

- (g) Any ONE of:
- Ensure that the flexible cord is securely anchored
 - Ensure that the cord grip is on the sheath of the flexible cord, not on the basic insulation.
 - Ensure that the basic insulation exposed for the purpose of termination is kept to a minimum
- (2 marks)
- (h) (i) Power or Watts (1 mark)
- (ii) Current or Amp or amperes. (1 mark)
- (i) Any TWO of:
- Damage to the circuit wiring.
 - Overheating or fire hazard.
 - Shock hazard
- (2 marks)
- (j) I = $\frac{W}{V}$
- (½ mark)
- = $\frac{2000}{230}$
- (½ mark)
- = 8.7 amps
- (1 mark)

Question 2

(a) It is the maximum current that a flexible cord is designed to carry safely without overheating.

(2 marks)

(b) • Current flow in excess of the rating will produce excess heat.

(1 mark)

• Failure will be by insulation deterioration.

(1 mark)

(c) Any ONE of:

• Maximum terminal or connection contact.

• Minimise the risk of shock.

• Minimise the risk of short-circuit.

(1 mark)

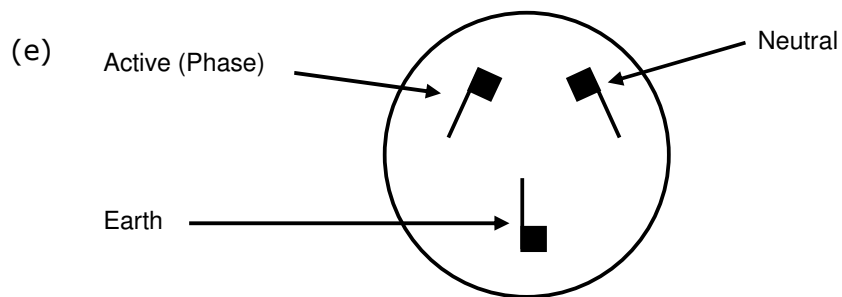
(d) So that the earth pin:

• Is first to make contact when inserted,

(1 mark)

• And the last to break contact when the plug is withdrawn,

(1 mark)



(3 marks)

Question 3

(a) Value 1

$$R = \frac{V}{I} \quad (1/2 \text{ mark})$$

$$= \frac{230}{10} \quad (1/2 \text{ mark})$$

$$= 23 \text{ ohms} \quad (1 \text{ mark})$$

(b) Value 2

$$W = V \times I \quad (1/2 \text{ mark})$$

$$= 230 \times 10 \quad (1/2 \text{ mark})$$

$$= 2300 \text{ watts (or 2.3 kW)} \quad (1 \text{ mark})$$

(c) Value 3

$$I = \frac{W}{V} \quad (1/2 \text{ mark})$$

$$= \frac{1000}{200} \quad (1/2 \text{ mark})$$

$$= 5 \text{ amps} \quad (1 \text{ mark})$$

(d) Value 4

$$R = \frac{V}{I} \quad (1/2 \text{ mark})$$

$$= \frac{200}{5} \quad (1/2 \text{ mark})$$

$$= 40 \text{ ohms} \quad (1 \text{ mark})$$

(e) Value 5

$$V = IR \quad (1/2 \text{ mark})$$

$$= 5 \times 46$$

$$= 230 \text{ volts}$$

(½ mark)

(1 mark)

OR

$$V = \frac{W}{I}$$

$$= \frac{1150}{5}$$

(½ mark)

$$= 230 \text{ volts}$$

(½ mark)

(1 mark)

Question 4

(a) (i) (A) Three.

(1 mark)

(B)

Brown	Red	Phase
Blue/light blue	Black	Neutral
Green/Yellow	Green	Earth

(3 marks)

(ii) (A) Two.

(1 mark)

(B)

Brown	Red	Phase
Blue/light blue	Black	Neutral

(2 marks)

(b) • The supply would be short-circuited.

(2 marks)

- Meter protection would operate,
or
The circuit protection would operate.
or
A personal hazard – flash burns.
or
Meter and/or appliance components could be damaged.

(1 mark)

Question 5

(a) The method has to show:

- Identification of the fuse on the switchboard for the appliance. (1 mark)
- Switching off the main switch and removing fuse carrier.

or

Removing the load from circuit and removing fuse carrier (1 mark)

- Attaching a Danger tag. (1 mark)
- Testing for isolation at the supply side of the permanent connect unit using the prove-test-prove method. (2 marks)

(b) • Go through the isolation procedure as in (a) above. (1 mark)

- Re-testing for isolation using the prove test prove method as per (b) above. (2 marks)

(c) • Ensure the permanent connection unit cover is securely fixed in place to prevent access to live parts. (1 mark)

- Replace danger tag with an out of service tag. (1 mark)

Question 6

- (a)
- Some current is diverted to earth (1 mark)
 - This causes an imbalance between phase and neutral currents (1 mark)
 - Which is detected by the sensing coil (1 mark)
 - Which trips and disconnects the supply to the load (1 mark)

(b) RCD

- To ensure the tripping mechanism has not become stuck or "frozen"
- or
- To ensure it works correctly

or

PRCD

- To ensure the tripping mechanism has not become stuck or "frozen"
- or
- To ensure PRCD does not remain in the "on" position after loss of supply. (1 mark)

- (c)
- The RCD disconnects the supply before the leakage current reaches levels that could cause harm to humans. (2 marks)
 - The RCD disconnects the supply very rapidly to minimise the exposure to electric shock (2 marks)

- (d) 30 mA (1 mark)

Question 7

(a) It is the maximum current that a flexible cord is designed to carry safely without overheating.

(2 marks)

(b) The insulation deteriorates and breaks down

(2 marks)

(c) Any FOUR of:

- Number of cores required
- Mechanical strength
- Operating environment
- Flexibility needed
- Application temperature at point of entry to appliance
- Colour coding
- Voltage rating
- Current rating
- Length
- Cross-sectional area

(4 marks)

(d) • Minimise the risk of shock.
• Minimise the risk of short-circuit.

(2 marks)

Question 8

(a) Any TWO of:

- The wrong isolating switch has been operated.
- The circuit is being fed from two different sources.
- The isolating switch is switching the neutral conductor.

(2 marks)

(b) (i) Most of the internal wiring remains alive at 230V to earth

(1 mark)

(ii) Any TWO of:

- The phase and neutral can be transposed at the plug on the flexible cord.
- The phase and neutral can be transposed at the internal terminals in the appliance.
- The phase and neutral can be transposed in an extension cord supplying the appliance.

(2 marks)

(c) Any TWO of:

- There would be exposed live terminals in the fuse base.
- The circuit can be easily relivened by inserting a fuse carrier in the fuse.
- Don't need a tool to reliven.

(2 marks)

(d) • To prevent access to basic insulation.
• To prevent access to live terminals.
• To prevent access to moving parts.

(3 marks)

Question 9

- (a) • Replace fittings incorporated in gas-fired equipment that have an electrical rating of not more than 230 volts and 15 amperes.
- Disconnect from and reconnect to fixed wiring, fittings incorporated in gas-fired equipment that have an electrical rating of not more than 230 volts and 15 amperes.
- Remove and replace fusible links in relation to gasfitting work.

(3 marks)

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- (b) • Safe Working Practices
- Testing
- CPR
- Basic first aid

(4 marks)

ER26(2)(b), (c), (d)

- (c) Any THREE of:
- Prosecute the person.
- Disqualify or suspend the person for doing or assisting to do prescribed electrical work.
- Require a person to sit and pass any specified examination.
- Require a person to complete a period of training.
- Require a person to attend a specified course of instruction.
- Limit the work the person is permitted to do .

(3 marks)

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