



**higher education  
& training**

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

# **MARKING GUIDELINE**

**NATIONAL CERTIFICATE (VOCATIONAL)**

**NOVEMBER EXAMINATION 2011**

**MACHINE MANUFACTURING  
NQF LEVEL 3**

**14 NOVEMBER 2011**

**This marking guideline consists of 7 pages.**

**SECTION A**

**QUESTION 1: MACHINE SAFETY**

- 1.1
- Fixed Guards ✓
  - Interlock Guards ✓
  - Automatic Guards ✓
  - Distance Guards ✓
  - Trip Guards. ✓ (5)

- 1.2
- Wearing of a tie/ scarf
  - Wearing of jewellery
  - Loose clothing
  - Long hair ✓✓ (any two) (2)

- 1.3
- No person should work alone
  - Never lean or sit on machine
  - Use all safety guards and safety equipment provide
  - Don't play fool when operating a machine
  - Never attempt to operate a machine unless trained
  - Never leave a machine unattended in motion
  - Never reach across or into a machine
  - There must be only one operator on a machine at a time ✓✓✓✓ (any four) (4)
  - Or any other relevant answer.

1.4 Risk = Probability Rating x Severity Rating (1)

$$= \frac{1}{1} \times \frac{1}{1} \checkmark$$

= 1 (Actual Score)

or

$$= \frac{2 \times 1}{2} \text{ (Maximum Score)} \checkmark (1)$$

- 1.5
- Position of First Aid equipment
  - Position of Fire Equipment so that the area be cleared
  - Easiest direction to emergency exit
  - A safe route through a workshop
  - Storage and packing area
  - Work area.
- ✓ ✓  
(any two) (2)  
**[15]**

**QUESTION 2: CAD APPLICATIONS**

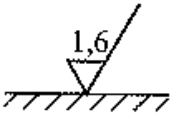

- 2.1
- Initial expense of hardware can be high
  - Heavy computing power is required
  - Cad packages are expensive and take time to learn
  - Some programmes are expensive
  - Trained operators needed.
- ✓ ✓  
(any two) (2)
- 2.2
- 2.2.1 Microsoft: No ✓ (1)
  - 2.2.2 Caddie: Yes ✓ (1)
  - 2.2.3 Paintbrush: No ✓ (1)
  - 2.2.4 Turbocad: Yes ✓ (1)
  - 2.2.5 Inventor: Yes ✓ (1)
- 2.3
- 2.3.1 all actions are undone in case of a mistake. ✓ (1)
  - 2.3.2 to move an object from one part of the screen to another ✓ location of the screen. (1)
  - 2.3.3 an object made longer or smaller. ✓ (1)
  - 2.3.4 to delete or erase any object. ✓ (1)
  - 2.3.5 it allows objects to copied to another part of the screen. ✓ (1)

- 2.4
- The tapping size drill is either too small or too big.
  - And if the tap and the tap wrench is not square in the hole ✓
  - Cutting fluid should be constantly used while tapping. ✓
  - **Tapping procedure not followed.** (3)
- [15]**

**TOTAL SECTION A: 30**

**SECTION B**

**QUESTION 3: ISO FITS AND LIMITS**

- 3.1 It is obtained when the diameter of the hole is expanded by heat and the shaft is forced in it and allowed to cool down. ✓ (1)
- 3.2 3.2.1 It is when the hole (female) component is given the basic size and the variation needed is made on the shaft size to obtain a fit ✓ (2)
- 3.2.2 The shaft is given the basic size and the variation needed is made on a hole to obtain the necessary fit. ✓ (2)
- 3.1.3 The tolerance = 0.05 ✓ (1)
- 3.3 3.3.1 125 ✓ (1)
- 3.3.2 125.00 ✓ (1)
- 3.3.3 125.02 ✓ (1)
- 3.3.4 0.04 ✓ (1)
- 3.4 3.4.1
- 
✓
- (1)
- 3.4.2
- 
✓
- (1)



4.5 Soft ✓

(1)  
[20]

**QUESTION 5: CENTRE LATHE AND MILLING MACHINE**

5.1 ➤ Keyway or Slots

➤ Gears

➤ Indexing

➤ Drilling

➤ Milling

➤ Helical cutting

✓ ✓ ✓

➤ Or any other relevant answer.

(any three)

(3)

5.2 ➤ Three Jaw Chuck

➤ Four Jaw Chuck

➤ Turning Between Centres

➤ By a Mandrel

✓ ✓ ✓  
(any three)

(3)

5.3 5.3.1 Gear and Belt cover ✓

(1)

5.3.2 Transparent chuck guard ✓

(1)

5.3.3 Splash Guard ✓

(1)

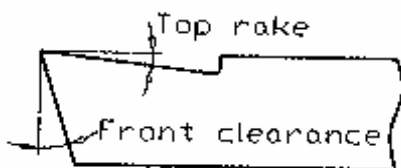
5.3.4 Emergency Switch ✓

(1)

5.3.5 Foot operated brake ✓

(1)

5.4



(2)

