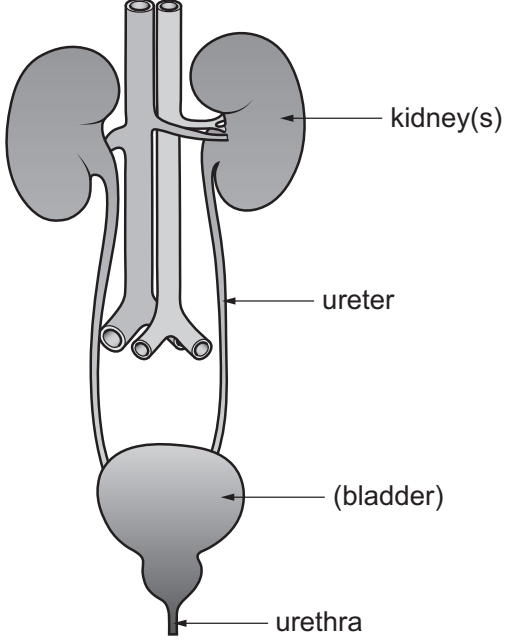


Question	Answer	Marks	Further Information
1(a)		3	each correct answer = 1 mark
1(b)	filters the blood or removes urea from the blood	1	Ignore cleans the blood Accept removes waste products from the blood Accept correct named waste products

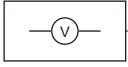
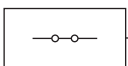
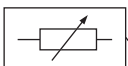
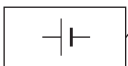
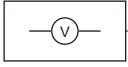
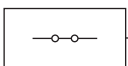
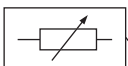
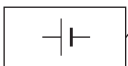
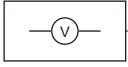
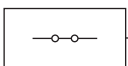
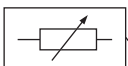
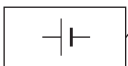
Question	Answer	Marks	Further Information
2(a)(i)	Al	1	more than one answer circled = 0 marks Accept any indication of the correct answer, e.g. ticking or underlining, but circling takes precedence
2(a)(ii)	Cl gains an electron	2	each correct answer = 1 mark Accept (ion) has 1 more electron than the atom
2(a)(iii)	Li and K	1	both needed in any order for the mark
2(b)	attraction between ions (attraction between) oppositely charged ions or positive and negative ions	2	each correct answer = 1 mark Accept electrostatic attraction between ions = 2 marks

Question	Answer	Marks	Further Information
3(a)	heat is the amount of (thermal) energy in an object temperature is how hot an object is or temperature is how cold an object is	2	each correct answer = 1 mark
3(b)(i)	thermometer	1	Accept temperature probe
3(b)(ii)	(idea that) the temperature has increased the most	1	Accept the black container has reached the highest temperature Accept shiny silver container increased the least Accept (except at start) the temperature is always higher (at the same time)
3(b)(iii)	black (container) is a better absorber (of radiation)	1	Accept shiny or silver object is a worse absorber Accept black (container) reflects less radiation Note answer must be comparative
3(c)	Thermal energy travels through the metal container by conduction . The particles in the metal gain thermal energy and vibrate more. As energy passes through the metal the particles collide with each other.	2	all three correct = 2 marks one or two correct = 1 mark Accept to and fro or move back and forth Accept collide for vibrate Accept hit or bump or knock

Question	Answer	Marks	Further Information
4	<p>The Moon formed in another part of the Solar System and was later captured by Earth's gravity. <input type="checkbox"/></p> <p>The Moon was formed at the same time as the Earth was formed. <input type="checkbox"/></p> <p>The Moon formed when Earth hit another smaller planet, the debris collected in an orbit around the Earth. <input checked="" type="checkbox"/></p> <p>The Earth was spinning so fast that some material broke off and began to orbit the Earth. <input type="checkbox"/></p>	1	<p>more than one box ticked = 0 marks</p> <p>Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence</p>

Question	Answer	Marks	Further Information										
5(a)	<table border="1"> <thead> <tr> <th>metal</th> <th>is there a displacement reaction?</th> </tr> </thead> <tbody> <tr> <td>zinc</td> <td>(yes)</td> </tr> <tr> <td>magnesium</td> <td>yes</td> </tr> <tr> <td>copper</td> <td>no</td> </tr> <tr> <td>iron</td> <td>no</td> </tr> </tbody> </table>	metal	is there a displacement reaction?	zinc	(yes)	magnesium	yes	copper	no	iron	no	1	all three correct = 1 mark
metal	is there a displacement reaction?												
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5(b)	$\boxed{\text{zinc}} + \boxed{\text{iron sulfate}} \rightarrow \boxed{\text{zinc sulfate}} + \boxed{\text{iron}}$	2	<p>correct reactants in any order = 1 mark</p> <p>correct products in any order = 1 mark</p>										
5(c)	(idea that) iron sulfate is used up in the first reaction	1											

Question	Answer	Marks	Further Information
6(a)(i)	root <u>hair</u> (cells)	1	
6(a)(ii)	xylem	1	
6(a)(iii)	transpiration	1	Accept diffusion or evaporation
6(b)(i)	9 (g)	1	Accept answer written near question, but answer in table takes precedence
6(b)(ii)	(idea of) to stop water loss (from the surface of the water in the conical flask) or to stop evaporation (of water from the conical flask)	1	Do not accept to stop water loss from the plant shoot or evaporation from the plant shoot
6(b)(iii)	the balance is more precise	1	Accept the results are more precise Do not accept results are more accurate

Question	Answer	Marks	Further Information															
7	<table border="0"> <thead> <tr> <th>symbol</th> <th>name</th> <th>function</th> </tr> </thead> <tbody> <tr> <td></td> <td>voltmeter</td> <td>the source of energy in the circuit</td> </tr> <tr> <td></td> <td>switch</td> <td>to measure the voltage across a component</td> </tr> <tr> <td></td> <td>cell</td> <td>to change the current in a circuit</td> </tr> <tr> <td></td> <td>variable resistor</td> <td>to turn a circuit on or off</td> </tr> </tbody> </table>	symbol	name	function		voltmeter	the source of energy in the circuit		switch	to measure the voltage across a component		cell	to change the current in a circuit		variable resistor	to turn a circuit on or off	3	<p>all six lines correct = 3 marks</p> <p>four or five lines correct = 2 marks</p> <p>two or three lines correct = 1 mark</p> <p>one correct = 0 marks</p> <p>if two lines to (or from) one box and one is incorrect, then both lines are incorrect</p>
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Question	Answer	Marks	Further Information															
8(a)	fertilisation	1																
8(b)	<p>any two from</p> <p>half the sperm has Y (chromosome) or half the sperm has X (chromosome)</p> <p>if the sperm which has a Y chromosome fertilizes the egg the offspring will be male</p> <p>if the sperm which has an X chromosome fertilizes the egg the offspring will be female</p>	2	<p>each correct answer = 1 mark</p> <p>Accept so 50% offspring are male because XY</p> <p>Accept so 50% offspring are female because XX</p>															
8(c)	(idea that) offspring inherit genes from both parents	1	Ignore offspring inherit different chromosomes															

Question	Answer	Marks	Further Information
9(a)	<p>any two from</p> <p>mass extinction (of dinosaurs/animals)</p> <p>climate change or long term cooling of the Earth's temperature</p> <p>tsunami</p> <p>wildfires</p>	2	<p>each correct answer = 1 mark</p> <p>Accept (idea of) increase in temperature near impact</p>
9(b)	<p>any two from</p> <p>all their results for each ball are similar</p> <p>the mean for each ball is similar to their results</p> <p>there are no anomalous results</p>	2	<p>each correct explanation = 1 mark</p>

Question	Answer	Marks	Further Information
10(a)	The rate of this reaction is increased by increasing the concentration or the temperature of the dilute sulfuric acid One other way of increasing the rate of this reaction is to increase the surface area of the magnesium	2	each correct sentence = 1 mark Ignore concentration
10(b)	evaporation	1	Accept crystallisation or heating Do not accept filtration or distillation or sieving

Question	Answer	Marks	Further Information
11(a)	$(\text{resistance}) = \frac{\text{voltage}}{\text{current}}$ or $(\Omega) = \frac{V}{I}$ or $\frac{3.0}{0.025}$ 120 (Ω)	2	correct formula or evidence of correct substitution = 1 mark Accept 120 with or without working = 2 marks Ignore incorrect unit
11(b)	any two from this is a parallel circuit (idea that) current divides at the junction (idea that) current joins up after going through the lamps	2	each correct answer = 1 mark

Question	Answer	Marks	Further Information																																
12(a)	<p>Nebulae are clouds of dust and gas</p> <p>New stars are formed in some nebulae called stellar nurseries</p>	2	<p>each correct sentence = 1 mark</p> <p>Accept dust and gas in either order</p> <p>Accept hydrogen or helium for gas</p>																																
12(b)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 35%;"></th> <th style="width: 15%;"></th> <th style="width: 45%;">star type</th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center; vertical-align: middle;">1</td> <td>star colour is blue or blue to white</td> <td style="text-align: center;">go to 2</td> <td style="background-color: #cccccc;"></td> </tr> <tr> <td>star colour is not blue or blue to white</td> <td style="text-align: center;">go to 3</td> <td style="background-color: #cccccc;"></td> </tr> <tr> <td rowspan="2" style="text-align: center; vertical-align: middle;">2</td> <td>mean mass is 60 times greater than the mass of the Sun</td> <td style="text-align: center;">Lactera</td> <td style="text-align: center;">(O)</td> </tr> <tr> <td>mean mass is 3.2 times greater than the mass of the Sun</td> <td style="text-align: center;">Sirius</td> <td style="text-align: center;">A</td> </tr> <tr> <td rowspan="2" style="text-align: center; vertical-align: middle;">3</td> <td>mean mass is greater than the mass of the Sun</td> <td style="text-align: center;">Capella</td> <td style="text-align: center;">G</td> </tr> <tr> <td>mean mass is less than the mass of the Sun</td> <td style="text-align: center;">go to 4</td> <td style="background-color: #cccccc;"></td> </tr> <tr> <td rowspan="2" style="text-align: center; vertical-align: middle;">4</td> <td>mean radius is about half that of the Sun</td> <td style="text-align: center;">Antares</td> <td style="text-align: center;">M</td> </tr> <tr> <td>mean luminosity is about half that of the Sun</td> <td style="text-align: center;">Arcturus</td> <td style="text-align: center;">K</td> </tr> </tbody> </table>				star type	1	star colour is blue or blue to white	go to 2		star colour is not blue or blue to white	go to 3		2	mean mass is 60 times greater than the mass of the Sun	Lactera	(O)	mean mass is 3.2 times greater than the mass of the Sun	Sirius	A	3	mean mass is greater than the mass of the Sun	Capella	G	mean mass is less than the mass of the Sun	go to 4		4	mean radius is about half that of the Sun	Antares	M	mean luminosity is about half that of the Sun	Arcturus	K	2	<p>all four correct = 2 marks</p> <p>two or three correct = 1 mark</p> <p>one correct = 0 marks</p>
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