



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MACHINE MANUFACTURING
NQF LEVEL 3

28 February 2024

This marking guideline consists of 5 pages.

HIGHER EDUCATION AND TRAINING PRIVATE BAG X110 2024 -03- - - PRETORIA 0001 LEFAPHA LA THUTO E KGOLWANE LE THUPELELO

Approved 202403 DHET marking

Guide. No amendments or additions

Must be made on this guide

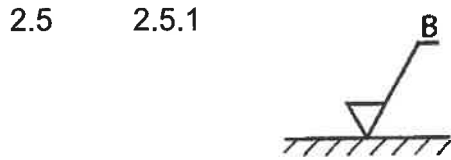
QUESTION 1

- | | | | | |
|-----|---|-------|-----------------------|--------------------|
| 1.1 | 1.1.1 | False | | |
| | 1.1.2 | False | | |
| | 1.1.3 | True | | |
| | 1.1.4 | True | | |
| | 1.1.5 | False | | |
| | | | (5 × 1) | (5) |
| 1.2 | <ul style="list-style-type: none"> • Position of first-aid equipment • Position of fire equipment so that the area be cleared • Easiest direction to emergency exit • Safe route through a workshop | | (Any relevant 4 × 1) | (4) |
| 1.3 | Risk = probability rating × severity rating✓
= 2 × 3✓
= 6 (actual score)✓ | | | |
| | OR | | | |
| | = 3 × 3
= 2 (maximum score) | | (Any relevant answer) | (3) |
| 1.4 | <ul style="list-style-type: none"> • A minor injury is a cut on the finger and can be treated immediately by putting a plaster on. • A major injury is losing a part of your body and hospital care is needed. • Serious accidents can be classified as death. | | | (3)
[15] |

QUESTION 2

- | | | | | |
|-----|-------|---|--|-----|
| 2.2 | 2.2.1 | Interference fit is obtained when a shaft is bigger than a hole and a force is required to make it fit. | | (2) |
| | 2.2.2 | Running fit is obtained where two mating components fit into each other smoothly but not loosely. | | (1) |
| | 2.2.3 | Push fit is obtained with some slight force by hand. | | (1) |
| | 2.2.4 | Driving fit is obtained if medium pressure is applied to let the parts fit into each other. | | (1) |
| 2.3 | 2.3.1 | 150,03 | | (1) |
| | 2.3.2 | 149,97 | | (1) |
| | 2.3.3 | 0,06 | | (2) |

2.4	2.4.1	B		
	2.4.2	A		
	2.4.3	D		
	2.4.4	C		
			(4 × 1)	(4)



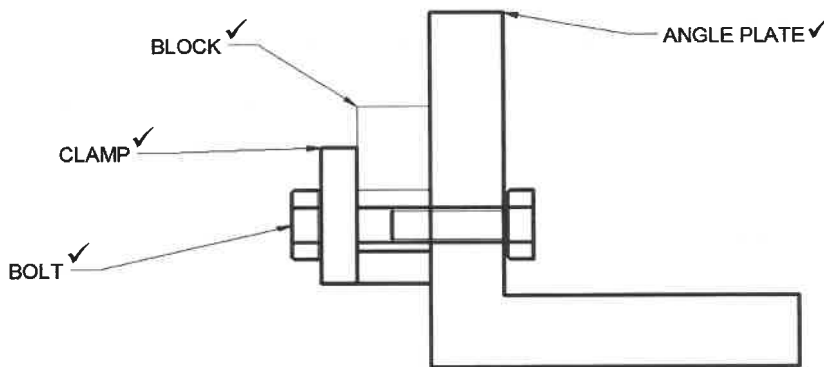
(2 × 1) (2)
[15]

QUESTION 3

3.1	3.1.1	D		
	3.1.2	C		
	3.1.3	C		
	3.1.4	A		
			(4 × 1)	(4)

3.2 To check if the angles and length of the lips of a drill is correct (2)

3.3



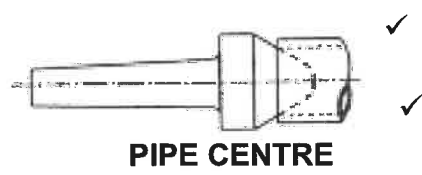
(4)

3.4	$V = 3,142 \times D \times N$ ✓ ($\pi = 3,142$)			
	$N = V / (3,142 \times D)$ ✓			
	$N = 70 / (3,142 \times 0,04)$ ✓			
	$N = 557 \text{ r/min}$ ✓ ✓			
				(5) [15]

QUESTION 4

- | | | | | |
|-----|-------|---|---------|-----|
| 4.1 | 4.1.1 | C | | |
| | 4.1.2 | A | | |
| | 4.1.3 | B | | |
| | 4.1.4 | D | | |
| | | | (4 × 1) | (4) |

- | | | | | |
|-----|-------|-------|---------|-----|
| 4.2 | 4.2.1 | False | | |
| | 4.2.2 | False | | |
| | 4.2.3 | True | | |
| | 4.2.4 | True | | |
| | | | (4 × 1) | (4) |



(2 + 2) (4)

- | | | | | |
|-----|----------------------|--|--|-----|
| 4.4 | 1: Carriage | | | |
| | 2: Workpiece | | | |
| | 3: Support | | | |
| | 4: Travelling steady | | | |
| | 5: Adjuster | | | |
| | | | | (5) |

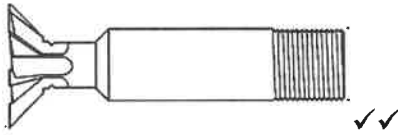
- | | | | | |
|-----|------------------------------|--|--|-----|
| 4.5 | • Vertical milling machine | | | |
| | • Horizontal milling machine | | | |
| | • Knee-type milling machine | | | |
| | | | | (3) |

- | | | | | |
|-----|--|--|--|-----|
| 4.6 | Indexing = $N/9^\circ$ ✓ | | | |
| | = $35/9$ | | | |
| | = $3\ 8/9$ ✓ | | | |
| | Therefore: $\{(8/9) \times (6/6)\}$ | | | |
| | = $3\ 48/54$ ✓ | | | |
| | = 3 full turns and 48 holes on a 54-hole circle plate ✓✓ | | | (5) |

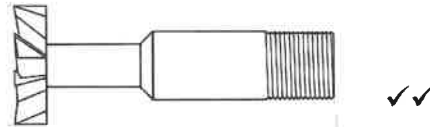
- | | | | | |
|-----|----------------------|--|--|-----|
| 4.7 | A: Vernier callipers | | | |
| | B: Telescopic gauge | | | |
| | C: Micrometer | | | |
| | | | | (3) |

- | | | | | |
|-----|-------|----------------|---------|-----|
| 4.8 | 4.8.1 | clamped | | |
| | 4.8.2 | milling | | |
| | 4.8.3 | vice | | |
| | 4.8.4 | dividing heads | | |
| | | | (4 × 1) | (4) |

4.9



DOVETAIL CUTTER



T-SLOT CUTTER

(2 + 2) (4)

4.10

- Boring
- Drilling
- Reaming
- Tapping
- Counterboring
- Countersinking

(Any 4 × 1) (4)
[40]

QUESTION 5

5.1

- 5.1.1 True
- 5.1.2 False
- 5.1.3 True
- 5.1.4 True
- 5.1.5 True
- 5.1.6 False

(6 × 1) (6)

5.2

- Some programs are expensive.
- Initial expense of hardware can be high.
- Heavy computing power is required.
- CAD packages are complicated and take some time to learn.

(4)

5.3

- Select size, scale and orientation of the drawing on a new template.
- Plan the drawing to use paper size space. Think of how many views there will be.
- Try to use the available space to a maximum.
- If a view has a lot of detail, make it large enough to see when it is printed out.
- Plan the drawing in such a way that when dimensions are put in there is space for it and that dimensions are not bunched up.

(5)
[15]

TOTAL: 100