higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

FITTING AND TURNING
NQF LEVEL 2

17 November 2022

This marking guideline consists of 6 pages.

Copyright reserved

QUESTION 1

1.1
1.1.1 A
1.1.2 B
1.1.3 C
1.1.4 D
1.1.5 A

(5 × 1) (5)

1.2
- It is difficult to control the amount of material being removed.
- The cutters wear away and need replacing.
- It is difficult to keep the face of the wheel parallel to the edge of the wheel.
- The tool rest has to be adjusted away from the wheel before dressing the wheel and then has to be reset in position.

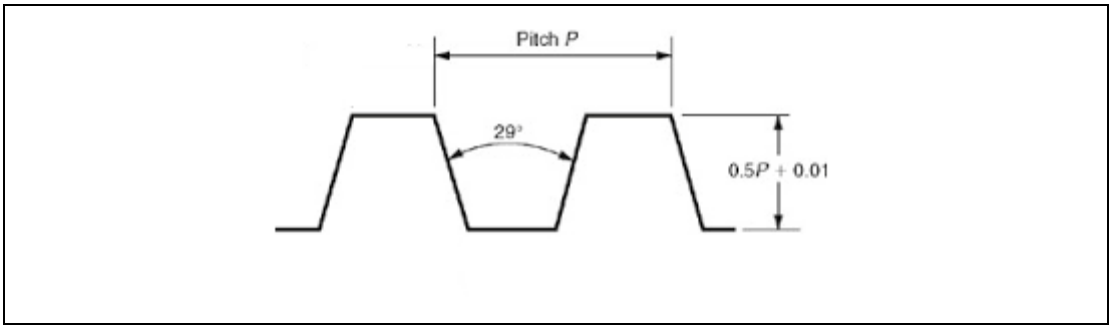
(Any 3 × 1) (3)

1.3
- Hardness of material.
- Area of contact.
- The speed of the wheel.
- Feed rate.
- Operator characteristics. (5)

1.4
- The fluid keeps the work piece cool.
- The fluid keeps the wheel clean.
- The fluid reduces rust on the machine.
- The fluid washes off the chips or shavings.

(Any 2 × 1) (2)

1.5



(TWO marks for accuracy) (5)

1.6
- First cut or taper tap.
- Second cut or intermediate tap.
- Third cut or plug tap. (3)

1.7 A solid die is used to cut external threads. (2)

[25]

QUESTION 2

2.1 A – Motor
B – Spindle speed selector
C – Hand feed lever
D – Pillar
E – Base
F – Table (6)

2.2 D=10 mm=0,01 m✓
S=50 m/min
N=?

S= πXDXN✓

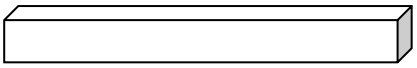
$$N = \frac{S}{\pi XD} \quad ✓$$

$$= \frac{50}{(\pi X0,01)} \quad ✓ \quad ✓$$

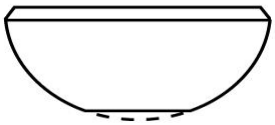
= 1591,343 r/m✓ (6)

2.3
- Drill bit blunt
- Incorrect speed
- Incorrect feed
- Metal too hard
- Loose bolts
- Inadequate coolant/cutting fluid (Any 5 × 1) (5)

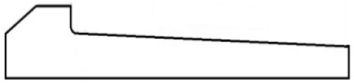
2.4



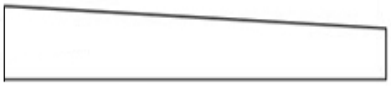
Rectangle key✓✓



Woodruff key✓✓



Gib head key✓✓



Taper key✓✓

(8)
[25]

QUESTION 3

3.1
- Eye protection
- Overalls
- Safety boots with a steel cap
- Hair net cap for long hair
- Gloves for removing shavings and handling work pieces with sharp edges. (5)

3.2
- Parting tool
- Roughing tool
- Right/left hand knife tool
- Facing tool
- Recessing tool
- Boring tool
- Grooving tool
- Form tool (Any 5 × 1) (5)

3.3
3.3.1 A
3.3.2 D
3.3.3 H
3.3.4 E
3.3.5 I
3.3.6 F

(6 × 1) (6)

3.4
- Adjust the centre lathe speed slow and use a rapid speed.✓
- Install the knurling tool in the tool post, adjust the height until it is square to the work piece.✓
- Turn the cross slide inwards until the tool makes a mark on the work piece.✓ Flood the tool with coolant and engage the manual or automatic feed to move the tool to the other end of the required knurling point on the work piece.✓
- Repeat until the desired finish is achieved.✓ (5)

3.5
- Prolongs machine life
- Part of good housekeeping
- To prevent rust
- While cleaning the machine defects or any breaks in the machine can be identified
- A clean centre lathe is safe lathe/Accident prevention (5)

[25]

QUESTION 4

4.1 4.1.1

A – Column
B – Arbor
C – Milling cutter
D – Overarm
E – Table
F – Knee
G – Base (7)

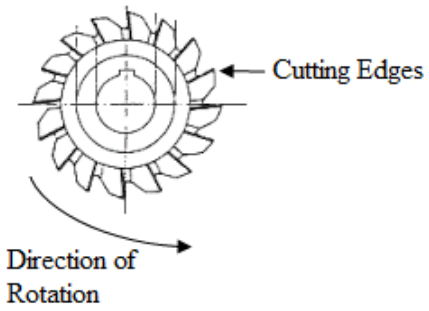
4.1.2

X – Horizontal movement of the table
Y – Vertical movement of the table
Z – Cross movement of the table (3)

4.2

- Gear cutting
- Slot cutting
- Key-way cutting
- Dove-tail cutting
- Face cutting
- End milling cutting (6)

4.3



TWO marks for drawing accuracy (4)

4.4

- The type of tool
- The hardness of the material
- The feed
- Condition of the material
- The cut (roughing or finishing cut) (5)

[25]

TOTAL: 100

Copyright reserved