



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

**FITTING AND TURNING
NQF LEVEL 2**

26 March 2021

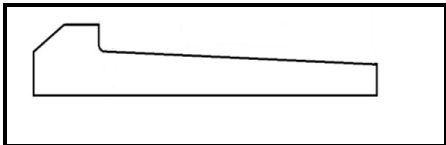
This marking guideline consists of 6 pages.

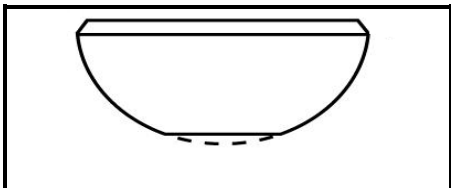
QUESTION 2

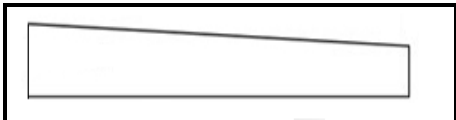
- 2.1
- A radial-arm drilling machine handles medium to large workpieces.
 - It has a large, flat base with a table that has machined T-slots for clamping workpieces.
 - A horizontal arm driven by a motor, slides up and down the pillar.
 - The drilling head can be operated by a hand wheel.
 - Bigger size cutting tools can be used.
 - This machine has more power than other types of drilling machines.
 - The machine head has a gearbox that can change speed and a drilling spindle slides on the arm. (Any other relevant answer) (Any 5 × 1) (5)

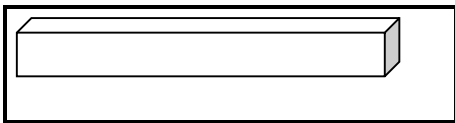
- 2.2
- Pedestal-type drilling machine
 - Portable hand-drilling machine
 - Radial-arm drilling machine
 - Pillar-type drilling machine (Any other relevant answer) (4)

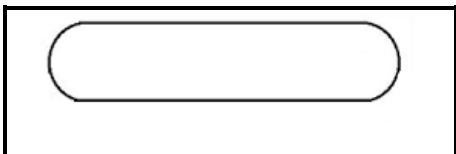
- 2.3
- A sharp cutting tool is used
 - The work piece securely clamped
 - The correct cutting fluid used
 - The machine table/vice is secured
 - Using the correct speed
 - Using the correct feed
 - All safety precautions adhered to (Any other relevant answer) (Any 5 × 1) (5)

2.4 2.4.1  Gib-head key

2.4.2  Woodruff key

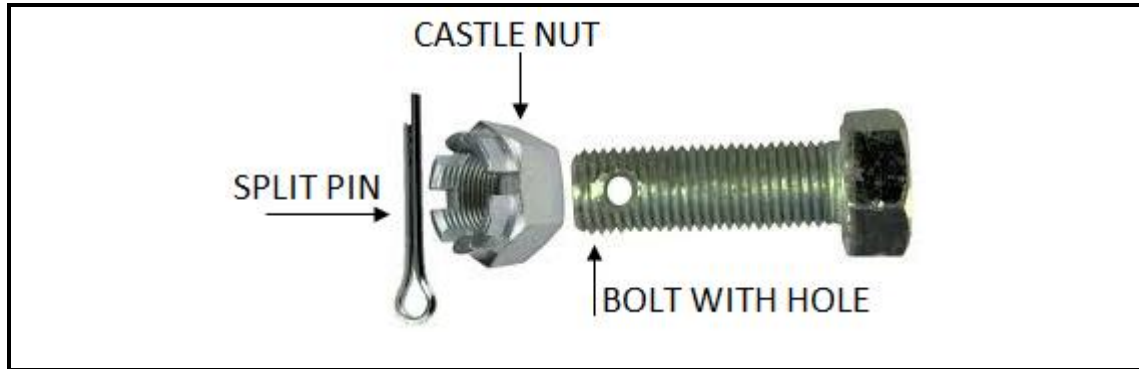
2.4.3  Taper key

2.4.4  Square key

2.4.5  Rounded key

(5 × 1) (5)

2.5



(Any relevant sketch)

(2)

- The bolt has a hole drilled through it, while the nut has a slot machined on the head.
- Tighten the nut to the required torque.
- Align the hole of the bolt and the slot on the nut so that a split pin can be inserted.
- Bend the split pin over the nut to lock it (Any other relevant answers)

(4)

[25]

QUESTION 3

- 3.1
- Headstock
 - Carriage
 - Tailstock
 - Tool post
 - Compound slide
 - Cross slide
 - Apron
 - Feed screw shaft
 - Lead screw
 - Main switches
 - Chuck (Any other relevant answer) (Any 5 × 1)

(5)

- 3.2
- | | | |
|-------|-------|--|
| 3.2.1 | True | |
| 3.2.2 | True | |
| 3.2.3 | True | |
| 3.2.4 | False | |
| 3.2.5 | False | |
- (5 × 1) (5)

- 3.3
- When turning
 - or screw-cutting shafts with small diameters
 - or when boring the end of a long shaft,
 - it is necessary to have additional support on the workpiece
 - to prevent it from springing or bending. (Any other relevant answer)

(5)

- 3.4
- Parting tool
 - Roughing tool
 - Screw thread cutting tool
 - Finishing tool
 - Recessing tool
 - Facing tool
 - Straight-cutting tool
 - Form tools
 - Boring bars
- (Any other relevant answer) (Any 5 × 1) (5)
- 3.5
- No setting up is required when mounting the workpiece.
 - Workpieces can be easily mounted or removed.
 - External turning is true to the internal diameter.
 - Production of large quantities of similar workpieces is easier.
 - Setting is quick, simple and true.
 - They can be adapted to suit a large variety of workpieces.
- (Any 5 × 1) (5)
[25]

QUESTION 4

- 4.1
- Safety goggles/eye protection
 - Overalls
 - Hair net if necessary
 - Safety boots/safety shoes
 - Use gloves when handling workpieces with sharp edges
- (Any other relevant answer) (5)
- 4.2
- Helical milling cutter
 - Dovetail cutter
 - Side-and-face cutter
 - End mill
 - T-slot cutter
 - Slot drill
 - Slot cutter
 - Corner rounding cutter
 - Radius cutter
 - Helical cutter
- (Any other relevant answer) (Any 5 × 1) (5)
- 4.3
- A Arbor
 - B Milling cutter
 - C Arbor support
 - D Table
 - E Knee
 - F Base
 - G Column
 - H Overarm
- (8 × 1) (8)

- 4.4
- $100,00 \pm 0,05$ refers to the tolerance of the workpiece.
 - When manufacturing the workpiece the dimensions can vary
 - from the exact size, 100 mm
 - to 100,05 mm
 - or 99,95 mm (Any other relevant answer) (5)
- 4.5
- Vernier calliper
 - Dial test indicator
 - Engineer's ruler
 - Micrometer (Any 2 x 1) (2)
- TOTAL: 100**
- [25]**