



# Cambridge Lower Secondary Checkpoint

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**SCIENCE**

**1113/02**

Paper 2

FINAL MARK SCHEME

October 2021

Maximum Mark: 50

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## Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Markers were instructed to award marks. It does not indicate the details of the discussions that took place at the Markers' meeting before marking began, which would have considered the acceptability of alternative answers.

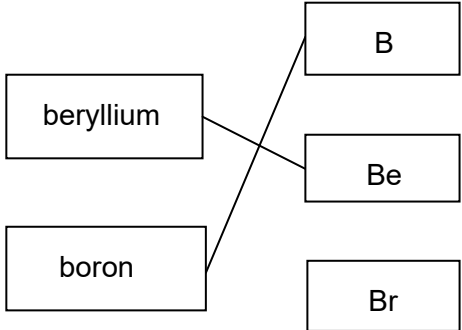
Mark schemes should be read in conjunction with the question paper and the End of Series Report. Cambridge will not enter into discussions about these mark schemes.

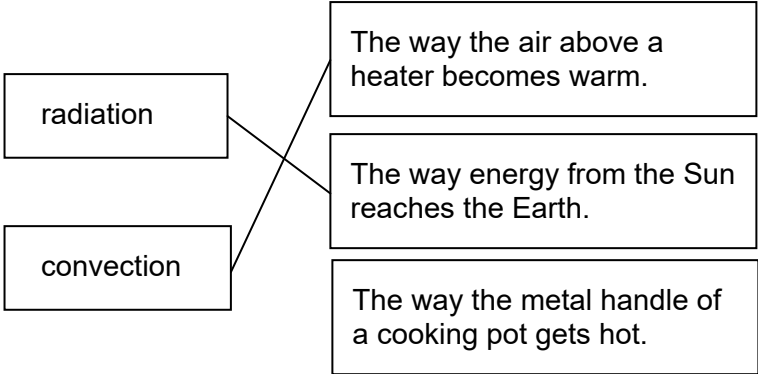
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This document consists of **15** printed pages.




Question	Answer	Marks	Further Information																
1(a)	<table border="1"> <tr> <th>part of plant</th><th>cell</th><th>tissue</th><th>organ</th></tr> <tr> <td>leaf</td><td></td><td></td><td>✓</td></tr> <tr> <td>palisade mesophyll</td><td></td><td>✓</td><td></td></tr> <tr> <td>root hair</td><td>✓</td><td></td><td></td></tr> </table>	part of plant	cell	tissue	organ	leaf			✓	palisade mesophyll		✓		root hair	✓			2	<p><b>all three</b> parts correct = 2 marks</p> <p><b>two</b> parts correct = 1 mark</p> <p><b>one</b> part correct = 0 marks</p> <p><b>two</b> ticks in a row is incorrect except <b>accept</b> palisade mesophyll as a cell and a tissue</p>
part of plant	cell	tissue	organ																
leaf			✓																
palisade mesophyll		✓																	
root hair	✓																		
1(b)	<table border="1"> <tr> <th>part of animal</th><th>cell</th><th>tissue</th><th>organ</th></tr> <tr> <td>sperm</td><td>✓</td><td></td><td></td></tr> <tr> <td>stomach</td><td></td><td></td><td>✓</td></tr> <tr> <td>heart</td><td></td><td></td><td>✓</td></tr> </table>	part of animal	cell	tissue	organ	sperm	✓			stomach			✓	heart			✓	2	<p><b>all three</b> parts correct = 2 marks</p> <p><b>two</b> parts correct = 1 mark</p> <p><b>one</b> part correct = 0 marks</p> <p><b>two</b> ticks in a row is incorrect</p>
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Question	Answer	Marks	Further Information
2(a)		1	<b>both</b> correct for the mark  <b>Note</b> two lines from or to any box = 0 marks
2(b)	sodium	1	<b>Accept</b> natrium  <b>Ignore</b> Na
2(c)	carbonate    hydroxide <b>oxide</b> sulfate	1	more than <b>one</b> answer circled = 0 marks

Question	Answer	Marks	Further Information
3(a)	 <p>The way the air above a heater becomes warm.</p> <p>The way energy from the Sun reaches the Earth.</p> <p>The way the metal handle of a cooking pot gets hot.</p>	1	<p><b>both</b> correct for the mark</p> <p><b>Note</b> two lines from or to any box = 0 marks</p>
3(b)	<p><b>any three from</b></p> <p>conduction</p> <p>particles vibrate</p> <p>(as temperature increases) particles vibrate more / vibrate faster</p> <p>vibration passes from one particle to another / energy passes from one particle to another</p>	3	<p>each correct answer = 1 mark</p> <p><b>Accept</b> copper is a conductor</p> <p><b>Accept</b> particles move to and fro for vibrate <b>or</b> particles gain <b>kinetic</b> energy</p> <p><b>Note</b> particles vibrate faster / vibrate more = 2 marks</p> <p><b>Accept</b> heat passes from one particle to another</p> <p><b>Accept</b> higher level answer, e.g. by electrons = 1 mark which move = 1 mark</p>

Question	Answer	Marks	Further Information
4(a)(i)	concentration / strength (of weed killer)	<b>1</b>	<b>Accept</b> amount of weed killer <b>or</b> amount of solution
4(a)(ii)	<b>any two from</b> <b>number</b> of weeds <b>or</b> seedlings species of weed <b>or</b> seedlings age of weed or seedlings <b>or</b> size of weed or seedlings volume of weed killer length of exposure to the weed killer type of weed killer used	<b>2</b>	each correct answer = 1 mark  <b>Accept</b> type of weed  <b>Accept</b> time  <b>Accept</b> temperature as an extra marking point <b>Accept</b> humidity as an extra marking point <b>Accept</b> light as an extra marking point <b>Accept</b> type of cotton wool <b>or</b> amount of cotton wool as an extra marking point

Question	Answer	Marks	Further Information
4(a)(iii)	<b>any two from</b> <b>number</b> of weeds <b>or</b> seedlings used in each dish (at the start)  <b>number</b> of weeds or seedlings killed <b>or number</b> of weeds or seedlings surviving  <b>concentration</b> of weed killer  <b>volume</b> of weed killer  time <b>or</b> length of exposure (to weed killer)	<b>2</b>	each correct answer = 1 mark  <b>Accept</b> size of weeds
4(b)	<b>any one from</b> (weed killer) may be toxic (weed killer) may be corrosive (weed killer) may be an irritant (weed killer) may be harmful (weed killer) may be poisonous	<b>1</b>	<b>Accept</b> weed killer may burn skin <b>or</b> may kill you <b>or</b> may harm you <b>or</b> give an allergic reaction  <b>Ignore</b> dangerous  <b>Ignore</b> so weed killer does not affect skin  <b>Ignore</b> damage skin must specify the type of damage

Question	Answer	Marks	Further Information
5(a)	on the poles  this is where the magnetic field is strongest	2	each correct answer = 1 mark  <b>Accept</b> south pole <b>or</b> north pole <b>or</b> on the ends  <b>Note</b> this mark is independent of the poles
5(b)	<b>X</b> written between the poles <b>or</b> on the poles	1	<b>Accept</b> the centre of the cross within the shaded region    <b>Note</b> if two crosses drawn both must be correct
5(c)	<b>C</b>	1	

Question	Answer	Marks	Further Information
6(a)	Universal Indicator <b>or</b> pH meter	<b>1</b>	<b>Accept</b> pH paper <b>or</b> pH indicator <b>Do not accept</b> use litmus
6(b)	<p>wear eye protection <b>or</b> goggles (because) liquids are corrosive <b>or</b> irritants <b>or</b> harmful</p> <p><b>or</b></p> <p>wear gloves <b>or</b> avoid getting liquids on your skin (because) liquids are corrosive <b>or</b> toxic <b>or</b> irritants <b>or</b> harmful</p> <p><b>or</b></p> <p>wear a lab coat <b>or</b> protective clothing <b>or</b> avoid getting liquids on clothes (because) liquids are corrosive <b>or</b> toxic <b>or</b> irritants <b>or</b> harmful</p>	<b>2</b>	<p>safety precaution = 1 mark</p> <p>linked explanation = 1 mark</p> <p><b>Accept</b> burns instead of corrosive <b>or</b> give an allergic reaction instead of irritation</p> <p><b>Note</b> unqualified damage to the skin is <b>not</b> sufficient</p>



Question	Answer	Marks	Further Information
7(a)	selective breeding <b>or</b> artificial selection	1	<b>Ignore</b> cross breeding
7(b)	(male) <b>C</b>  <b>and</b>  (idea that) it is the variety with most wool	1	<b>both</b> correct for the mark

Question	Answer	Marks	Further Information
8(a)	(particle <b>X</b> ) electron  (particle <b>Y</b> ) neutron	2	each correct answer = 1 mark  <b>Accept</b> both names reversed for 1 mark
8(b)	Copernicus Galileo Newton Pasteur <b>Rutherford</b>	1	more than <b>one</b> answer circled = 0 marks
8(c)(i)	Carbon is found in Period <b>2</b> of the Periodic Table.	1	<b>Accept</b> two / second / 2 <sup>nd</sup>
8(c)(ii)	Ar Al B Li <b>Si</b>	1	more than <b>one</b> answer circled = 0 marks

Question	Answer	Marks	Further Information
9(a)	<b>C</b>	<b>1</b>	
9(b)	<b>B</b>	<b>1</b>	
9(c)	<b>D</b>	<b>1</b>	
9(d)	<b>C and D</b>	<b>1</b>	<b>both</b> correct any order for the mark

Question	Answer	Marks	Further Information
10(a)	<p>exhaled air has less oxygen <b>or</b> air breathed out has less oxygen</p> <p>exhaled air has more carbon dioxide <b>or</b> air breathed out has more carbon dioxide</p>	<b>2</b>	<p>each correct answer = 1 mark</p> <p><b>Accept ora</b> / 4% difference</p> <p><b>Accept ora</b> / 3.96% difference</p>
10(b)	<p><b>any two from</b></p> <p>oxygen goes into the blood <b>or</b> oxygen leaves the air</p> <p>carbon dioxide leaves the blood <b>or</b> carbon dioxide enters the air</p> <p>(by) diffusion</p> <p>(and) gaseous exchange</p>	<b>2</b>	<p>each correct answer = 1 mark</p> <p><b>Accept</b> deoxygenated blood becomes oxygenated <b>or</b> oxygen enters capillaries</p> <p><b>Accept</b> carbon dioxide leaves capillaries</p>
10(c)	<p><b>any two from</b></p> <p>trachea <b>or</b> windpipe</p> <p>bronchus <b>or</b> bronchi</p> <p>bronchiole</p>	<b>1</b>	<p><b>both</b> correct for the mark</p> <p><b>Accept</b> mouth, larynx <b>or</b> voice box, pharynx as extra parts</p> <p><b>Ignore</b> lungs / nostril / throat</p>

Question	Answer	Marks	Further Information
11(a)	reacts rapidly with acid <b>and</b> slowly with water <b>or</b> more bubbles with acid than water	1	<b>Accept</b> reacts vigorously with acid but not with water  <b>Note</b> faster with acid is in the question so do not credit if written  <b>Note</b> needs a comment about reaction with acid <b>and</b> the reaction with water
11(b)	zinc <b>or</b> iron <b>or</b> lead <b>or</b> tin	1	<b>Accept</b> correct symbol but name takes precedence, e.g. Zn/Fe/Pb/Sn
11(c)	(colourless gas) hydrogen  (alkaline solution) potassium hydroxide	2	each correct answer = 1 mark

Question	Answer			Marks	Further Information
12				2	<b>all three</b> correct = 2 marks  <b>one</b> or <b>two</b> correct = 1 mark  <b>Ignore</b> pink for red  <b>Accept</b> light or dark preceding the colour  <b>Accept</b> no light <b>or</b> no colour for black
	colour of light	colour of object	colour the object appears		
	white	red	red		
	green	green	green		
	blue	red	black		

Question	Answer	Marks	Further Information
13(a)	dispersion <b>or</b> dispersal	<b>1</b>	<b>Ignore</b> refraction
13(b)	prism	<b>1</b>	<b>Accept</b> any type of prism

Question	Answer	Marks	Further Information
14	<div>coal <input type="checkbox"/></div> <div>hydroelectric <input checked="" type="checkbox"/></div> <div>oil <input type="checkbox"/></div> <div>natural gas <input type="checkbox"/></div> <div>solar <input checked="" type="checkbox"/></div>	<b>2</b>	each correct tick = 1 mark <b>three</b> ticks and <b>two</b> correct = 1 mark <b>three</b> ticks and <b>one</b> correct = 0 marks <b>more</b> than <b>three</b> ticks = 0 marks