higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MANUAL MANUFACTURING
NQF LEVEL 2

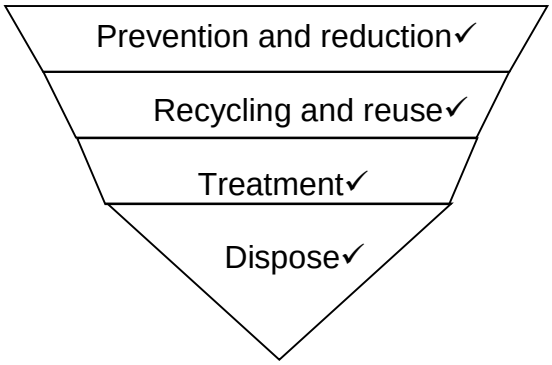
8 MARCH 2019

This marking guideline consists of 7 pages.

QUESTION 1

1.1
- Protect the person from injury.
- Clear the area.
- Loosen tight clothing.
- Do not restrict arms and legs.
- Wipe away saliva.
- Do not force the mouth open.
- Attempt to keep the airway open.
- Place the person on his/her side when the convulsions ceased.
- Monitor breathing.
- Obtain medical assistance if needed. (Any 5 × 1) (5)

1.2



(4)

1.3
- Replacing bulbs or tubes standing on drums
- Spilling oil on the floor
- Picking up heavy boxes
- Grinding without protection
- Gas welding without screen protection
- Cleaning clothes with compressed air
- Letting cables lie on workshop floor
- Gas welding next to flammable drums
- Ignoring faulty electrical cables (open wires) (Any 6 × 1) (6)

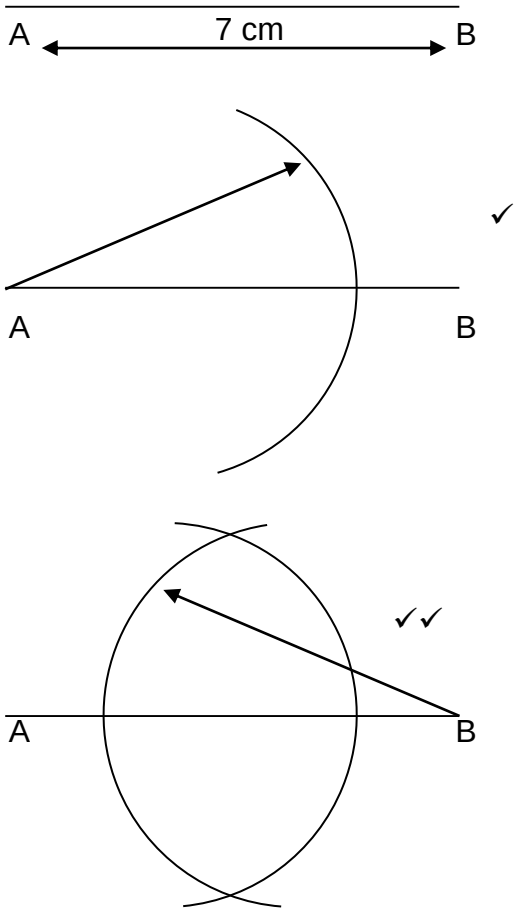
[15]

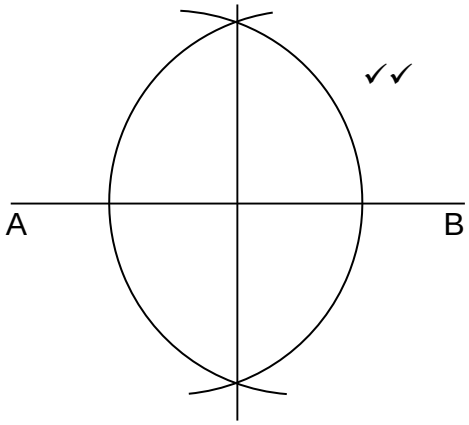
QUESTION 2

2.1

- Dimension each feature of the object once.
- Place dimensions in the most descriptive view.
- Do not place any dimension on hidden detail.
- Do not place dimensions outside the boundaries of an object.
- Orientate dimensions to be read from the bottom or to the right.
- Align and group dimensions to promote clarity and a uniform appearance.
- Show angles as right angles assumed to be 90°.
- Dimension diameters with numerical values preceded by the correct symbol (Ø).
- Precede numerical values used for radii by the symbol R.
- Make leader lines used for circles or arcs radial.
- Make concentric circles in a longitude view where possible.
- Note the depth of a blind hole.
- Avoid crossed dimension lines.
- Make a 2 mm gap visible between the object and the extension lines.
- Extend extension lines 2 mm between the object and the last dimension line. (Any 5 × 1) (5)

2.2





✓✓

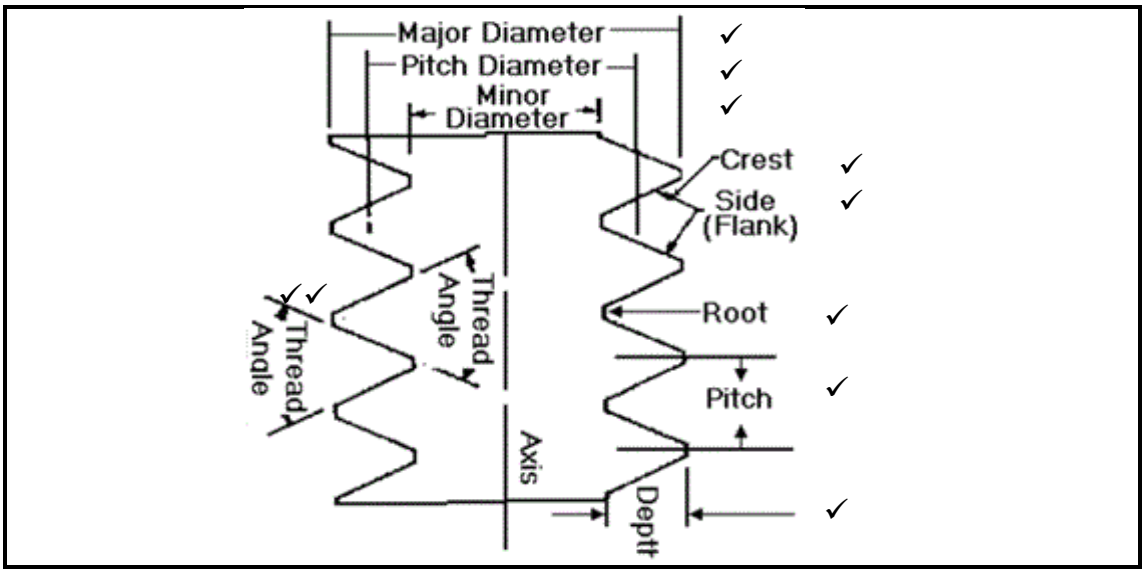
(5)
[10]

QUESTION 3

3.1
- Avoid using measure equipment on moving or rotating machinery.
- Watch out for electrical points and electricity closes to where the instrument will be used.
- Handle hot workpieces with care.
- Be careful when handling workpieces with sharp edges.
- Do not let heavy equipment fall and damage the equipment and feet.
- Use all instruments and tools for what they were designed for. (Any 5 × 1) (5)

3.2 A – 10 mm
B – 0,02 mm
C – 1 mm
D – 49 mm on beam or 0,5 mm on sliding beam
E – 0,1 mm (5 × 1) (5)

3.3



(10)

3.4
- Drill the correct size of the hole.
- Do not use blunt taps.
- Frequently turn anticlockwise to break chips and clear the hole.
- Do not use excessive force as it may damage or break the tap.
- Taps should not come into contact with other tools as it may damage the cutting edge.
- Do not overtighten the wrench as it may strip/damage the threads.
- Taps should be stored in the correct box to prevent damaging the cutting edge. (Any 5 × 1) (5)

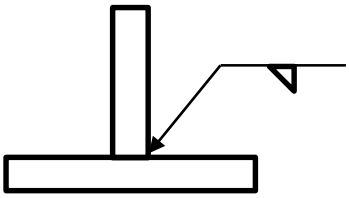
[25]

QUESTION 4

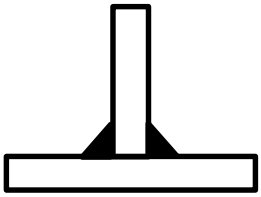
4.1
- The handle must have no cracks.
- Make sure the handle is secured to the soldering iron.
- The electrical cord must be free of cracks, burn marks and loose connections.
- There must be no loose connections in the plug and the casing must not be damaged.
- Never use a soldering iron when standing in water. (5)

4.2 When welding, the arc emits ultraviolet radiation which can cause burns and permanent damage to the eyes.✓ An arc flash can damage unprotected eyes within seconds.✓ The symptoms for arc eyes are pain, watering and the feeling of sand in the eyes.✓ These conditions are only temporary and usually clear in a few days.✓ (Any relevant answer) (4)

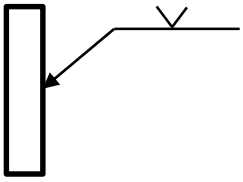
4.3 A

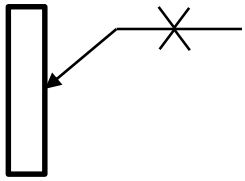


B



C



D 

E 

F 

(6 × 2) (12)

4.4 Tinning the tip of a soldering iron must be performed after cleaning. Heat the soldering iron until it melts the solder.✓ Put some solder wire onto the tip and spread the molten metal over the surface.✓ After this process, the tip will have a bright, shiny, silver appearance.✓ A too hot tip will result in the copper tip to tarnish.✓ (4)

4.5
- Clean the tip on a damp sponge or cloth when the soldering iron is hot.
- Make sure the tip is tightened in the soldering iron.
- Lightly sand the tip on 120 grid sandpaper or with a piece of steel wool.
- After this process, heat the soldering iron and perform the tinning process.
- Clean the tip on a sponge or cloth again. (5)

[30]

QUESTION 5

5.1 A – Caution
B – Prohibition
C – Safe condition
D – Mandatory
E – Supplementary (5 × 1) (5)

5.2
- Copper
- Lead
- Aluminium
- Zinc
- Tin (Any 3 × 1) (3)

5.3

Work plan					
Name:	xxxxxxx				
Name of task:	Manufacture of a hammer head✓				
Start date:	xx.xx.xxxx		**End date:**	xx.xx.xxxx	
Bill of materials					
Part name:	**No:**	**Material:**	**Size:**	**Unit cost :**	**Total cost:**
Hammer head	**1**	**MS**	**102 × 24 × 24 mm ✓**	**Rxx,xx**	**Rxx,xx**

Procedural plan

List ALL operations to be performed in the correct sequence and list the tools and equipment needed to accomplish the work task according to the plan.

Item	**Operation**	**Tools**
1.	Cut the mild-steel stock to size and deburr.	Material, ruler, square, scriber and hacksaw
2.	File head square to size.	Vernier height gauge
3.	Mark the workpiece as per the drawing.	Marking blue, scriber, hammer, punch and ruler
4.	File chamfers and bevels.	Files, file handle, clamping device, safety goggles
5.	Cut the wedge and file to size.	Hacksaw
6.	Drill a 12 mm hole as per the drawing.	Drill machine, safety goggles, 12 mm drill bit
7.	File the slot to size.	Deburr using round and flat files, file handle
8.	Punch the name onto the hammer.	Letter punches
9.	Clean and polish the workpiece.	Emery paper
10.	Harden and polish.	Oxy-acetylene outfit, case hardening power, pliers, water, emery cloth
	(Any FIVE steps in correct sequence)	(Any FIVE tools that meet the requirements of the adjacent process sequence)

(12)
[20]

TOTAL: 100