

2 A soldering iron is a tool used when joining electronic components in a circuit.

It has an electric heater.

(a) Soldering iron A operates when connected to the mains supply.



Soldering iron A

Soldering iron A is labelled 230 V, 30 W.

(i) What does **30 W** tell you about the energy transfer in the soldering iron?

(2)

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(ii) This soldering iron has an earth connection.

Explain how an earth connection protects the user.

(2)

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(b) Soldering iron B is connected to a low voltage power supply.



Soldering iron B

Soldering iron B is labelled 24 V, 70 W.

A student says:



I think that both soldering irons need a 3 A fuse.

(i) Use information from the soldering iron labels to evaluate this statement.

(3)

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(ii) There is a step-down transformer in the power supply for soldering iron B.

Describe the structure of a step-down transformer.

You may draw a labelled diagram to help your answer.

(3)

(Total for Question 2 = 10 marks)

