higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING PROCESSES
NQF LEVEL 4

9 March 2020

This marking guideline consists of 5 pages.

Copyright reserved

QUESTION 1

1.1
- Air-supplying respirator
- Air-purifying respirator (2)

1.2
- Clean and tidy the work area.
- Clean all tools and equipment used.
- Return all tools, equipment and materials to their storage places.
- Deposit all waste in the appropriate waste-disposal containers so that it can be disposed of properly or recycled. (4)

[6]

QUESTION 2

2.1 2.1.1 Putting something together in the correct way

2.1.2 Examining something carefully (2 × 2) (4)

2.2
2.2.1 band saw
2.2.2 alloy
2.2.3 velocity ionised
2.2.4 pitch
2.2.5 quantity (5 × 1) (5)

2.3
2.3.1 B regulators
2.3.2 D guards
2.3.3 E hollow
2.3.4 C synthetics
2.3.5 A screws (5 × 1) (5)

2.4
- Metallic projections
- Cavities in the cast
- Discontinuities
- Defective surface
- Incomplete casting
- Incorrect dimension or shape
- Inclusions (7)

2.5
- Misalignment of components
- Coupling and runner imbalances
- Coupling wear
- Worn drive belts
- Stiff machine mountings
- Misaligned gears
- Overloaded bearings (Any 5 × 1) (5)

[26]

QUESTION 3

3.1
- Use the correct personal protective equipment.
- Do not wear jewellery or neckties and tie back long hair.
- Make sure you understand all hazard signs in the workplace and obey them.
- Check that there are no obstructions or hazards on the floor.
- Never operate a machine if you are not trained and authorised. (5)

3.2
- Turning
- Screw cutting
- Parting
- Boring
- Drilling
- Deburring (Any 3 × 1) (3)

3.3
- Check that the components correspond with drawing instructions.
- Make sure that all facets are machined as indicated on the drawing.
- Make sure that surface protection of the components is addressed. (3)

[11]

QUESTION 4

4.1
- Reduces friction and wear
- Cools the cutting zone
- Reduces the amount of energy used
- Protects the machined surface (4)

4.2
- Size and weight of material
- Type of cutting that needs to be done
- Quantity and time allowed for cutting process
- Type of surface finish wanted
- Available machines (5)

4.3
- Correctness of settings
- Level of lubricant reservoir
- Suitable blade for material to be cut
- Placement of machine guards (4)

Copyright reserved

4.4. 4.4.1 False
4.4.2 True
4.4.3 False
4.4.4 True
4.4.5 True
4.4.6 False
4.4.7 True
4.4.8 True
4.4.9 False
4.4.10 False

(10 × 1) (10)

4.5
- Adjust the lubricant.
- Perform the cutting operation.
- Confirm blade clearance.
- Cut edges to conform to job specification.
- Check the cutting operation and completed cut.
- Inspect and report on completed components. (Any 3 × 1) (3)

[26]

QUESTION 5

5.1
- Fanuc
- Siemens
- Heidenhain (3)

5.2
- Permits unskilled labour
- Improves machining accuracy
- Enables complex tasks
- Creates flexibility in manufacturing
- Increases safety
- Boosts production
- Reduces set-up change over (Any 5 × 1) (5)

5.3
- Ring gauge
- Plug gauge
- Snap gauge (3)

5.4 5.4.1 Speed at which the spindle in the machine revolves

5.4.2 Distance tool travelled during one spindle revolution

5.4.3 Speed between cutting tool and work piece

(3 × 2) (6)

[17]

QUESTION 6

6.1
- Bolts and nuts
- Welding
- Riveting
- Brazing
- Soldering
- Adhesives (6)

6.2
- Availability and readiness of safety equipment
- Hazards in work area Any suitable answer (2 × 2) (4)

6.3
- Electroplating
- Cladding
- Spraying
- Hot dipping
- Sherardising (Any 4 × 1) (4)

[14]

TOTAL: 100

Copyright reserved