable materials.✓ All tools must be stored in a tool/carboard box.✓ (5)

[20]

TOTAL: 100

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