



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

NOVEMBER EXAMINATION

**MANUAL MANUFACTURING
NQF LEVEL 2**

10 NOVEMBER 2016

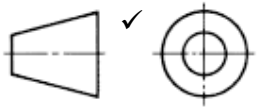
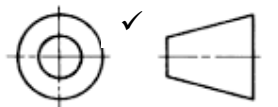
This marking guideline consists of 7 pages.

QUESTION 1

1.1	1.1.1	True		
	1.1.2	False		
	1.1.3	True		
	1.1.4	False		
	1.1.5	False		
	1.1.6	True		
	1.1.7	True		
			(7 × 1)	(7)
1.2	1.2.1	<ul style="list-style-type: none"> • Engineering design or safety machine guards • Personal protective equipment • Good housekeeping • Colour coding • Education • Safety procedures 	(Any 2 × 1)	(2)
	1.2.2	<ul style="list-style-type: none"> • Steel toe cap • Non-slip soles • Chemical-resistant soles • Ankle protection • Steel inner sole 	(Any 2 × 1)	(2)
	1.2.3	So as to prevent injury due to falling heavy objects to prevent foot injuries and for non-slip.✓		(1)
	1.2.4	Dust masks are used in dusty work environment or unhygienic working environments.✓ or fumes or poisonous gasses		(1)
	1.2.5	Fit a machine guard.✓		(1)
	1.2.6	Pinching or crushing. Exposed moving parts, no safety guard✓		(1)
				[15]

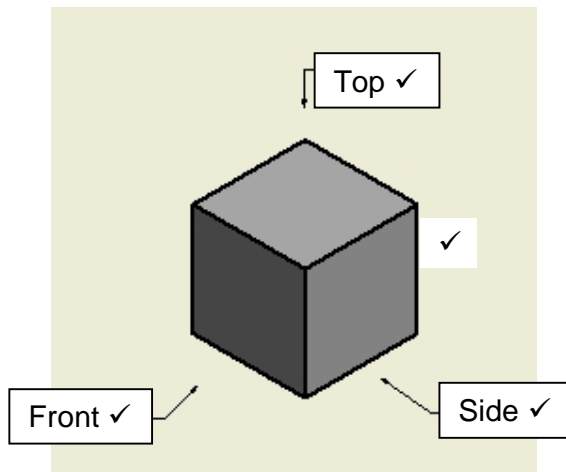
QUESTION 2

2.1

Projection	Symbol
First angle ✓	
Third angle ✓	

(6)

2.2

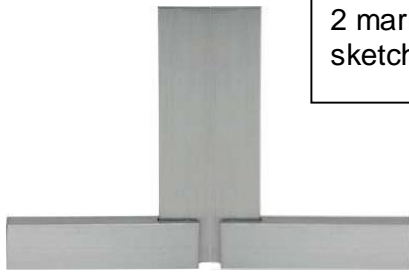


Top or top view ½
 Front or front view ½
 Box ½
 Side is incorrect,
 should be right or
 right view ½

(4)
[10]

QUESTION 3

3.1



2 marks for the sketch.

One engineering square is true (90°). $\frac{1}{2}$ The other square is been tested. If there is no light shining between the blades when the stocks are place on a level surface the other square is also true. $\frac{1}{2}$

By taking two engineers squares ✓ assuming one to be true-square 1 side. Bring them up against each other as shown in the figure. ✓ If there is no light when they butt up against each other, then both are square. ✓ However if there is a hint of light then square (2) is said to be out of square. ✓ (4)

3.2 The marking-off procedure is the process of marking guidelines ✓ onto a surface of the workpiece material before it is formed/cut ✓ (2)

3.3

- Straightness
- Flatness
- Roundness
- Parallelisms
- Angular relationship

(5 × 1) (5)

3.4

- Define the shape of a workpiece.
- Indicate the exact positions of holes.
- Keep the material wastage to minimum.
- It helps a machinist to correctly set up the workpiece on the machine.

(4 × 1) (4)

3.5

- 1 . Outside jaw
- 2 . Internal jaw
- 3 . Depth rod
- 4 . Main scale or main scale in mm
- 5 . Bar scale or main scale in inches
- 6 . Vernier scale
- 7 . Slide/or graduation or vernier scale in inches
- 8 . Moveable frame or retainer

(8 × 1) (8)

3.6 Inside micrometre ✓
It is used to measure internal diameters. ✓ (2)
[25]

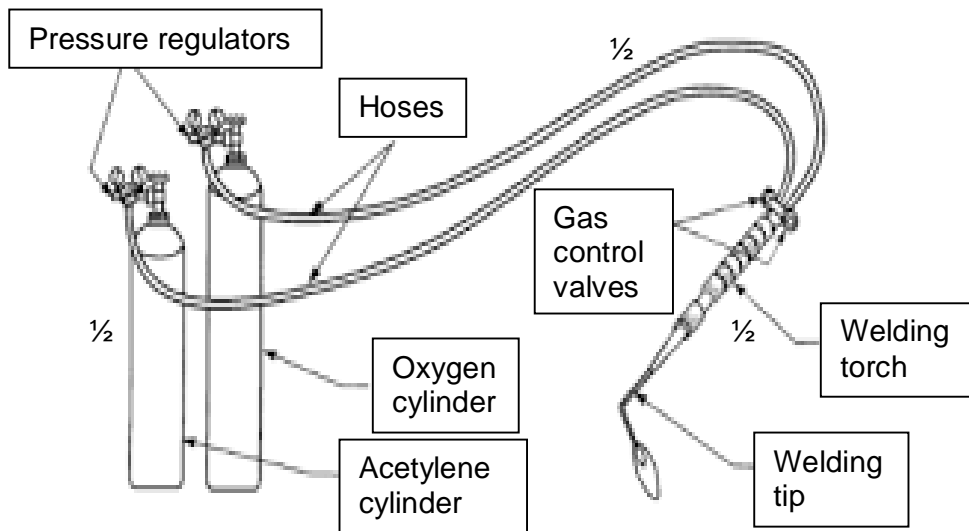
QUESTION 4

4.1 Gas welding is when the gas flame is gentle by nature and allows enough heat to the metal to form a molten puddle that moves between the metals being joined with or without a filler. Gas cutting requires the metal to be heated so that it becomes molten and then forced by increasing the pressure so as to remove the metal, hence the name blow torch. (4)

- 4.2
- Prevention against electric shock . check electrical leads for damage.
 - Prevention against radiation . using welding helmets and full body cover.
 - The scattering of hot particles or globules of metal parts . leather protective wear.
 - Flying pieces of slag chipped away from weld . protective welding screens.
 - Heat and fumes . adequate ventilation.
 - Arc rays which can seriously damage eyes . welding helmets, welding screens. Ensure gas bottle regulators are set correctly. (Any 5 x 1) (5)

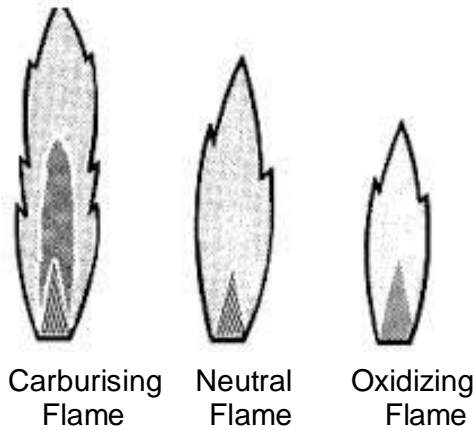
- 4.3
- Leather apron
 - Leather gauntlets
 - Spats safety boots, welding helmet, welding gloves and overalls (3 x 1) (3)

4.4



(3 marks for drawing and 7 for labels) (10)

4.5



(3 x 2) (6)

4.6 Soldering is the process of joining two metals ✓ together by the use of an alloy. ✓

(2)
[30]**QUESTION 5**

- 5.1
- Aisles . be wide enough, demarcated and kept clean.
 - Storage . sufficient packing space
 - Work space . enough work space for workers
 - Ventilation- fresh air
 - Lighting . sufficient lighting
 - Amenities . clean hygienic rest rooms
 - Waste disposal . waste products must be removed regularly.
 - Floors . must be kept clean at all times.
 - Signage . make use of colour coding.
 - Emergency equipment . perform the relevant inspections.
 - Maintenance . maintenance on workplace buildings
- (Any 5 x 1) (5)
- 5.2
- Draw attention to health and safety hazards.
 - Point out hazards that may not be obvious.
 - Provide general information and directions.
 - Remind employees where personal protective equipment must be worn.
 - Show where emergency equipment is located.
 - Indicate where certain actions are prohibited.
- (Any 5 x 1) (5)

5.3 **ADDENDUM**

Workplan	
NAME:	
Name of task:	
Start date:	End date:

Procedure plan

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

PROCESS	TOOLS/EQUIPMENT
<ul style="list-style-type: none"> • Mark out centre lines and edges to dimensions✓ • Cut to rough profile✓ • File to dimension✓ • Centre punch and drill hole✓ • Bend the plate✓ • Deburr and polish to required finish 	<ul style="list-style-type: none"> • Steel ruler and scriber ✓ • Hacksaw✓ • Range of files✓ • Hammer and centre punch, drill bits and drilling machine ✓ • Bending machine✓ • Range of files

(Any answers in the correct sequence) = (10 × 1)

(10)
[20]

TOTAL: 100