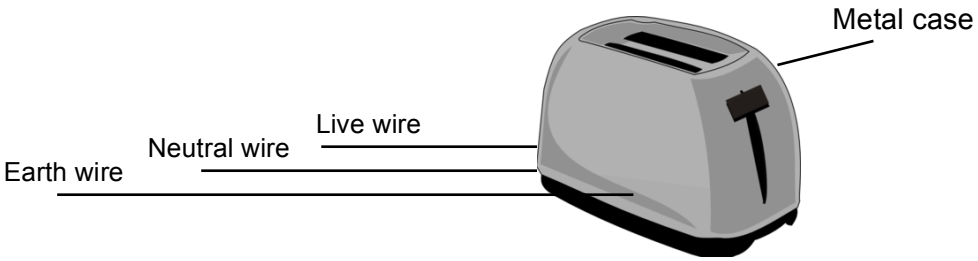
Fuses and RCCBs

Do not write outside the box

1 The diagram shows an electric toaster. The toaster can be is connected to an electricity mains supply with a three pin plug.



1 (a) (i) The cable connecting the toaster to the mains supply is a three-core cable. Why is it important to have a three-core cable for the toaster shown in the diagram?

So it can be earthed [1 mark]

Because it has a metal casing [1 mark]

It's probably not enough to just say 'for safety' for this question. Better to explain why the third wire is needed.

(2 marks)

1 (b) The plug connecting the toaster to the mains contains a fuse. Explain how the earth wire and the fuse protect a person from an electric shock when there is a short circuit to the metal case of the toaster.

Electricity or current flows to earth [1 mark]

(Accept flows to ground or down the earth wire)

(A surge of current) blows / melts the fuse [1 mark]

This breaks the (live) circuit [1 mark]

This could easily be a 6 mark question because it is important to get a logical sequence in your answer.

1

Stops electricity flowing (through person or appliance) [1 mark]

Do not write it stops an electric shock

1 (c) What is the advantage of using a Residual Current Circuit breaker (RCCB) over a fuse?

Quicker [1 mark]

Can be reset [1 mark]

(2 marks)