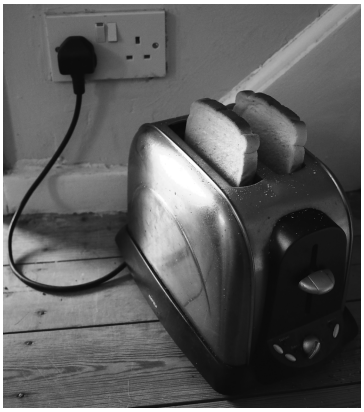
Do not write outside the box

0 5 **Figure 7** shows a toaster.

Figure 7



The toaster is connected to the mains supply using a three-core cable.

0 5 . 1 What is the function of the earth wire inside the cable?

[1 mark]

Tick (✓) **one** box.

To carry the current from the supply to the toaster ☐

To complete the circuit in the toaster ☐

To melt if a fault occurs inside the toaster ☐

To stop the metal case of the toaster becoming live if a fault occurs ☐

0 5 . 2 Complete the sentences.

Choose answers from the box.

[3 marks]

blue	**brown**	**orange**	**white**	**yellow**

The insulation around the earth wire is green and _____ .

The insulation around the live wire is _____ .

The insulation around the neutral wire is _____ .

Turn over ►

Do not write outside the box

0 5 . 3 The toaster is switched on for 120 seconds.

The power of the toaster is 850 watts.

Calculate the energy transferred by the toaster.

Use the equation:

energy transferred = power × time

[2 marks]

_____

_____

_____

Energy transferred = _____ J

0 5 . 4 Complete the sentences.

Choose answers from the box.

[2 marks]

chemical	**elastic potential**	**kinetic**	**thermal**

When bread is lowered into the toaster, a spring is stretched. The stretched spring stores _____ energy.

After the bread is toasted, the spring makes the toast move upwards. As the speed of the toast increases, the _____ energy of the toast increases.

Do not write outside the box

0 5 . 5 Write the equation which links gravitational field strength, gravitational potential energy, height and mass.

[1 mark]

_____

_____

0 5 . 6 The toast was moved upwards by the spring.

The change in gravitational potential energy of the toast was 0.049 J

The mass of the toast was 0.050 kg

gravitational field strength = 9.8 N/kg

Calculate the change in height of the toast.

[3 marks]

_____

_____

_____

_____

_____

_____

Change in height = _____ m

12

Turn over for the next question

Question	Answers	Extra information	Mark	AO / Spec. Ref.	ID
05.1	to stop the metal case of the toaster becoming live if a fault occurs		1	AO1.1 6.2.3.2	A
05.2	yellow brown blue		1 1 1	AO1.1 AO1 in isolation 6.2.3.2	G
05.3	 E = 850 ×120 E = 102 000 (J)	an answer of 102 000 (J) scores **2** marks	 1 1	AO2.1 6.2.4.2 6.1.1.4 WS 3.3	E
05.4	elastic potential kinetic		1 1	AO1.1 6.1.1.1	G
05.5	gravitational potential energy = mass × gravitational field strength × height or $E_p = m\ g\ h$	allow gpe allow any correct re-arrangement	1	AO1.1 AO1 in isolation 6.1.1.2	E
05.6	 0.049 = 0.050 × 9.8 × h $h = \frac{0.049}{0.050 \times 9.8}$ h = 0.10 (m)	an answer of 0.10 (m) scores **3** marks	 1 1 1	AO2.1 6.1.1.2 WS 3.3	E
Total			**12**		