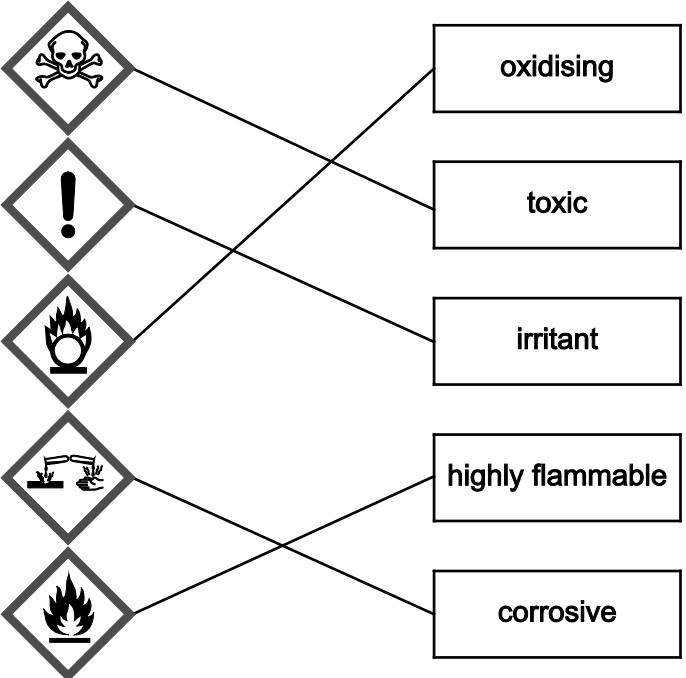


Question	Answer	Marks	Further Information
1(a)	<p>A – cell membrane</p> <p>B – cytoplasm</p> <p>C – nucleus</p>	3	each correct answer = 1 mark
1(b)	<p>any two adaptations and linked explanations from</p> <p>large surface area or large surface area : volume ratio = 1 mark which increases the uptake of oxygen = 1 mark</p> <p>no nucleus = 1 mark so more space to carry oxygen = 1 mark</p> <p>haemoglobin = 1 mark to transport oxygen = 1 mark</p> <p>flexible (membrane) = 1 mark so it can fit through (the smallest) blood vessels = 1 mark</p>	4	<p>adaptation = 1 mark</p> <p>linked explanation = 1 mark</p> <p>Accept adaptations and explanations anywhere in the answer</p> <p>Accept biconcave / flat disc shape = 1 mark so large surface area for diffusion of oxygen = 1 mark</p>

Question	Answer	Marks	Further Information
2	<p>The butterflies breed together and all their offspring are female. <input type="checkbox"/></p> <p>The butterflies breed together but do not produce offspring. <input type="checkbox"/></p> <p>The butterflies breed together and produce fertile offspring. <input checked="" type="checkbox"/></p> <p>The butterflies breed together and produce offspring that are not fertile. <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
3	<p>acidic B E</p> <p>neutral D</p> <p>alkaline A C</p>	2	<p>all five correct = 2 marks</p> <p>two, three or four correct = 1 mark</p> <p>one correct = 0 marks</p>

Question	Answer	Marks	Further Information
4		4	all five correct = 4 marks three or four correct = 3 marks two correct = 2 marks one correct = 1 mark if two lines from one hazard symbol and one is incorrect = 0 marks for that hazard symbol

Question	Answer	Marks	Further Information																																									
5(a)	<table border="1"> <thead> <tr> <th rowspan="2">description</th> <th colspan="5">particle model</th> </tr> <tr> <th>V</th> <th>W</th> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>one compound</td> <td></td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>one element</td> <td></td> <td>(✓)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>mixture of two elements</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>a mixture of a compound and an element</td> <td></td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>mixture of two compounds</td> <td></td> <td></td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	description	particle model					V	W	X	Y	Z	one compound					✓	one element		(✓)				mixture of two elements	✓					a mixture of a compound and an element			✓			mixture of two compounds				✓		4	<p>each correct tick = 1 mark</p> <p>more than one tick for a substance = 0 marks for that substance</p> <p>Accept any indication of the correct answer but ticking takes precedence</p>
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5(b)	<p>test – (bubble into) limewater / calcium hydroxide solution</p> <p>positive result – goes milky / white precipitate / white solid (formed)</p>	2	<p>correct test = 1 mark</p> <p>correct positive result = 1 mark</p> <p>Accept goes white / cloudy / misty</p> <p>Ignore goes colourless or clear (after it goes milky)</p> <p>Accept</p> <p>Test – (bubble into) bicarbonate indicator</p> <p>positive result – (red) to yellow</p> <p>Note the positive result mark is independent of the test</p>																																									

Question	Answer	Marks	Further Information
5(c)	test – (use a) lighted splint positive result – (squeaky) pop (noise)	2	Ignore the burning splint goes out Ignore use of a glowing splint Do not accept splint relights Note the positive result mark is independent of the test

Question	Answer	Marks	Further Information
6(a)	any two from type of earthworm / size of earthworms / age of earthworms / mass of leaves / size of leaves / number of leaves / type of leaves / size of container / temperature / moisture / pH / time	2	each correct answer = 1 mark Ignore light
6(b)	number of earthworms	1	
6(c)	mass of (dead) leaves / rate of decay (of dead leaves)	1	

Question	Answer	Marks	Further Information
7(a)(i)	ammeter	1	Accept ameter / ampmeter
7(a)(ii)	amps / A	1	Accept amperes / ampheres Do not accept 'a'
7(b)	the current will stay the same there is only one pathway for the electrons	2	each correct answer = 1 mark Accept there is the same number of electrons flowing
7(c)	decreases / less current and it is more difficult for the electrons to flow	1	Accept there is greater resistance

Question	Answer	Marks	Further Information
8(a)	<p>any two from</p> <p>(they can) move reproduce sense grow respire excrete eat food</p>	2	<p>each correct answer = 1 mark</p> <p>Accept movement reproduction sensitivity / irritability growth respiration excretion nutrition</p>
8(b)	<p>(Lily) a virus can reproduce / replicate</p> <p>(Mia) a virus cannot move / cannot grow / cannot respire / cannot eat food / cannot sense / cannot excrete</p>	2	<p>each correct answer = 1 mark</p> <p>Accept a virus can only reproduce inside a living cell</p>

Question	Answer	Marks	Further Information
9(a)	sound / wave (from clapping) reflected (from the school)	2	each correct answer = 1 mark Accept sound wave bounces back (from the school) = 2 marks
9(b)(i)	correct plotting of at least 5 points $\pm \frac{1}{2}$ small square suitable scale on x-axis label of x-axis	3	each correct answer = 1 mark must occupy at least half of the x-axis and be linear but does not need to include 0 distance (between Carlos and the school) in metres
9(b)(ii)	425 m	1	Ignore 3.5 s Note if answer line blank check results table
9(b)(iii)	straight line of best fit	1	Accept ecf from (i) and (ii) Ignore line extending beyond the plotted range
9(b)(iv)	As distance (from the school) increases the time (taken to hear the echo) increases	1	Accept positive correlation between distance and time / distance and time are (directly) proportional
9(c)(i)	Answer from candidate's graph $\pm \frac{1}{2}$ small square	1	
9(c)(ii)	half of the value in (c)(i) to at least one decimal place	1	

Question	Answer	Marks	Further Information
10(a)	D, C, B, A	1	Accept 4:56 pm, 4:39 am, 4:25 pm, 4:05 am Accept 5.2 m, 5 m, 4.4 m, 4 m
10(b)	(no) the low tides are more than 12 hours apart/if they were 12 hours apart they would happen at the same time each day/calculation showing they are more than 12 hours apart e.g. time between first and second low tide is 12 hr and 15 min	1	Note if answer is yes = 0 marks for the question Note to be awarded a mark there must be a correct explanation
10(c)	3.6 m – 4.0 m	1	
10(d)	any two from Moon's gravity causes a tidal force idea of the water bulging out on the side closest to and farthest from the Moon	2	each correct answer = 1 mark Accept Sun's gravity