

ELECTRICITY IN HOMES 1 MARK SCHEMES

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	0.0046	accept 4.6 mA allow 1 mark for correct substitution and transformation i.e. current = $\frac{230}{50\,000}$ an answer of 4.6 gains 1 mark	1 1
a)ii)	<input checked="" type="checkbox"/> increases overall resistance <input checked="" type="checkbox"/> (in event of a shock) gives a smaller current	accept gives smaller shock do not accept no shock/current	1 1
b)i)	50 (hertz)	ignore units	1
b)ii)	NO has the lowest current at which people cannot let go or YES changing the frequency changes the current by only a small amount	answer and reason needed accept a sensible reason in terms of their answer to (b) (i)	1
c)	a current flows through from the live wire/metal case to the earth wire this current causes the fuse to melt	accept a current flows from live to earth do not accept on its own if the current is too high accept blow for melt	1 1
Total marks			8

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	brown		1
b)	outside/case is plastic / an insulator	accept is double insulated accept non-conductor for plastic do not accept it / hairdryer is plastic	1
c)i)	(1) S1 (2) S1 and S3	and no other both required, either order	1 1
c)ii)	S1 must be ON (for either heater to work) S1 switches the fan on	do not accept reference to 'fan' switch	1 1
d)	1495 watt(s) or W	allow 1 mark for correct substitution, ie 6.5×230 an answer of 1.495 kW gains 3 marks although the unit is an independent mark for full credit the unit and numerical value must be consistent accept joules per second or J/s	2 1
Total marks			

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	hairdryer 13 saw 3 mixer 13	all correct allow 1 mark for 2 correct	2
a)ii)	fuse melts	accept blows/ breaks/ snaps for melts do not accept blows up do not accept fuse gets hot on its	1

		own do not accept does not work on its own	
b)i)	920	allow 1 mark for correct substitution	2
b)ii)	no earth (wire) outside / case may become live or danger of electric shock	cause a fire insufficient	1 1
Total marks			7

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	230 50		1 1
b)i)	has a plastic case or does not have a metal case or plastic is an insulator	accept outside is plastic accept cover / handle/ hair dryer is plastic / non-conductor accept is double insulated	1
b)ii)	copper		1
Total marks			4

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	connect the earth wire (to pin) screw cable grip (across cable)	answers must be in terms of correcting the faults accept tighten the cable grip	1 1
a)ii)	earth (wire)	accept the green and yellow (wire)	1

a)iii)	any two from: <ul style="list-style-type: none"> • fuse gets (very) hot • fuse melts • circuit breaks/ switches off 	accept blows for melts do not accept break / snap fuse / blow up accept stops current flowing	2
b)	any two from: <ul style="list-style-type: none"> • hairdryer is plugged into mains (electricity socket) <ul style="list-style-type: none"> • hairdryer is using 230 V • water conducts electricity • radio is low power / current / pd / voltage • (the current in / p.d. across) hairdryer more likely to give a (fatal) electric shock 	it refers to hairdryer hairdryer works from the mains accept 240 for 230 do not accept water and electricity don't mix accept radio not connected to the mains do not accept radio is waterproof accept the idea of electrocution if hairdryer is wet accept the idea of radio not causing electrocution if wet	2
Total marks			7

QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	D		1
a)ii)	plastic or rubber	accept a specific type of plastic accept electrical insulator	1
b)	460	allow 1 mark for correct substitution ie 2×230	1 1
c)	any two from: <input type="checkbox"/> not all appliances need a 13 A fuse <input type="checkbox"/> can choose the most suitable fuse (for the appliance) <input type="checkbox"/> (in the event of a fault) 13 A fuse may allow too much current to flow through an	idea that 13 A is (much) bigger than required by many appliances do not accept some appliances require more than 13 A do not accept 13 A fuse will blow accept install correct fuse for	2

	appliance or fuse may not melt (before appliance is damaged) ☒ may already have the fuse	the appliance idea of reusing a fuse do not accept cheaper unless explained correctly	
Total marks			6