Mains Electricity

Problems by Topic (2012-2016)

Edexcel International GCSE

01

(b) A hairdryer connected to the mains supply takes a current of 5.5 A.

(i) Which of these fuses should be used with the hairdryer?

(1)

☐ **A** 3 A

☐ **B** 5 A

☐ **C** 7 A

☐ **D** 13 A

(ii) Explain your answer.

(1)

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(iii) The hairdryer has a plastic case so there is no need for an earth wire connection in the plug.

Explain why the hairdryer is still safe to use.

(2)

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January 2012

3 The photograph shows an extension cable on a reel.

There is a warning label on the reel.

WARNING
maximum allowable power
when cable fully extended – 2400 W, 240 V
when cable coiled up – 700 W, 240 V

(a) (i) State the equation linking power, current and voltage.

(1)

(ii) Complete the table by inserting the missing value.

(1)

Power in W	Voltage in V	Current in A
700	240	
2400	240	10

(b) The extension cable is fitted with a 13 A fuse.

(i) Describe how the fuse protects the cable.

(3)

(ii) Explain why a 5 A fuse is **not** suitable for this extension cable.

(2)

(iii) Suggest why the maximum recommended current is lower when the cable is coiled up.

(1)

(Total for Question 3 = 8 marks)

January 2014

1 Mains electricity is used in circuits at home.

(a) Double insulation is needed for safety when there is

(1)

- ☐ **A** no circuit breaker
- ☐ **B** no earth connection
- ☐ **C** no fuse
- ☐ **D** no switch

(b) A fuse is used so that

(1)

- ☒ **A** an earth connection is not needed
- ☒ **B** the appliances are more efficient
- ☒ **C** the circuit cannot overheat if there is a fault
- ☒ **D** the user cannot touch a live wire

(c) Most lamps at home have their own switch.

This is because the lamps are connected

(1)

- ☐ **A** in parallel
- ☐ **B** in series
- ☐ **C** to a fuse
- ☐ **D** to an earth wire

(Total for Question 1 = 3 marks)

January 2015

8 The table shows information about three electrical appliances.

Appliance	Power in W	Current in A
lamp	40	0.17
clothes iron	2200	9.6
television	110	

(a) (i) State the relationship between power, current and voltage.

(1)

(ii) Calculate the current in the television.
[assume that the mains voltage is 230 V]

(2)

current = ... A

(b) The photographs show the different cables used for the clothes iron and the lamp.

clothes iron cable

lamp cable

(i) Suggest why the wires in the clothes iron cable are thicker than the wires in the lamp cable.

(1)

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(ii) The clothes iron cable has three wires, E, N and L.

Which of these wires is connected to the fuse?

(1)

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(iii) Suggest why the lamp is safe to use, even though its cable only has two wires.

(1)

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(c) The lamp is switched on for 55 minutes.

Calculate the energy transferred by the lamp in this time.

(3)

energy transferred = ... J

(Total for Question 8 = 9 marks)

January 2016