higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING PROCESSES
NQF LEVEL 4

19 November 2024

This marking guideline consists of 4 pages.

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QUESTION 1

1.1 Check all parts for wear and tear.✓
Check for slack belts or chain.✓
Check whether any other components need to be replaced.✓ (Any TWO) (2)

1.2 Clean and tidy the workplace.✓
Clean all the tools and equipment used.✓
Return all tools, equipment and materials to their storage places.✓
Deposits all waste in an appropriate waste disposal container so that it can be disposed of properly or recycled.✓ (4)
[6]

QUESTION 2

2.1 2.1.1 False✓ (1)
2.1.2 True✓ (1)
2.1.3 True✓ (1)
2.1.4 True✓ (1)
2.1.5 False✓ (1)

2.2 Helps one to see the manufacture's✓ identification marks on the components.✓
Helps one to get a good grip ✓on screws, nuts, bolts and keys.✓
Helps one to see any marks that one must identify✓ on the components before dismantling them.✓ (6)

2.3 Liquid lubricant✓
Semi-solid lubricant✓
Solid lubricant✓ (3)

2.4 Lack of lubrication✓
Bearing failure✓
Damaged/worn gears✓
Foreign matter in the gearbox✓
Lack of maintenance✓
Improper installation✓
Oil viscosity too high or too low✓ (Any Four) (4)

2.5 Examine the component or its parts✓ carefully to determine why it is damaged.✓ (2)

2.6 2.6.1 This tool is used to hold✓ or turn pipes or circular bars.✓ (2)

2.6.2 This tool is used for tightening ✓bolts and nuts to a specific torque and sets a level pressure.✓ (2)

2.6.3 This tool is used for measuring small gaps✓ and flatness when installing a machine.✓ (2)
[26]

QUESTION 3

3.1 3.1.1 Machine guards protect✓ operators from getting caught by moving parts of the machine while it is in operation.✓ (2)

3.1.2 A chuck key could potentially fly out and injure✓ someone or strike another machine.✓ (2)

3.2 Reset the clearance angle on the cutting tool.✓
Check that the rotating cutting tools are moving at the right speed and reset if necessary.✓
Replace worn cutting tools causing deformities in components.✓
Check whether the cutting too is the correct size.✓
Add or change the coolant.✓
Re-adjust the feed rate.✓
Compare the information on the drawing with the settings on the machine.✓ (7)
[11]

QUESTION 4

4.1 It can make internal cuts✓
Wear is distributed over many teeth.✓
Cutting action holds the workplace to the table✓
Chips are removed by the motion✓ (4)

4.2 To avoid inhaling fumes.✓ (1)

4.3 Leather spats and leggings✓
Leather apron✓
Welding goggles ✓
Welding gloves✓
Safety boots✓ (5)

4.4 Plasma cutters give a good✓ finish result.✓
Plasma cutters can also cut any steel✓ or any other metal like stainless steel.✓
Plasma cutters can cut more items in a shorter time✓ than oxyacetylene cutters.✓ (6)

4.5 The left-hand gauge indicates the gas✓ in the cylinder✓
The right-hand gauge indicates the pressure✓ to be adjusted by the regulator.✓ (4)

4.6 Job selectors are attached to the machine tool✓
The cutting speeds are pre-set for different materials✓
Select the type of material to be cut✓
Then the machine will do the rest.✓ (4)

4.7 If one runs out of gas the entire process should be restarted, ✓ and this could result in flaws in the material.✓ (2)
[26]

QUESTION 5

5.1 The dimensions of the component after the final cut✓ should be the same as the specifications on the drawing.✓ (2)

5.2 The cutting speed and feed rate ✓must suit the type of material as well as its composition.✓ (2)

5.3 One enters the data for the component✓ to be manufactured into the post-processor.✓
Then post processor converts✓ the plan into a set of instructions for the machine.✓
Once one is satisfied with the process plan, ✓one can instruct the post-processor to carry out the conversion.✓ (6)

5.4 Check that the measurements✓ of the component to determine whether it complies with the tolerances for that component. ✓
Check that the material used is good enough✓ to satisfy the quality requirements of the components.✓
Perform quality checks and record the findings✓ at interval to see whether the components still comply with the tolerances specified.✓
Check and ensure that the machined component✓ meets all the design requirements.✓ (8)
[18]

QUESTION 6

6.1 The function of the finished product.✓
The environment in which the product will function.✓
The type and thickness of the material to be joined.✓
Type of material being used ✓
The mechanical properties of the material used✓ (5)

6.2 To improve ductility✓ (1)

6.3 To check whether the heat might have discoloured the joint.✓
To check whether some extra flux needs to be removed. ✓ (2)

6.4
6.4.1 C✓ (1)
6.4.2 E✓ (1)
6.4.3 A✓ (1)
6.4.4 B✓ (1)
6.4.5 D✓ (1)
[13]

TOTAL: 100

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