

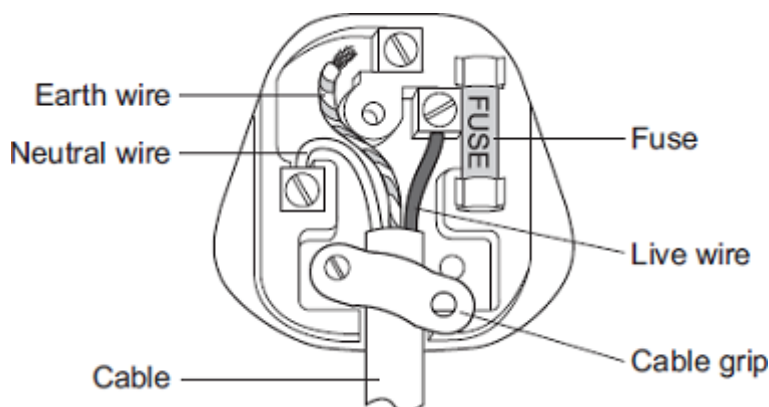
Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Q1.

- (a) The diagram shows the inside of an incorrectly wired three-pin plug.



- (i) What **two** changes need to be made so that the plug is wired correctly?

1. _____

2. _____

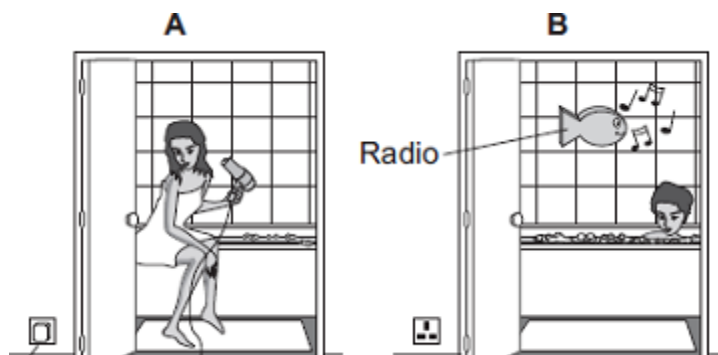
(2)

- (ii) The fuse inside a plug is a safety device.

Explain what happens when too much current passes through a fuse.

(2)

- (b) Each of these pictures shows an electrical appliance being used in a bathroom.



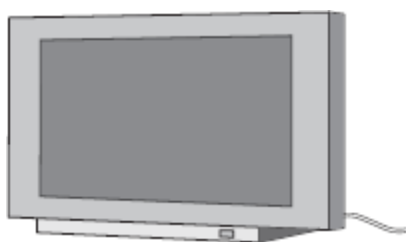
Using the hairdryer in picture **A** is dangerous. However, it is safe to use the battery-operated radio in picture **B**.

Explain why.

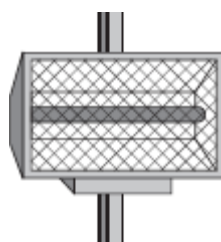
(2)
(Total 6 marks)

Q2.

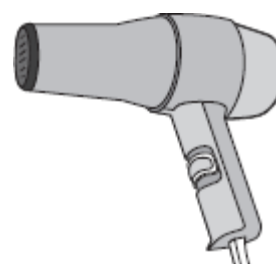
The data included in the diagrams gives the power of the electrical appliances.



TV
160 W



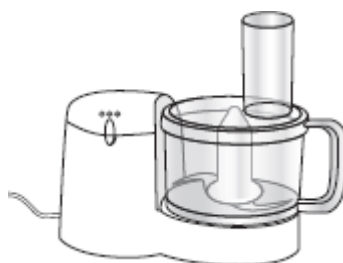
Radiant heater
1.0 kW



Hairdryer
1100 W



Sandwich toaster
1.1 kW



Food processor
0.4 kW



Table lamp
40 W

- (a) (i) Which appliance is designed to transform electrical energy to light and sound?

(1)

- (ii) Which **two** appliances transform energy at the same rate?

_____ and _____

(1)

- (b) During one week, the food processor is used for a total of 3 hours.

- (i) Use the equation in the box to calculate the energy transferred, in kilowatt-hours, by the food processor in 3 hours.

energy transferred (kilowatt-hour, kWh)	=	power (kilowatt, kW)	×	time (hour, h)
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Show clearly how you work out your answer.

Energy transferred = _____ kWh

(2)

- (ii) Electricity costs 15 pence per kilowatt-hour.

Use the equation in the box to calculate the cost of using the food processor for 3 hours.

total cost	=	number of kilowatt-hours	×	cost per kilowatt-hour
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Show clearly how you work out your answer.

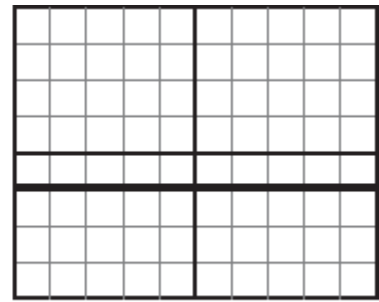
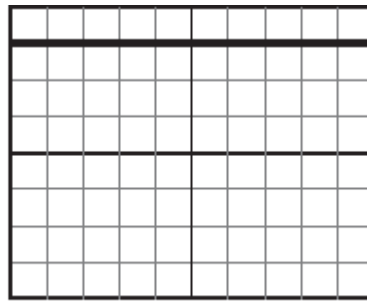
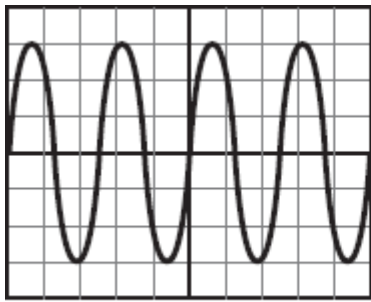
Cost = _____ pence

(2)

(Total 6 marks)

Q3.

- (a) The diagram shows the traces produced on an oscilloscope when it is connected across different electricity supplies.

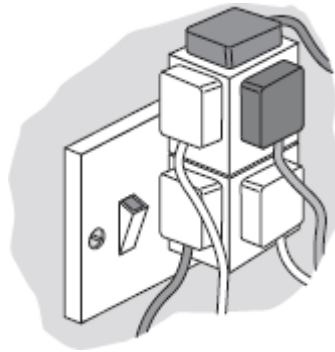


Which of the traces could have been produced by the mains electricity supply?

Give a reason for your answer.

(2)

- (b) The picture shows two adaptors being used to plug five electrical appliances into the same socket.



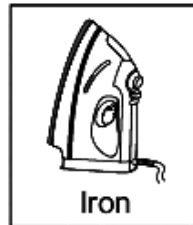
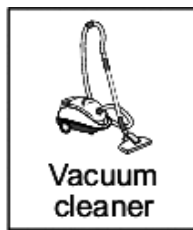
Explain why it is dangerous to have all five appliances switched on and working at the same time.

(2)

(Total 4 marks)

Q4.

The appliances shown below transfer electrical energy to other types of energy.



- (a) The vacuum cleaner is designed to transfer electrical energy to kinetic energy.

Three more of the appliances are also designed to transfer electrical energy to kinetic energy. Which **three**?

Draw a ring around each correct appliance.

3

- (b) Which **two** of the following statements are true?

Tick (✓) **two** boxes.

Appliances only transfer part of the energy usefully.

☐

The energy transferred by appliances will be destroyed.

☐

The energy transferred by appliances makes the surroundings warmer.

☐

The energy output from an appliance is bigger than the energy input.

☐

(2)
(Total 5 marks)