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.**

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## 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
- 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
- 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)

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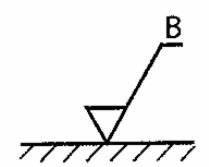
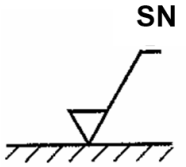
2.4 2.4.1 B
2.4.2 A
2.4.3 D
2.4.4 C

(4 × 1) (4)

2.5 2.5.1




2.5.2




(2 × 1) (2)
**[15]**

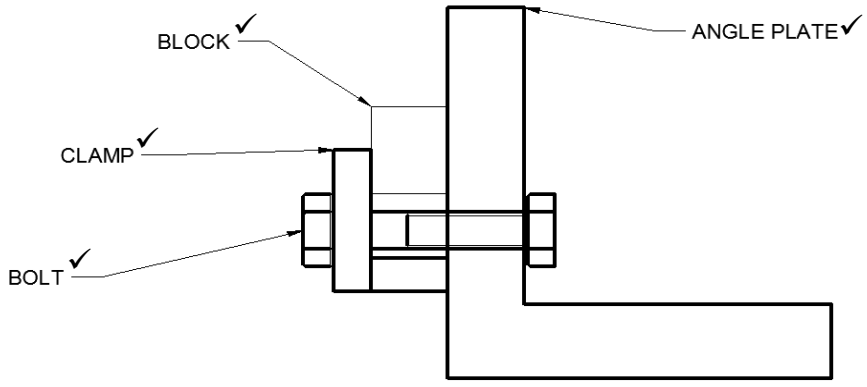
**QUESTION 3**

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 × D × N✓ (π = 3,142)
N = V/(3,142 × D)✓
N = 70/(3,142 × 0,04)✓
N = 557 r/min✓✓ (5)
**[15]**

## QUESTION 4

4.1
4.1.1 C
4.1.2 A
4.1.3 B
4.1.4 D

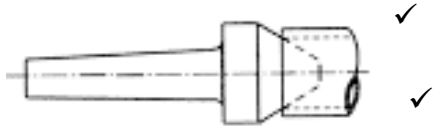
(4 × 1) (4)

4.2
4.2.1 False
4.2.2 False
4.2.3 True
4.2.4 True

(4 × 1) (4)

4.3

**HALF CENTRE**



**PIPE CENTRE**

(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°✓
= 35/9
= 3 8/9✓

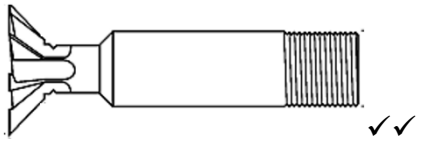
Therefore: {(8/9) × (6/6)}
= 3 48/54✓
= 3 full turns and 48 holes on a 54-hole circle plate✓✓ (5)

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

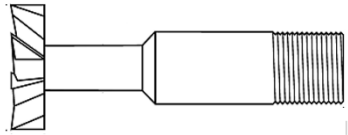
4.8
4.8.1 clamped
4.8.2 milling
4.8.3 vice
4.8.4 dividing heads

(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**

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