Cambridge Lower Secondary Checkpoint

SCIENCE **1113/02**

Paper 2 **April 2020**

MARK SCHEME

Maximum Mark: 50

Published

This mark scheme is published as an aid to teachers and learners, to indicate the requirements of the examination. However, we have not been able to adjust it to reflect the full range of answers that would have been seen as a part of the normal moderation and marking process, and it does not necessarily contain all the possible alternatives that might have arisen.
Cambridge will not enter into discussions about the mark scheme.

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)	**C** **A** (E) **D** **B**	2	**C** and **A** correct = 1 mark **D** and **B** correct = 1 mark
1(b)	good tasting milk / disease free / healthy	1	**Ignore** lots of milk **Accept** size / meat production / docile / good temperament
1(c)	Copernicus **Darwin** Galileo Pasteur Rutherford	1	

Question	Answer	Marks	Further Information
2(a)	increase the temperature of nitric acid increase the concentration of nitric acid more crowded particles so more collisions more surface area so more collisions particles move faster so more collisions has bigger particles so that there are more collisions	**2**	each correct link = 1 mark two lines from same way = 0 marks
2(b)	**any two from** (idea that) larger pieces have smaller (surface) area / ora reaction occurs at the surface so fewer collisions / ora	**2**	**Note** assume answer refers to the reactant as a lump unless otherwise specified **Accept** larger pieces have less surface / fewer particles exposed (on surface) **Accept** particles collide less often / less frequent collisions / less chance of a collision

Question	Answer	Marks	Further Information
3(a)	86 ± 1 (m)	**1**	
3(b)	4.7± 0.2 (s)	**1**	
3(c)(i)	(average speed =) $\frac{\text{distance}}{\text{time}}$	**1**	**Accept** d / t or s / t **Ignore** m / s
3(c)(ii)	$\frac{110}{18}$ 6 or 6.1 (m / s)	**2**	correct answer = 2 marks correct working only = 1 mark **Accept** 6.111111 with any number of decimal places **Accept** $6\frac{1}{9}$

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Further Information</th></tr>
<tr><td>4(a)</td><td>
<table>
<tr><td>large flat feet</td><td>stop sinking into sand</td></tr>
<tr><td>thick eyelashes</td><td>stop sand getting into eyes</td></tr>
<tr><td>does not produce sweat</td><td>stop too much water loss or stop dehydration</td></tr>
</table>
</td><td>3</td><td>each correct line = 1 mark</td></tr>
<tr><td>4(b)</td><td>any two from
thick fur
lots of fat
small ears
short legs
small surface area to volume ratio
greasy coat
large feet</td><td>2</td><td>each correct answer = 1 mark
Accept other valid answers</td></tr>
</table>

Question	Answer	Marks	Further Information
5(a)	filter it / filtration	**1**	
5(b)	evaporate the solution / crystallisation	**1**	**Accept** heat or boil the solution
5(c)	magnesium + sulfuric acid → hydrogen + magnesium sulfate	**2**	reactants (any order) = 1 mark products (any order) = 1 mark **Accept** correct formulae but words take precedence **Accept** mix of words and formulae **note** magnesium is Mg, sulfuric acid is H_2SO_4, hydrogen is H_2 and magnesium sulfate is $MgSO_4$

Question	Answer	Marks	Further Information
6(a)	decreases / gets lower	**1**	
6(b)	increases / gets higher	**1**	
6(c)	increase the temperature	**1**	**Accept** heat (it)

Question	Answer	Marks	Further Information
7(a)	Water and minerals enter plants through the **root hair** cells. The water and mineral solution is transported in the stems through **xylem** cells. The solution reaches the **palisade mesophyll** cells in the leaves and is used for growth.	3	each correctly sentence = 1 mark
7(b)	**any two from** carbon dioxide light chlorophyll enzymes	2	each correct answer = 1 mark

Question	Answer	Marks	Further Information
8(a)	metamorphic	1	**Accept** named metamorphic rock
8(b)	atmosphere inner core **mantle** outer core	1	more than one answer = 0 marks
8(c)	fossils	1	
8(d)	clay **loam** sandy silt	1	more than one answer = 0 marks

Question	Answer	Marks	Further Information
9	**change** angle **y** **control** **any two from** loudness of ticking clock length of tubes type of material / type of board distance of clock from tube distance of sound meter from tube other sounds in the room **measure** **any one from** loudness of sound / sound level angle **y** (and **x**)	4	each correct answer = 1 mark **Accept** position of board **Ignore** distance

Question	Answer	Marks	Further Information
10(a)	nerve cell has extensions/nerve cell has connections with other cells/nerve cell has larger surface area	**1**	**Accept** nerve cell is not round **Ignore** have different shapes
10(b)	function – to carry oxygen adaptation – (idea of) large surface area/rounded shape/flexible/ has haemoglobin/no nucleus	**2**	function = 1 mark adaptation = 1 mark **Note** accept mark points wherever they are written

Question	Answer	Marks	Further Information
11(a)	2.4 (cm^3)	**1**	
11(b)(i)	°C	**1**	**note** award unit mark if shown in table but answer line takes precedence
11(b)(ii)	change in temperature (+3) **–3** **+4**	**1**	correct numerical value **including** correct sign = 1 mark
11(b)(iii)	type of reaction **exothermic** **endothermic** **exothermic**	**1**	**all** correct for the mark

Question	Answer	Marks	Further Information
12(a)	**any two from** rub the objects together charges move / electrons move from the cloth electrons move to the rod	2	each correct answer = 1 mark charges / electrons moves must be mentioned for the second mark
12(b)	Opposite charges **attract**. Like charges **repel**.	1	both correct = 1 mark
12(c)	(**A** is positive.) **B** is **positive**. **C** is **negative**. **D** is **negative**.	1	**all three** correct = 1 mark

Question	Answer	Marks	Further Information
13	**light** energy = 10 J	1	