higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING FABRICATION
NQF LEVEL 2
(First paper)

28 November 2023

This marking guideline consists of 4 pages.

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SECTION A

QUESTION 1

1.1 1.1.1 True
1.1.2 False
1.1.3 False
1.1.4 True
1.1.5 True

(5 × 1) (5)

1.2 1.2.1 D
1.2.2 E
1.2.3 F
1.2.4 B
1.2.5 C

(5 × 1) (5)

TOTAL SECTION A: 10

SECTION B

QUESTION 2

2.1
- The parts will be interchangeable.
- Templates save time because developments are made only once.
- Semi-skilled labour can be employed to cut the pieces.
- Using templates increases productivity. (4)

2.2 Any dimension of the actual object will be larger than that on the drawing. (2)

2.3
- Allowances are made for stretching of sheet metal during forming.
- Allowances are made for material thickness.
- To save time and material. (3)

2.4 2.4.1 ID = OD – 2t✓
= 23 000 – 48
= 22 952 mm✓ (2)

2.4.2 MD = OD – t✓
= 23 000 – 24
= <u>22 976 mm</u>✓ (2)

2.4.3 V = πD²h/4✓
= 3.142 (22,952)² × 9/4✓
= <u>3724.172 M³</u>✓ (3)

[16]

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QUESTION 3

3.1 3.1.1 Forming machines.

3.1.2 Bending machines.

(2 × 2) (4)

3.2 The upper roll of the slip-roll forming machine can be released and swung away to remove the formed piece of metal. With a plain forming machine it cannot be done. (2)

3.3
- Use only safe tools
- Use the correct tools for the job
- Use tools correctly (3)

3.4 3.4.1 On cylindrical objects. (1)

3.4.2
- Stiffeners' reinforcement
- Reinforcement
- Ornaments (Any 2 × 1) (2)

3.5
- Welding method
- Bolting method
- Riveting method (3)

3.6 Groove joint (1)

[16]

QUESTION 4

4.1 4.1.1 A – Neutral flame
B – Carburizing flame (2)

4.1.2 B – Carburizing flame (1)

4.2

Item	Acetylene regulator	Oxygen regulator
Thread direction	4.2.1 Left-handed✓	4.2.2 Right-handed✓
Colour	4.2.3 Red/Maroon✓	4.2.4 Blue/Black✓

(4)

4.3
- A regulator reads the gas content of a cylinder.
- A regulator regulates the flow from a cylinder. (2)

4.4 A flashback arrestor prevents backfiring. (2)

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4.5 4.5.1 When the cutting speed is too low: it causes a heavy slag build-up and gouged surface on the cut face.

4.5.2 When the cutting speed is too high: it causes slanted drag lines that curves backward in the opposite direction of the cut line.
(2 × 2) (4)

4.6
- When an empty cylinder is replaced.
- When the oxy-acetylene equipment will not be used for a long period.
- When the equipment is faulty. (Any 2 × 1) (2)

[17]

QUESTION 5

5.1 Continuous or band saw,✓ circular or abrasive saw✓ and reciprocating saw✓ (3)

5.2 Reciprocating power saw (1)

5.3
- Cutting fluid cools the work
- It lubricates the blade
- It also prolongs the durability of the blade (3)

5.4
- For maintaining a balanced stance
- Proper posture allows you to have better perception of how perpendicular and square the workpiece is to a reference point.
- It also allows the proper and most effective method of using the power tool without causing undue stress on the blade or machine. (3)

5.5
- Hand file.
- Pedestal grinder for portable items.
- Deburring tool.
- Portable grinder.
- Handheld disk grinder. (Any 4 × 1) (4)

5.6
- Dry abrasion is when cutting is done without any coolant.
- Wet abrasion is when cutting is done with a coolant. (2)

[16]

TOTAL SECTION B: 65
GRAND TOTAL: 75

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