



**higher education  
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Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

# **MARKING GUIDELINE**

**NATIONAL CERTIFICATE (VOCATIONAL)**

**FITTING AND TURNING**

**NQF LEVEL 2**

(Second paper)

**22 November 2024**

**This marking guideline consists of 5 pages.**

**QUESTION 1**

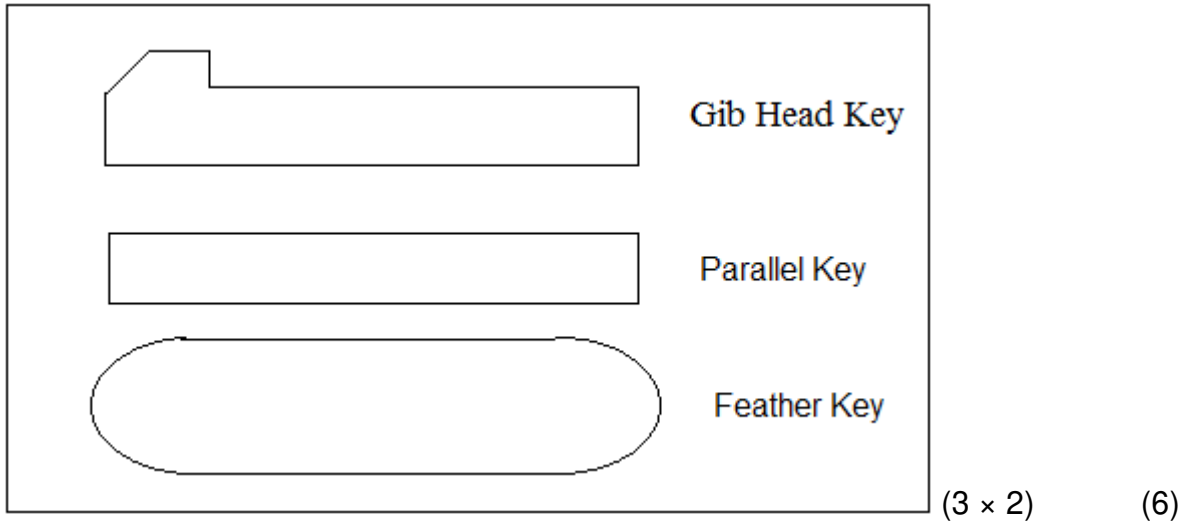
- 1.1
- |       |     |  |         |      |
|-------|-----|--|---------|------|
| 1.1.1 | A✓✓ |  |         |      |
| 1.1.2 | B✓✓ |  |         |      |
| 1.1.3 | D✓✓ |  |         |      |
| 1.1.4 | D✓✓ |  |         |      |
| 1.1.5 | A✓✓ |  | (5 × 2) | (10) |
- 1.2
- |   |                 |  |  |     |
|---|-----------------|--|--|-----|
| A | Outer flange ✓  |  |  |     |
| B | Nut✓            |  |  |     |
| C | Blotting paper✓ |  |  |     |
| D | Plastic bushes✓ |  |  |     |
| E | Shaft✓          |  |  | (5) |
- 1.3
- Clean taps after use.✓
  - After use store taps in the original container.✓
  - Clean off any tapping fluid from the work bench or floor.✓
  - Ensure that the metal shavings are cleaned and thrown in the metal scrap bin.✓
  - Use the correct tools for the job.✓     (Any other appropriate answers 5 × 1)     (5)
- 1.4
- Cutting fluid prevents rust✓
  - Reduces friction✓
  - The workpiece is cooled✓
  - The cutting tool is cooled✓
  - Cutting fluid washes away the iron chips from the workpiece✓
  - Imparts a smooth finish✓
  - Increases production rates✓
  - Increases the life of the drill(durability)✓
  - Allows higher cutting speed✓     (Any other appropriate answers 5 × 1)     (5)
- [25]**

**QUESTION 2**

- 2.1
- |   |                               |  |  |     |
|---|-------------------------------|--|--|-----|
| A | Elevating motor✓              |  |  |     |
| B | Elevating screw✓              |  |  |     |
| C | Pillar✓                       |  |  |     |
| D | Spindle motor✓                |  |  |     |
| E | Speed and feed gear box✓      |  |  |     |
| F | Horizontal movement steering✓ |  |  |     |
| G | Base✓                         |  |  | (7) |
- 2.2
- D = 50 mm     S = 50 m/min     N=?
- $50/1\ 000 = 0,05\ m✓✓$
- $S = \pi \times D \times N✓$
- $N = 50/\pi \times 0,05✓$
- $= 318,268\ r/min✓$      **OR**     318 r/min✓     (5)

- 2.3
- Check that the drive belts are in position and not damaged.✓
  - Make sure that the power supply is secured and is in the ON position.✓
  - Ensure that the belt guard is closed.✓
  - Check for correct operation of the feed spindle.✓
  - Make sure that the table can move freely and can lock.✓
- (Any other appropriate answers 5 × 1) (5)

2.4



- 2.5
- Thread cutting screw.✓
  - Self-cutting screw✓
  - Drive screw.✓
- (Any other appropriate answers 2 × 1) (2)  
**[25]**

**QUESTION 3**

- 3.1
- |       |        |  |
|-------|--------|--|
| 3.1.1 | False✓ |  |
| 3.1.2 | True✓  |  |
| 3.1.3 | True✓  |  |
| 3.1.4 | False✓ |  |
| 3.1.5 | False✓ |  |
- (5 × 1) (5)

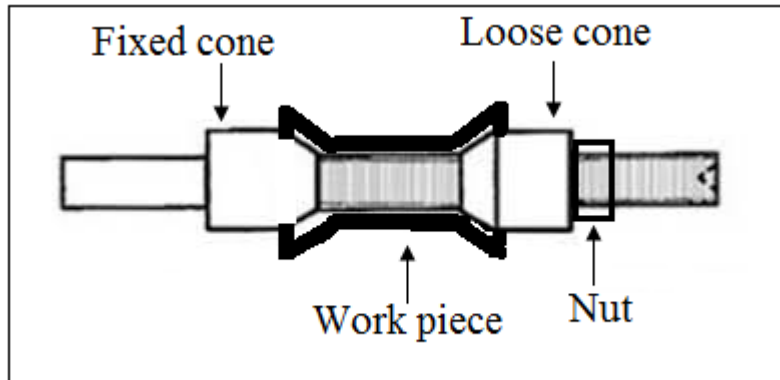
3.2

Manual feed	Automatic feed
<ul style="list-style-type: none"> <li>• The operator of the centre lathe physically adjusts while turning✓</li> <li>• Its time-consuming✓</li> <li>• The material removed leaves a rough and uneven surface (finish)</li> </ul>	<ul style="list-style-type: none"> <li>• Machine adjusts automatically✓</li> <li>• It is quicker✓</li> <li>• The finish is more even and smooth✓</li> </ul>

(Any other appropriate answers 2 + 3) (5)

- 3.3
- It is time-consuming to set up a workpiece in a four-jaw chuck.✓
  - The chuck is heavy to mount on the centre lathe.✓
  - The chuck is bulky.✓
  - The strong gripping force of the jaws can damage fine work pieces.✓
  - Knowledge of the use of a dial test indicator (DTI) is critical.✓
- (5)

3.4



Labelling = ✓✓✓✓

Sketch = ✓

(5)

- 3.5
- The workpiece can get loose from the chuck.✓
  - The cutting tool may break or become blunt.✓
  - Play between the slides.✓
  - Lack of coolant/cutting fluid.✓
  - Centre hole wearing out.✓
- (Any other appropriate answers 5 × 1) (5)

[25]

**QUESTION 4**

- 4.1
- |       |    |  |  |
|-------|----|--|--|
| 4.1.1 | H✓ |  |  |
| 4.1.2 | C✓ |  |  |
| 4.1.3 | G✓ |  |  |
| 4.1.4 | E✓ |  |  |
| 4.1.5 | A✓ |  |  |
| 4.1.6 | F✓ |  |  |
| 4.1.7 | B✓ |  |  |
| 4.1.8 | D✓ |  |  |
- (8 × 1) (8)

- 4.2
- Eye protection.✓
  - Hair net✓
  - Gloves✓
  - Overalls✓
  - Safety boots.✓
- (Any other appropriate answers 5 × 1) (5)

- 4.3
- Consider the speed.✓
  - The condition of the machine.✓
  - The type of material being machined.✓
  - Condition of the material✓
  - The type of cutting tool.✓ (Any other appropriate answers 5 × 1) (5)
- 4.4
- During the operation of a Milling machine ensure that there is an adequate supply of coolant.✓
  - Make sure the speed and feed is correct.✓
  - Check that the workpiece is secured during cutting.✓
  - Ensure that the cutting tips are sharp.✓
  - When using automatic feed ensure that the table trips are in position.✓ (Any other appropriate answers 5 × 1) (5)
- 4.5
- A roughing cut is the first cut that is taken where excess material is removed and the work piece is cut closer to the required size.✓✓ (Any other appropriate answers) (2)
- TOTAL: 100**
- [25]**