

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.

This document has **14** pages. Blank pages are indicated.

Question	Answer	Marks	Further Information					
1(a)	<table><tr><td>C</td><td>A</td><td>(E)</td><td>D</td><td>B</td></tr></table>	C	A	(E)	D	B	2	C and A correct = 1 mark D and B correct = 1 mark
C	A	(E)	D	B				
1(b)	good tasting milk / disease free / healthy	1	Ignore lots of milk Accept size / meat production / docile / good temperament					
1(c)	<div>Copernicus</div> <div>Darwin</div> <div>Galileo</div> <div>Pasteur</div> <div>Rutherford</div>	1						

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

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 $6\frac{1}{9}$

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

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)	<div style="display: flex; align-items: center; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">magnesium</div> <div>+</div> <div style="border: 1px solid black; padding: 2px 10px;">sulfuric acid</div> <div>→</div> <div style="border: 1px solid black; padding: 2px 10px;">hydrogen</div> <div>+</div> <div style="border: 1px solid black; padding: 2px 10px;">magnesium sulfate</div> </div>	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 ₂ SO 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)	<p>Water and minerals enter plants through the root hair cells.</p> <p>The water and mineral solution is transported in the stems through xylem cells.</p> <p>The solution reaches the palisade mesophyll cells in the leaves and is used for growth.</p>	3	each correctly sentence = 1 mark
7(b)	<p>any two from</p> <p>carbon dioxide</p> <p>light</p> <p>chlorophyll</p> <p>enzymes</p>	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	<p>change angle y</p> <p>control any two from loudness of ticking clock</p> <p>length of tubes</p> <p>type of material / type of board</p> <p>distance of clock from tube</p> <p>distance of sound meter from tube</p> <p>other sounds in the room</p> <p>measure any one from loudness of sound / sound level</p> <p>angle y (and x)</p>	4	<p>each correct answer = 1 mark</p> <p>Accept position of board</p> <p>Ignore distance</p>

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)	<table><tr><td>change in temperature</td></tr><tr><td>(+3)</td></tr><tr><td>−3</td></tr><tr><td>+4</td></tr></table>	change in temperature	(+3)	−3	+4	1	correct numerical value including correct sign = 1 mark
change in temperature							
(+3)							
−3							
+4							
11(b)(iii)	<table><tr><td>type of reaction</td></tr><tr><td>exothermic</td></tr><tr><td>endothermic</td></tr><tr><td>exothermic</td></tr></table>	type of reaction	exothermic	endothermic	exothermic	1	all correct for the mark
type of reaction							
exothermic							
endothermic							
exothermic							

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	<div style="border: 1px solid black; padding: 2px; display: inline-block;">light energy = 10 J</div>	1	