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higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

ELECTRICAL TRADE THEORY N1

28 November 2023

This marking guideline consists of 5 pages.

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QUESTION 1

1.1 To ensure that the plant is neat, orderly, sanitary and safe. (3)

1.2
- Provides maximum positive protection.
- Blocks access to the danger zone during operation.
- Guards do not affect the efficient operation of the machine.
- They are a permanent part of the machine without affecting its structure.
- They are strong enough to withstand normal wear and tear.
- Guards are corrosion and fire resistant.
- They are easily replaceable. (Any 3 × 1) (3)

1.3
- Notify all persons who will be affected by the switch-off.
- Switch off the main disconnector.
- Lock the main disconnector in the 'off' position.
- Make sure that one of the three phases on the load side of the main disconnector is earthed.
- Display a danger sign near the main disconnector.
- Test for power before commencing work. (Any 4 × 1) (4)

[10]

QUESTION 2

2.1
- Electrical faults
- Open flames
- Heated surfaces
- Matches and cigarettes
- Spontaneous reaction
- Static electricity
- Friction
- Lighting (Any 5 × 1) (5)

2.2
2.2.1 To crimp ferrules and lugs onto conductors.
2.2.2 To remove the outer and inner sheaths of a cable.
2.2.3 To cut metals, plastic and wood.
2.2.4 To bend PVC conduit pipes.
2.2.5 To pull conductors through conduit pipes.

(5 × 1) **[10]**

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QUESTION 4

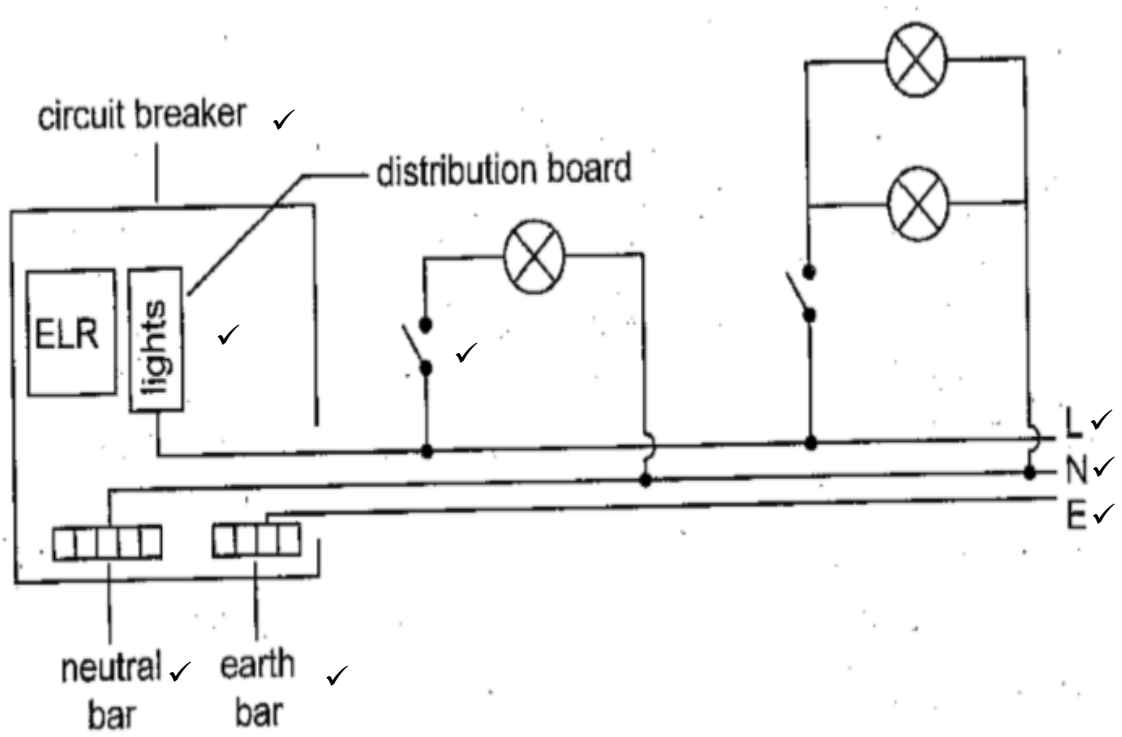
4.1
- Flexible
- Robust
- Heat resistant
- Waterproof
- Suitable for high-voltage use
- Cheaper
- Higher dielectric strength
- Good tensile strength

(Any 5 × 1) (5)

4.2
4.2.1 10 mm^2 or 16 mm^2.
4.2.2 30 A or 40 A.
4.2.3 20 A.
4.2.4 2, 5 mm^2.
4.2.5 1, 5 mm^2.
4.2.6 1 A.

(6 × 2) (12)

4.3



(TWO marks for correctness) (10)

4.4 To detect overcurrent or short-circuit currents and automatically disconnect faulty equipment or circuit from the supply. (3)

[30]

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QUESTION 5

5.1 To ensure that all single-pole switches, fuses and circuit breakers break only the live conductor and that the centre contact of each Edison-screw lamp holder is connected to the live conductor. (3)

5.2
- A multimeter set on the ohm scale.
- A Megger set on the ohm scale.
- A bell tester.
- A buzzer. (Any 2 × 1) (2)

5.3
- Natural magnet.
- Permanent magnet.
- Electromagnet. (3)

5.4
- Magnetic lines of flux always flow from the north pole to the south pole of the magnet.
- They behave like stretched elastic bands that are always try to shorten themselves.
- They never intersect.
- Magnetic lines of flux always form closed loops.
- Magnetic lines of flux are vector quantities. (Any 4 × 1) (4)

5.5 An electromotive force or open-circuit voltage is always induced in a coil whenever the magnetic flux links with the coil changes. (3)

5.6 The energy produced by renewable resources that can be used repeatedly or are replenished naturally. (3)

5.7 Greenhouse gases are gases that absorb infrared radiation emitted from the earth's surface and radiate it back to the earth's surface. (2)

[20]

TOTAL: 100

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