

Q1.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

Figure 6 shows part of the UK National Grid system for the supply of electricity to homes.

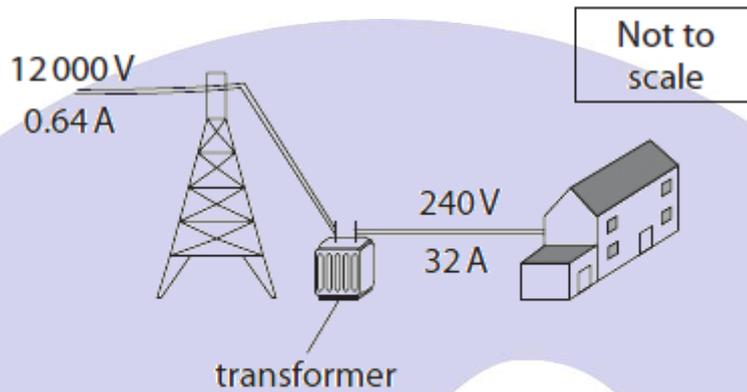


Figure 6

Electricity supplied to homes has a frequency of

- A 0.02 Hz
- B 20 Hz
- C 50 Hz
- D 500 Hz

(1)

(Total for question = 1 mark)

Q2.

Figure 7 shows the inside of a mains plug.
The neutral wire is labelled.

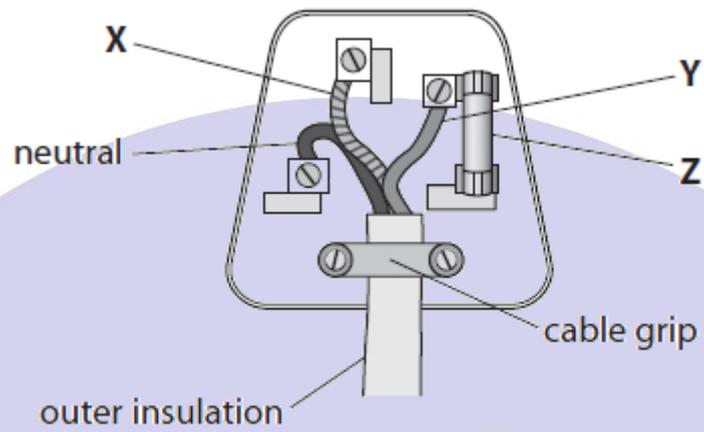


Figure 7

(i) State the name of wire **X** and the name of wire **Y**.

(2)

wire **X**

wire **Y**

(1)

(ii) State the name of component **Z**.

component **Z**

(Total for question = 3 marks)

Q3.

Figure 1 shows the inside of a mains plug.

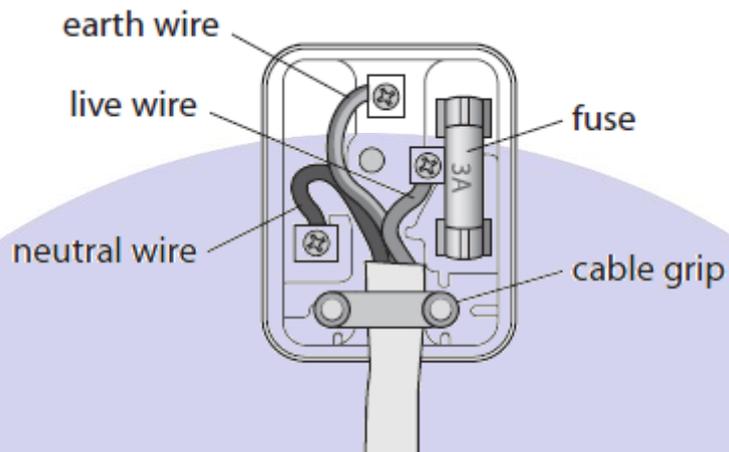


Figure 1

The mains plug has three safety features.

One of these safety features has been ticked in the table.

Put **two** more ticks in the table to show the other two safety features.

(2)

part of plug	safety feature
cable grip	<input checked="" type="checkbox"/>
earth wire	<input type="checkbox"/>
fuse	<input type="checkbox"/>
live wire	<input type="checkbox"/>
neutral wire	<input type="checkbox"/>

(Total for question = 2 marks)

Q4.

Answer the question with a cross in the box you think is correct (☒). If you change your mind about an answer, put a line through the box (☒) and then mark your new answer with a cross (☒).

Figure 8 shows a saucepan of milk being heated on an electric cooker.



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Figure 8

The wiring for the cooker has safety features.

(i) Which of these wires would help to protect a person from getting an electric shock if a fault developed in the cooker? (1)

- A** earth
- B** live
- C** negative
- D** positive

(ii) Explain how a fuse can prevent overheating of the wiring for the cooker. (2)

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(Total for question = 3 marks)

Q5.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

An electric water pump is powered by the 230 V mains supply.

Figure 5 shows the inside of the plug on the cable to the pump.

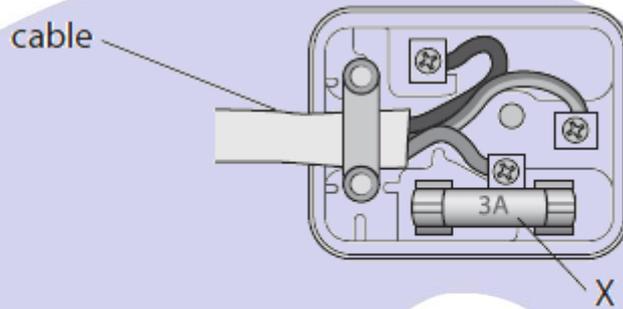


Figure 5

(i) One wire in the plug is the earth wire.
The other two wires are

- A** live and negative
- B** live and neutral
- C** positive and negative
- D** positive and neutral

(1)

(ii) Describe the purpose of the component labelled X.

(2)

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(Total for question = 3 marks)

Q6.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

A technician investigates different electrical devices that are used in a car.

The technician connects a device to the 12 V car battery.

The technician measures the current in the circuit and the potential difference (voltage) across the device.

Figure 17 shows the car battery and the device that is being tested.



Figure 17

The technician connects four devices to the car battery.

Each device is connected to its own switch and its own fuse.

Figure 18 shows how the four devices, fuses and switches are connected.

The current in each device is shown next to the device.

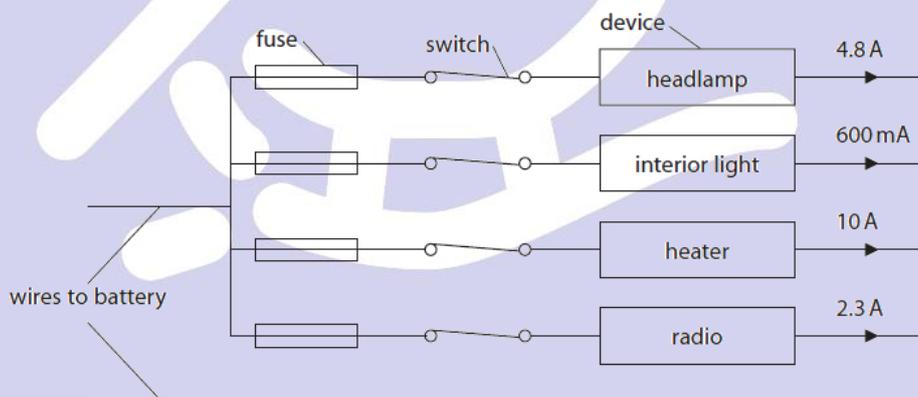


Figure 18

(iii) There is a current of 2.3 A in the radio when the radio is working correctly.

Which of these should the technician choose to protect the radio circuit?

(1)

- A 2 A fuse
- B 5 A fuse
- C 10 A fuse
- D 13 A fuse

(Total for question = 1 marks)

Q7.

* Figure 20 shows the three-pin plug used to connect the kettle to the mains.

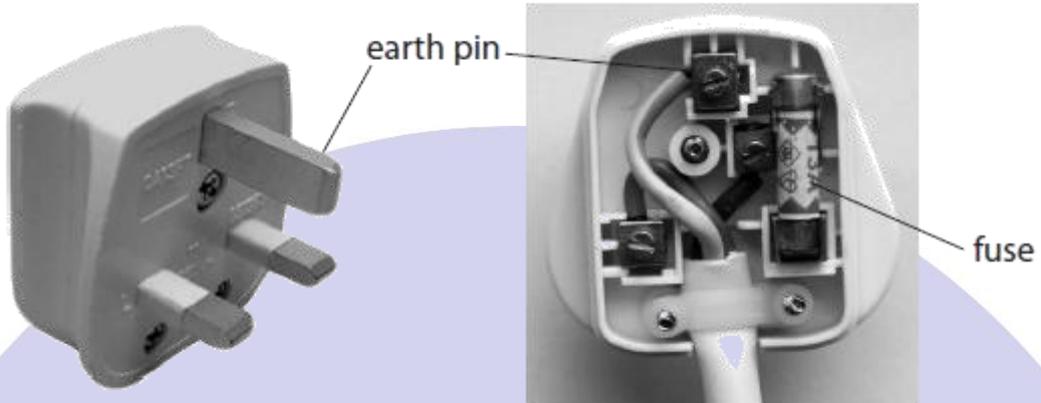


Figure 20

A fault occurs in the kettle causing the live wire to touch the metal case of the kettle.

Explain how the safety features of the plug operate when this fault occurs.

(6)

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(Total for question = 6 marks)