

# 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.

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1.1.1 1.1.2

#### -2-FITTING AND TURNING L2

#### **QUESTION 1**

1.1

1.1.3	Α				
1.1.4	F				
1.1.5	С				
1.1.6	G				
1.1.7	Н				
1.1.8	K				
1.1.9	I				
1.1.10	J				
				$(10 \times 1)$	(10)
				` ,	` '

Safety goggles/eye protection

Ε

- Overalls
- Hair net if necessary
- Safety boots/safety shoes
- Use gloves when grinding workpieces that are hot or have sharp edges

(Any other relevant answer) (5)

- 1.3 High-speed steel
  - Diamond tip
  - Stellite
  - Cemented carbides
  - Cubic boron nitrate
  - Ceramic
  - Tungsten carbide (Any other relevant answer) (Any 5 x 1) (5)
- Wear the required personal protective equipment (PPE).
  - Start the grinder and allow it to reach full speed.
  - Place the diamond dresser on the edge of the grinder's work rest.
  - Hold the dresser firmly with one hand and gently turn the wheel dresser clockwise with the other hand
  - allowing the tip to lightly touch the wheel.
  - Move the dresser from side to side on the work rest and adjust the dresser until the wheel is clean and square.

(Any other relevant answer) (Any  $5 \times 1$ ) (5)

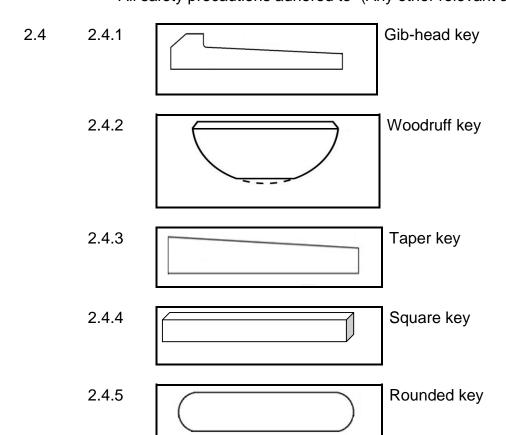
[25]

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#### -3-FITTING AND TURNING L2

#### **QUESTION 2**

- 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 x 1)
- 2.2 Pedestal-type drilling machine
  - Portable hand-drilling machine
  - Radial-arm drilling machine
  - Pillar-type drilling machine (Any other relevant answer)
- 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 x 1)



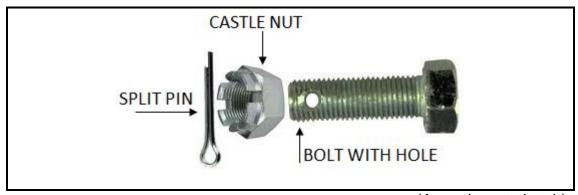
 $(5 \times 1) \qquad (5)$ 

(5)

(4)

#### -4-FITTING AND TURNING L2

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

 $(5 \times 1) \qquad (5)$ 

- 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)

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#### -5-FITTING AND TURNING L2

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  $5 \times 1$ ) (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.  $(Any 5 \times 1)$ (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  $5 \times 1$ ) (5)4.3 Α Arbor В Milling cutter С Arbor support D Table Ε Knee F Base G Column Overarm

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 $(8 \times 1)$ 

(8)

#### -6-FITTING AND TURNING L2

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)

4.5Vernier calliper

- Dial test indicator
- Engineer's ruler

• Micrometer  $(Any 2 \times 1)$  (2)

[25]

**TOTAL: 100**