higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

AUTOMOTIVE REPAIR AND MAINTENANCE
NQF LEVEL 2

17 November 2022

This marking guideline consists of 6 pages.

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QUESTION 1

1.1
- Badly planned workshop layout.
- Workshop with insufficient lighting and ventilation.
- Machine guards not in place. (OR any applicable answers 2 × 1) (2)

1.2
1.2.1 No cellphones allowed
1.2.2 Safety boots must be worn
1.2.3 No smoking
(3 × 1) (3)

1.3
- To identify the causes of incidents and accidents.
- To implement action plans to prevent them.
- To improve the working environment. ✓
- To improve safety clothing. (OR any applicable answers 2 × 1) (2)

1.4 It causes distraction, which can lead to accidents. (OR any applicable answer) (1)

1.5
- Reduced handling eases the flow of materials.
- Fewer tripping and slipping incidents occur in clutter-free and spill-free work areas.
- Fewer fire hazards.
- Workers are less exposed to hazardous products (e.g. dust and vapours).
- Better control over tools and materials, including inventory and supplies.
- Hygienic conditions improve workers' health.
- Space is used more effectively.
- Better preventive maintenance reduces property damage.
- Higher productivity since tools and materials are easy to find. (Any 3 × 1) (3)

1.6
1.6.1 False
1.6.2 True
1.6.3 False
1.6.4 False
1.6.5 True
(5 × 1) (5)

1.7
1.7.1 To adjust a belt according to specifications.

1.7.2 To measure small gaps between components.

1.7.3 To measure the pressure a piston exerts in a cylinder.
(3 × 1) (3)

1.8
- To determine the crankshaft end float.
- To align a workpiece in a machine.
- To measure play between gears.
- To measure the run out on flywheel. (Any 2 × 1) (2)

[21]

QUESTION 2

2.1 2.1.1 Hydrometer
2.1.2 Multi-meter
2.1.3 Load tester
(3 × 1) (3)

2.2
- Goggles
- Gloves
- Safety overalls
- Safety shoes (Any 3 × 1) (3)

2.3 Positive terminal (1)

2.4
- Soda
- Vinegar (2)

2.5 2.5.1 D
2.5.2 C
2.5.3 A
2.5.4 B
2.5.5 F
(5 × 1) (5)
[14]

QUESTION 3

3.1 3.1.1 Thermostat (1)

3.1.2
- To regulate the amount of coolant recirculated back into an engine.
- It allows the engine to warm up quickly.
- It maintains the engine temperature. (Any 2 × 1) (2)

3.2
- Prevents corrosion.
- Increases the boiling point of water.
- Reduces freezing point of water. (Any 2 × 1) (2)

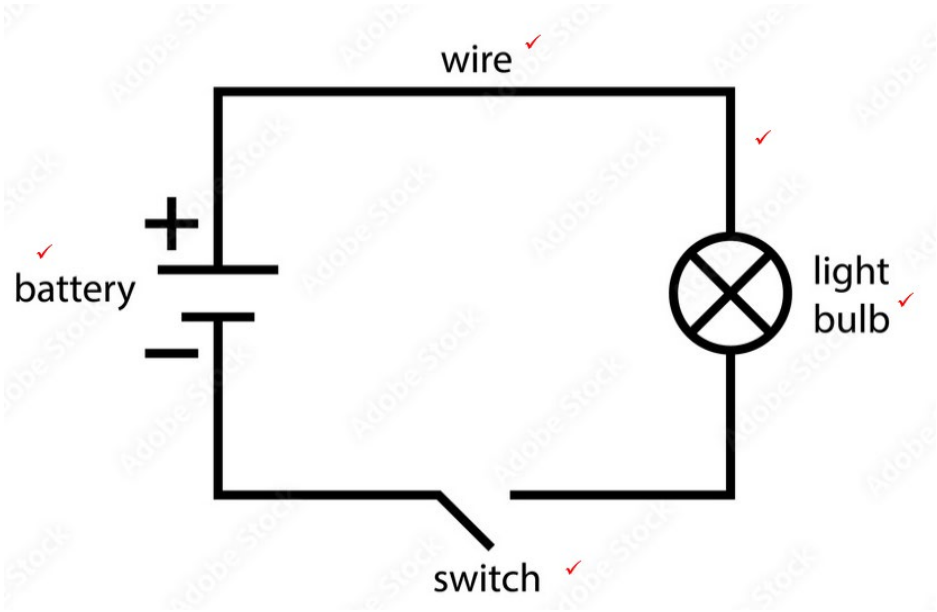
3.3 3.3.1 A – roller ball
B – separator
C – outer race
D – inner race (4)

3.3.2 It reduces friction and allows for smoother rotation. (1)

3.3.3 Ball bearing (1)
[11]

QUESTION 4

4.1



(5)

4.2 Power stroke: When both valves are closed, the spark plug between the intake and exhaust valve fires and ignites the air/fuel mixture. The resulting explosion forces the piston downwards and the crankshaft rotates.

(4)

4.3
4.31 Externally
4.3.2 Internally
4.3.3 Internally
4.3.4 Externally
4.3.5 Internally

(5 × 1) (5)

4.4
- It keeps motorists safe on the road.
- It extends the life of tyres.
- It minimises noise and ensures a comfortable ride.
- It prevents excessive heat from building up. (Any 2 × 1) (2)

4.5
- Rims support the weight of a car.
- They resist the torque when a vehicle pulls off and brakes.
- They withstand the side thrust resulting from cornering.
- Rims permit the mounting of tyres. (Any 3 × 1) (3)

4.6
4.6.1 Both outer edges
4.6.2 Centre of the tread

(2 × 1) (2)

4.7
- Steel
- Cast aluminium
- Magnesium (Any 2 × 1) (2)

[23]

QUESTION 5

5.1
- A filter cleans oil before it enters the engine. (1)

5.2
- Gear oil
- Brake fluid
- Water
- Transmission fluid
- Antifreeze (Any 4 × 1) (4)

5.3 5.3.1 Gear pump (1)

5.3.2 A – drive shaft
B – master gear
C – casing
D – gear teeth
E – sleeve gear (5)

5.4 Chain wrench (1)

5.5
- To send job details to workers out in the field.
- To have information about the work done for each job.
- To avoid wasting time and energy. (OR any applicable answers 2 × 1) (2)

5.6
- Socket wrenches
- Screwdriver set
- Set of Allen keys
- Wheel spanner
- Torque wrench
- Spark plug socket (OR any applicable answers 5 × 1) (5)

5.7
- Check engine oil level.
- Check coolant .
- Check v-belt condition.
- Check clutch master cylinder reservoir fluid.
- Check for oil leaks.
- Check for water leaks. (OR any applicable answers 5 × 1) (5)

5.8
- Make sure that the flow is clean.
- Get a job card.
- Collect the tools you will need.
- Have the service kit ready. (OR any applicable answers 4 × 1) (4)

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5.9 A roadworthy test is done to determine whether a vehicle is safe to drive or not. (1)

5.10
- To check if a car engine is in good condition.
- To test if there are any other problems. (OR any applicable answers 2 × 1) (2)

[31]

TOTAL : 100

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