Name of the Student:_____
Max. Marks : 24 Marks **Time : 24 Minutes**

Q1.

Many electrical appliances are connected to the mains supply using a three-core cable and a three-pin plug.

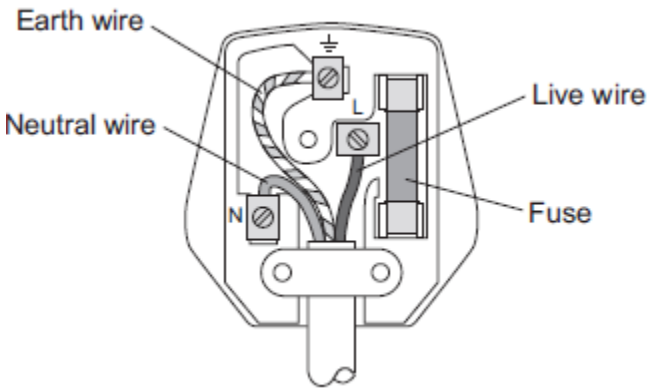
(a) Use the correct answer from the box to complete the sentence.

charge	energy	power

Electric current is the rate of flow of _____ .

(1)

(b) The diagram shows a three-pin plug connected to a three-core cable.



(i) The three wires of the three-core cable have different coloured coverings.

State the colour of the covering of the neutral wire.

_____

(1)

(ii) Which **two** parts of the plug shown above protect the wiring of a circuit?

Tick (✓) **two** boxes.

	Tick (✓)
Earth wire	
Fuse	
Live wire	

Neutral wire	

(2)

(c) Some electrical appliances are connected to the mains supply using a two-core cable and a three-pin plug. Appliances that are double insulated do not require all three wires.

(i) What does 'double insulated' mean?

_____

_____

(1)

(ii) State which of the three wires is **not** required.

_____

(1)

(d) (i) An electrical appliance is connected to a 20 V supply.

The current in the appliance is 3 A.

Calculate the power of the appliance.

_____

_____

Power = _____ W

(2)

(ii) Another electrical appliance is connected to a 20 V supply.

The appliance transfers 300 J of energy.

Calculate the charge.

Give the unit.

_____

_____

Charge = _____

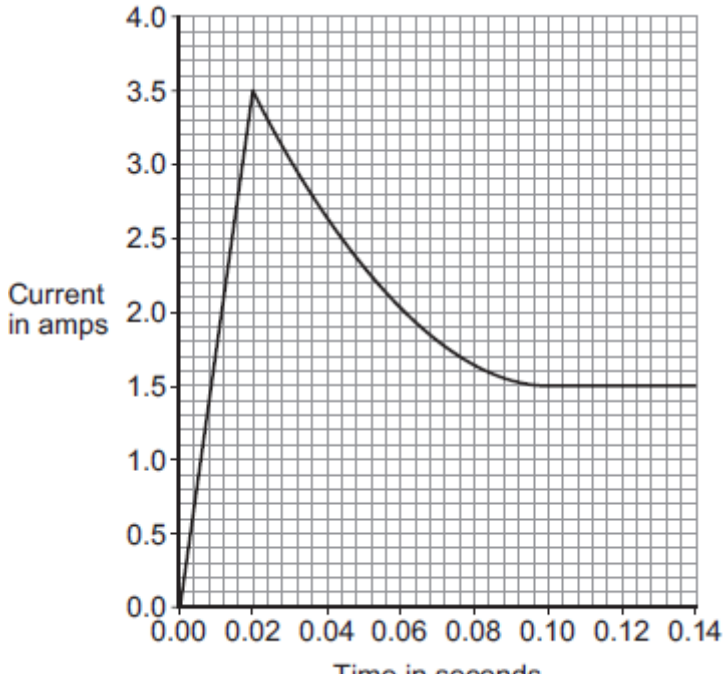
Unit _____

(3)

(Total 11 marks)

Q2.

The graph shows how the current through a filament bulb changes after the bulb is switched on.



(a) What happens to the current through the bulb in the first 0.02 seconds after the bulb is switched on?

_____

(1)

(b) Between 0.02 seconds and 0.08 seconds the current through the bulb decreases.

(i) What, if anything, happens to the **resistance** of the bulb between 0.02 seconds and 0.08 seconds?

Draw a ring around the correct answer.

decreases **does not change** **increases**

(1)

(ii) What, if anything, happens to the **temperature** of the bulb between 0.02 seconds and 0.08 seconds?

Draw a ring around the correct answer.

decreases **does not change** **increases**

(1)

(c) The bulb is connected to a 12 V power supply.

Calculate the power of the bulb when the current through the bulb is 1.5 A.

Choose the unit from the list below.

coulomb **joule** **watt**

_____

_____

Power = _____ unit _____

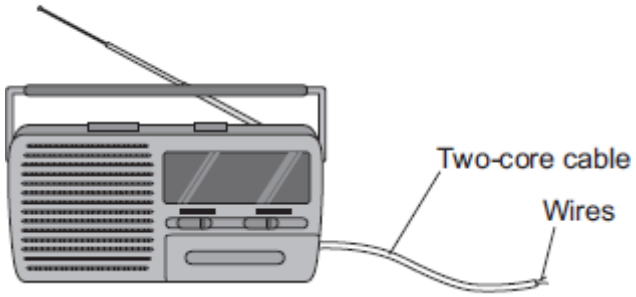
(3)

(Total 6 marks)

Q3.

Figure 1 shows a radio. The radio can be powered by connecting the two-core cable to the mains electricity supply.

Figure 1



(a) (i) What must be fitted to the cable before it can be connected to the mains electricity supply?

_____

(1)

(ii) There are only two wires inside the cable.
What are the names of the two wires inside the cable?

Tick (✓) **one** box.

Earth and live ☐

Earth and neutral ☐

Live and neutral ☐

(1)

(iii) Use the correct answer from the box to complete the sentence.

double	**extra**	**fully**

It is safe to connect the radio to the mains electricity supply using a two-core cable because the radio is _____ insulated.

(1)

(b) The radio can also be powered by a battery.

What type of current does a battery supply?

Tick ( ) **one** box.

Alternating current (a.c.) only ☐

Direct current (d.c.) only ☐

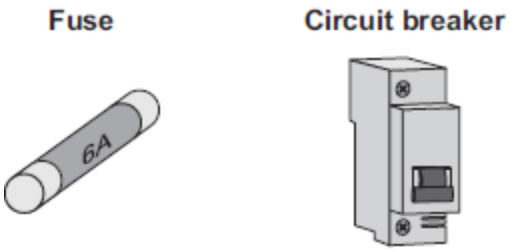
Both a.c. and d.c. ☐

(1)

(c) **Figure 2** shows a fuse and a circuit breaker.

Fuses and circuit breakers are able to disconnect and switch off circuits.

Figure 2



(i) Use the correct answer from the box to complete the sentence.

earth	**live**	**neutral**

A fuse or a circuit breaker is connected to the _____ wire in a circuit.

(1)

(ii) What happens to cause a fuse or circuit breaker to disconnect a circuit?

_____

_____

(1)

(iii) Suggest **two** advantages of using a circuit breaker to disconnect a circuit compared with using a fuse.

1. _____

_____

2. _____

_____

(2)

(Total 8 marks)