higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING FABRICATION: SHEET METAL WORK
NQF LEVEL 4

22 November 2024

This marking guideline consists of 5 pages.

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SECTION A

QUESTION 1

1.1 Numerically
1.2 G
1.3 Sketch
1.4 Air
1.5 Vertical
1.6 Size
1.7 Flammable
1.8 Extracted
1.9 Aluminium
1.10 Rate

(10 × 1) **[10]**

QUESTION 2

2.1 D
2.2 C
2.3 A
2.4 E
2.5 B

(5 × 1) **[5]**

TOTAL SECTION A: 15

SECTION B

QUESTION 3

3.1
- It provides insulation
- It provides sound proofing (2 × 2) (4)

3.2 Thermal acquisition duct work is the control of temperature (2)

3.3
- Accurate information
- Duct connections
- Service access
- Pipework and electrics
- Airflow access (5)

3.4 3.4.1 Spaces that are further than 5 m from the façade or front of the building

3.4.2 Mechanically distribution of ventilation through fans and intake exhaust vents

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3.4.3 The lower zone is the volume of a conditioned space below the stratification height.

(3 × 2) (6)
[17]

QUESTION 4

4.1 4.1.1 Is a process of adding moisture to the air within a space

4.1.2 Is an air-movement system where conditioned air is mixed with outside air

(2 × 2) (4)

4.2
- Connect two ducts at an angle
- Connect ducts of different sizes (2 × 2) (4)

4.3
- Check that the correct gas has been chosen
- Check that the correct materials are available to do the welding
- Check the power supply
- Check the wire feed, the current tap tips and look out for any fire hazards
- Check that the correct polarity has been set. (5)

4.4 Alkaline cleaner removes oil and grease on metal surfaces (2)

4.5 Fume extraction is done by machines that suck the air away from the welding work to protect welders from the toxic fumes. (2)
[17]

QUESTION 5

5.1 5.1.1
- Argon makes it easier to start the arc
- It has lower arc voltage requirements
- It allows for more stable and neat welding
- It creates a thin focused arc cone (Any 3 × 1) (3)

5.1.2
- Helium
- Hydrogen (2)

5.2 5.2.1 Figure 2 (1)

5.2.2
- Tungsten✓ inert✓ gas✓ (3)

5.2.3 TIG welding process in FIGURE 2✓
- Greater control and precision✓
- It cleans the welds✓
- A variety of materials can be welded (1 + any 2 for reason) (3)

5.3
- Handle the cylinders with care
- Fasten the cylinders with care
- Use protector caps on cylinders
- Move cylinders correctly
- Use and store cylinders in a vertical position
- Never weld on any cylinder (6)

[18]

QUESTION 6

6.1
- Computer✓ numerically✓ controlled✓ (3)

6.2
- 'X'
- 'Y'
- 'Z' (3)

6.3
- Chuck
- Cutting tool
- Tail stock
- Bed (4)

6.4 6.4.1 Oblique drawing (1)

6.4.2
- Three surfaces of an object are shown in a single drawing
- Vertical lines remain vertical
- Horizontal lines are drawn at 30 degrees to the horizontal

(Any 2 × 1) (2)

6.5 6.5.1 The path is from one to another defined point

6.5.2 It allows for a straight line path at any angle and even circular paths (2 × 2) (4)

6.6
- Welding amps
- Wire feed
- Welding feed rate
- Torch height (Any 3 × 1) (3)

6.7
- Store the program in another location (flash disc)
- Use a DVD
- Have back-up copies
- Hard drive (Any 3 × 1) (3)

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6.8	6.8.1	Smaller workpieces are clamped in the collet.		
	6.8.2	Long workpieces on a CNC lathe machine are clamped in the automatic tailstock.		
			(2 × 2)	(4)
6.9	6.9.1	5 mm		
	6.9.2	0,4 mm/rev to 1 mm/rev		
	6.9.3	1 mm		
			(3 × 2)	(6)
				[33]

TOTAL SECTION B:	**85**
GRAND TOTAL:	**100**

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