higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT AND EQUIPMENT
NQF LEVEL 3

6 March 2020

This marking guideline consists of 5 pages.

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QUESTION 1

- Setting off the alarm siren
- Number of fire emergency people
- How to use the fire-fighting equipment/extinguishers
- Evacuating the building
- Gathering point outside the building **[5]**

QUESTION 2

2.1 2.1.1 Process of using hands or effort by a person to lift something

2.1.2 Process of lifting something using machines

2.1.3 Two cranes lifting a single load simultaneously

(3 × 2) (6)

2.2 It could be that one crane is not strong enough,✓ or it could be that the load has to be moved through an angle that would make a single crane unsafe.✓ (2)

2.3
- Ensuring load is properly prepared for the lift
- Ensuring lift area is clear of personnel and obstructions
- Relaying instructions to crane operator during operations
- Maintaining an overview of the lifting operator's area, including potential danger zone where boom could come into contact with another structure (4)

2.4
- Weight of pulley attached to crane
- Number of rope segments supporting pulley
- Angle between boom and horizontal line
- Distance from center of gravity of crane to center of gravity of load
- Direction of lift over front, back, left or right side of crane
- Length of boom (Any 5 × 1) (5)

2.5 To ensure✓ stability✓ of mobile crane✓ (3)

[20]

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QUESTION 3

3.1
- Excessive carbon build-up in combustion and exhaust spaces
- Dirty or blocked air filters
- Incorrect fuel injection timing
- Over fueling
- Incorrect fuel/air ratio
- Overloading the engine
- Poor fuel quality (Any relevant 6 × 1) (6)

3.2 There are brushes✓ in an electric motor that make a noise as they rub on the commutator✓ or slip rings, whereas induction motors do not use brushes✓ and tend to run at slower speeds than brush-type motors, and are much quieter✓ than brush-type motors. (4)

3.3
- Efficient
- Requires minimum maintenance
- Quiet
- Cheap in terms of energy costs (4)

3.4
- No fuel in the tank
- Fuel pump not working
- Damaged or blocked carburettor
- Damaged or blocked fuel injectors
- Dirty in-tank filter
- Damaged or blocked fuel-distribution (Any relevant 6 × 1) (6)

[20]

QUESTION 4

4.1 True
4.2 True
4.3 True
4.4 True
4.5 True
4.6 False
4.7 False
4.8 False
4.9 False
4.10 False

(10 × 1) **[10]**

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QUESTION 5

5.1 h, d, f, g, i, b, j, e, c, a (10)

5.2
- Less stable
- More difficult to steer in the right direction
- Takes longer to stop
- Tyres can overheat and wear faster
- Cannot accelerate properly, thus endangering overtaking
- Headlights shine upwards and can blind oncoming drivers
- Brakes may overheat and fail to operate as expected
- Suspension system more stressed
- Expensive as parts wear faster and will need to be replaced more frequently
- No joy in driving an overloaded vehicle (Any 10 × 1) (10)

[20]

QUESTION 6

6.1
- Air impact wrench
- Pneumatic grinder
- Pneumatic sander
- Pneumatic drill
- Pneumatic screw driver
- Pneumatic nail gun (Any 5 × 1) (5)

6.2
- Pumps
- Emergency lights
- Electrically powered tools
- Computers (4)

6.3
- Small side-cutter
- Pair of wire strippers
- Flat or star screwdriver
- Three-pin plug (4)

6.4
- Drill
- Planer
- Screwdriver (Any 2 × 1) (2)

[15]

QUESTION 7

7.1 7.1.1 Controls pressure together with the size of the nozzle and the thickness of the plate that needs to be cut

7.1.2 Connects regulators with torch

(2 × 2) (4)

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7.2
- Always secure and store cylinders in upright position.
- Keep full cylinders and empty cylinders separated.
- Never store full or empty cylinders near oil, chemicals or heat sources.
- Always use oxygen and acetylene cylinders in an upright position.
- Store oxygen and acetylene cylinders in an area that can be locked, well-ventilated and dry.
- Store oxygen cylinders separately from acetylene cylinders, with a fire wall between them or a minimum of 5 m apart.

(6)
[10]

TOTAL: 100

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