



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

**FITTING AND TURNING
NQF LEVEL 2**

22 NOVEMBER 2019

This marking guideline consists of 5 pages.

QUESTION 1

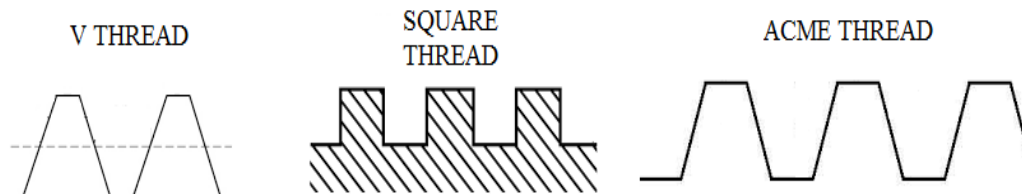
- 1.1 1.1.1 A
- 1.1 1.1.2 B
- 1.1 1.1.3 B
- 1.1 1.1.4 A
- 1.1 1.1.5 A

(5x 2) (10)

- 1.2
 - The ring test must be done before installing the wheel on the grinder.
 - Begin by suspending the wheel with a string through the centre. For smaller, lighter wheels place your finger through the centre hole/bore.
 - Use a non-metal tool and tap the stone at every 45°.
 - If there is no crack on the wheel, the sound will be sharp and continuous.
 - A cracked wheel will have a dull sound. Do not assemble the stone.

(Any other relevant answers) (5)

1.3



Labelling = 1 mark
Sketch = 1 mark

(6)

- 1.4
 - Machine reamer
 - Parallel reamer
 - Taper reamer
 - Helical flute reamer
 - Expanding reamer
 - Adjustable reamer

(Any 4 x 1) (4)

[25]

QUESTION 2

- 2.1
- | | |
|---|-----------------|
| A | Pulley |
| B | Motor |
| C | Pillar |
| D | Base |
| E | Table |
| F | Chuck |
| G | Hand-feed lever |
| H | Machine guard |
- (8)

- 2.2
- | | |
|-------|---|
| 2.2.1 | D |
| 2.2.2 | E |
| 2.2.3 | A |
| 2.2.4 | F |
| 2.2.5 | G |
| 2.2.6 | B |
| 2.2.7 | C |
| 2.2.8 | H |
- (8 × 1) (8)

2.3

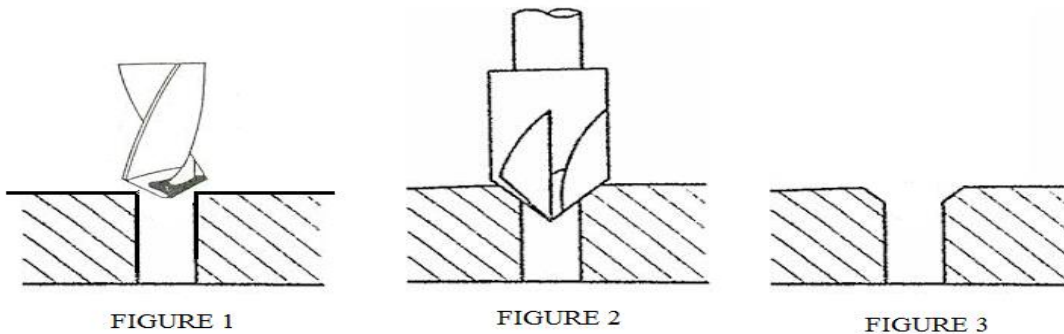


FIGURE 1 = 1 mark ✓

Drill the work piece with a steel drill bit, and remove the drill bit from the chuck. ✓

FIGURE 2 = 1 mark. ✓

Insert a counter-sink drill into the chuck, and drill the work piece to the height of the head of the screw. ✓

FIGURE 3 = 1 mark. ✓

Completed hole to accommodate a countersunk screw. ✓

(Any other relevant answers 3 × 2) (6)

- 2.4
- Drill bit not sharpened correctly.
 - Incorrect feed.
 - Drill bit clogged with metal chips.
 - Insufficient coolant.
 - Incorrect speed.

(Any other relevant answers 3 × 1) (3)

[25]

QUESTION 3

- 3.1 3.1.1 True
 3.1.2 True
 3.1.3 True
 3.1.4 False
 3.1.5 True
- (5 × 1) (5)
- 3.2 • Plain turning
 • Facing
 • Taper turning
 • Screw cutting
 • Parting off
 • Drilling
 • Boring
- (Any other relevant answers 5 × 1) (5)
- 3.3 S = ?
 N = 159,15 RPM
 D = 60 mm divided 1 000 = 0,06 m
- $S = \pi \times D \times N$ ✓
 = $\pi \times 0,06 \times 159,15$ ✓✓
 = 30,003 m/min. ✓✓
 = 30 m/min
- (5)
- 3.4 The completed dimension of the work piece is 10 mm. However, a deviation in the size is allowed. ✓
 The acceptable size can be from 10 mm to 0,02 mm = 9,98 mm ✓✓ to 10 mm + 0,02 mm = 10,02 mm. ✓✓
- (5)
- 3.5 • Check the dimensions of the work piece.
 • Check for clamping marks on the work piece.
 • Check for sharp edges.
 • Check the overall length.
 • Check for correct finish.
- (Any other relevant answers) (5)

[25]

QUESTION 4

- 4.1
- Ensure that the correct personal protective equipment is worn.
 - Ensure that the machine guards are in place.
 - Ensure that the work area is free and spacious.
 - Make sure that the milling machine is off when placing or removing work pieces.
 - Use hand protection or gloves when installing milling cutters.
 - Use guards or shields to deflect steel chips.
 - Ensure that the work area is clean and free of steel chips, spills and fluid.
- (Any other relevant answers 5 × 1) (5)
- 4.2
- Helical milling cutter
 - Side-and-face cutter
 - Dovetail cutter
 - T-slot cutter
 - Corner-rounding cutter
 - End mill
 - Slot drill
 - Slitting cutter
 - Convex cutter
 - Concave cutter
- (Any other relevant answers 5 × 1) (5)
- 4.3
- | | | | |
|--------|-----------------------|---------|-----|
| 4.3.1 | milling operations | | |
| 4.3..2 | cutting speed | | |
| 4.3..3 | material | | |
| 4.3..4 | cutting tool | | |
| 4.3..5 | clamping arrangements | | |
| | | (5 × 1) | (5) |
- 4.4
- Consider the feed rate.
 - The condition of the machine.
 - The type of material being machined.
 - Condition of the material.
 - The type of cutting tool.
- (5)
- 4.5
- Prevents the formation of continuous chips.
 - Assists in the disposal of material being cut.
 - Ensures a better cutting action.
 - A good finish is acquired.
 - Chattering is reduced.
 - Less power consumption.
- (Any other relevant answers 5 × 1) (5)

[25]**TOTAL: 100**