Cambridge Assessment International Education

Cambridge Lower Secondary Sample Test

For use with curriculum published in September 2020

Science Paper 1

Mark Scheme

Stage 7

General guidelines on marking

Many descriptive answers can be expressed in a variety of ways. Professional judgement can be used in these cases, providing it matches the marking points and further information in the mark scheme.

Answers may have words spelt incorrectly. Credit is normally given for phonetically correct answers, unless the word has a scientifically different meaning. For example, where the answer should be antennae, credit will be given for antena but not for anthen (too close to anther).

Only the science is being assessed, so answers do not need to be grammatically correct.

Significant figures will be indicated in the question or in the mark scheme.

Unless specified all marking points are independent.

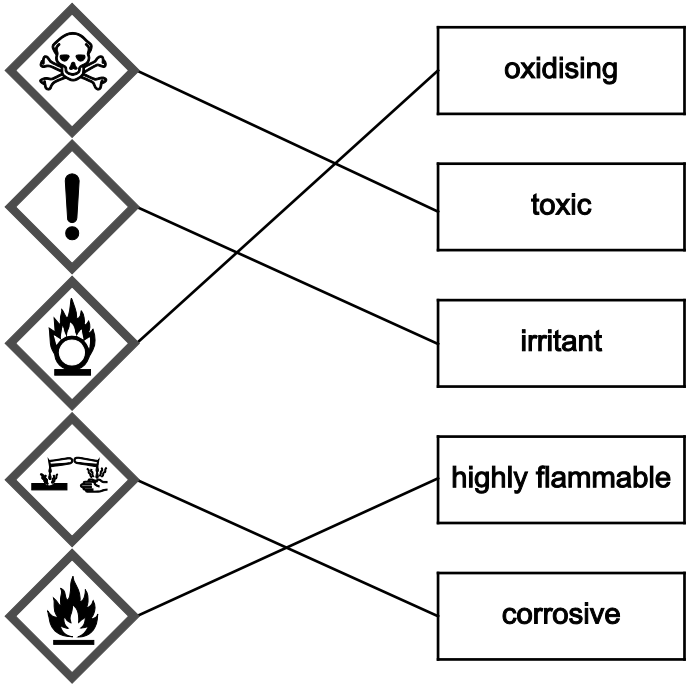
Annotations and abbreviations

/ OR	alternate responses for the same marking point
( ) brackets	the words or units in brackets do not need to be stated, for example, (recycles or releases or provides) minerals = minerals scores the mark
underline	exact word is required
Accept	an acceptable response
Do not accept	indicates an incorrect response that would contradict another otherwise correct alternative
Ignore	indicates an irrelevant answer that is not creditworthy. Full marks can still be achieved even with answers that are ignored.
Note	provides extra information when necessary
ecf	error carried forward; marks are awarded if an incorrect response has been carried forward from earlier working provided the subsequent working is correct
ora	or reverse argument; for example, as mass increases, volume increases could be written as mass decreases, volume decreases

Question	Answer	Marks	Further Information
1(a)	**A** – cell membrane **B** – cytoplasm **C** – nucleus	**3**	each correct answer = 1 mark
1(b)	**any two adaptations and linked explanations from** large surface area or large surface area : volume ratio = 1 mark which increases the uptake of oxygen = 1 mark no nucleus = 1 mark so **more** 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	**4**	adaptation = 1 mark linked explanation = 1 mark **Accept** adaptations and explanations anywhere in the answer **Accept** biconcave / flat disc shape = 1 mark so large surface area for diffusion of oxygen = 1 mark

Question	Answer	Marks	Further Information
2	The butterflies breed together and **all** their offspring are female. ☐ The butterflies breed together but do **not** produce offspring. ☐ The butterflies breed together and produce fertile offspring. ✓ The butterflies breed together and produce offspring that are **not** fertile. ☐	**1**	more than one box ticked = 0 marks **Accept** any indication of the correct answer, e.g. circling or underlining but ticking takes precedence

Question	Answer	Marks	Further Information
3	acidic **B E** neutral **D** alkaline **A C**	**2**	**all** five correct = 2 marks **two**, **three** or **four** correct = 1 mark **one** correct = 0 marks

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

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Further Information</th></tr>
<tr><td>5(a)</td><td>
<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>
</td><td>4</td><td>each correct tick = 1 mark

more than one tick for a substance = 0 marks for that substance

Accept any indication of the correct answer but ticking takes precedence</td></tr>
<tr><td>5(b)</td><td>test – (bubble into) limewater / calcium hydroxide solution

positive result – goes milky / white precipitate / white solid (formed)</td><td>2</td><td>correct test = 1 mark

correct positive result = 1 mark

Accept goes white / cloudy / misty

Ignore goes colourless or clear (after it goes milky)

Accept

Test – (bubble into) bicarbonate indicator

positive result – (red) to yellow

Note the positive result mark is independent of the test</td></tr>
</table>

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)	**any two from** (they can) move reproduce sense grow respire excrete eat food	**2**	each correct answer = 1 mark **Accept** 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	**2**	each correct answer = 1 mark **Accept** a virus can **only** reproduce inside a **living cell**

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 ±½ 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 ± $\frac{1}{2}$ 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

BLANK PAGE