



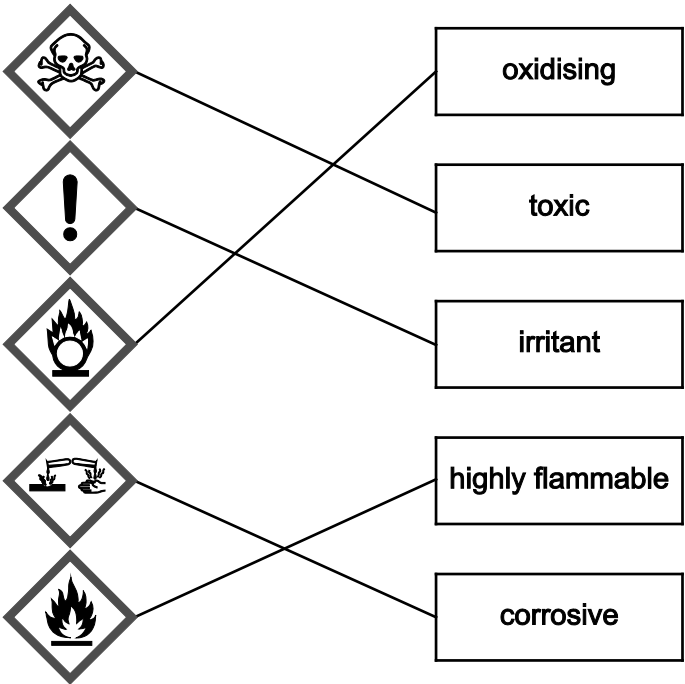
**Cambridge Assessment  
International Education**

**Cambridge Lower Secondary Sample Test**  
**For use with curriculum published in**  
**September 2020**

**Science Paper 1**  
**Mark Scheme**  
Stage 7

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

Question	Answer	Marks	Further Information
2	<div>The butterflies breed together and <b>all</b> their offspring are female. <input type="checkbox"/></div> <div>The butterflies breed together but do <b>not</b> produce offspring. <input type="checkbox"/></div> <div>The butterflies breed together and produce fertile offspring. <input checked="" type="checkbox"/></div> <div>The butterflies breed together and produce offspring that are <b>not</b> fertile. <input type="checkbox"/></div>	1	<p>more than one box ticked = 0 marks</p> <p><b>Accept</b> any indication of the correct answer, e.g. circling or underlining but ticking takes precedence</p>
Question	Answer	Marks	Further Information
3	<div>acidic <b>B E</b></div> <div>neutral <b>D</b></div> <div>alkaline <b>A C</b></div>	2	<p><b>all</b> five correct = 2 marks</p> <p><b>two, three</b> or <b>four</b> correct = 1 mark</p> <p><b>one</b> correct = 0 marks</p>

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

Question	Answer	Marks	Further Information																																									
5(a)	<table><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><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></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><b>Accept</b> 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><b>correct</b> test = 1 mark</p> <p><b>correct</b> positive result = 1 mark</p> <p><b>Accept</b> goes white / cloudy / misty</p> <p><b>Ignore</b> goes colourless or clear (after it goes milky)</p> <p><b>Accept</b></p> <p>Test – (bubble into) bicarbonate indicator</p> <p>positive result – (red) to yellow</p> <p><b>Note</b> 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	<b>Ignore</b> the burning splint goes out  <b>Ignore</b> use of a glowing splint  <b>Do not accept</b> splint relights  <b>Note</b> the positive result mark is independent of the test

Question	Answer	Marks	Further Information
6(a)	<b>any two from</b>  <b>type of</b> earthworm / <b>size of</b> earthworms / <b>age of</b> earthworms / <b>mass of</b> leaves / <b>size of</b> leaves / <b>number of</b> leaves / <b>type of</b> leaves / size of container / temperature / moisture / pH / time	2	each correct answer = 1 mark  <b>Ignore</b> light
6(b)	<b>number of</b> 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	<b>Accept</b> ameter / ampmeter
7(a)(ii)	amps / A	1	<b>Accept</b> amperes / ampheres <b>Do not accept</b> 'a'
7(b)	the current will stay the same  there is only one pathway for the electrons	2	each correct answer = 1 mark  <b>Accept</b> there is the same number of electrons flowing
7(c)	decreases / less current  <b>and</b>  it is more difficult for the electrons to flow	1	    <b>Accept</b> there is greater resistance

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



Question	Answer	Marks	Further Information
9(a)	sound / wave (from clapping)  reflected (from the school)	2	each correct answer = 1 mark  <b>Accept</b> 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	<b>Ignore</b> 3.5 s <b>Note</b> if answer line blank check results table
9(b)(iii)	straight line of best fit	1	<b>Accept</b> ecf from (i) and (ii)  <b>Ignore</b> line extending beyond the plotted range
9(b)(iv)	As distance (from the school) increases the time (taken to hear the echo) increases	1	<b>Accept</b> 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)	<b>D, C, B, A</b>	<b>1</b>	<b>Accept</b> 4:56 pm, 4:39 am, 4:25 pm, 4:05 am <b>Accept</b> 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	<b>1</b>	<b>Note</b> if answer is yes = 0 marks for the question  <b>Note</b> to be awarded a mark there must be a correct explanation
10(c)	3.6 m – 4.0 m	<b>1</b>	
10(d)	<b>any two from</b>  Moon's gravity  causes a tidal force  idea of the water bulging out on the side closest to and farthest from the Moon	<b>2</b>	each correct answer = 1 mark  <b>Accept</b> Sun's gravity