

Cambridge Lower Secondary Checkpoint

SCIENCE**1113/01**

Paper 1

April 2022

MARK SCHEME

Maximum Mark: 50

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 a 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.

This document has **18** pages. Any blank pages are indicated.

Question	Answer	Marks	Further Information
1(a)	stem	1	Accept rhizome or stalk Ignore shoot Do not accept xylem or phloem or root or leaf etc.
(b)	leaves	1	Accept foliage or stem or chloroplast Do not accept root or flower
(c)	anchorage or absorb water or absorb minerals or absorb salts or absorb ions	1	Accept food storage or water storage Accept absorbs nutrients Ignore helps plant to stand or transport of water or transport of minerals or supports the plant Do not accept make their own food
(d)	(idea that flowers) contains reproductive organs or contains sex organs or produce seeds	1	Accept for reproduction or for pollination or for propagation or pollen dispersal or fertilisation Accept to produce fruits Ignore just to attract insects but Accept to attract insects for pollination

Question	Answer	Marks	Further Information
2(a)	He or Ne or Ar	1	Accept helium or neon or argon, but symbol takes precedence
(b)	F	1	Accept fluorine, but symbol takes precedence
(c)	Mg	1	Accept magnesium, but symbol takes precedence
(d)	Dalton Darwin Galileo Rutherford	1	more than one answer circled = 0 marks

Question	Answer	Marks	Further Information
3(a)	<p>thick fur (to keep warm)</p> <p>large ears or long ears (to detect prey)</p> <p>large eyes or sensitive eyes</p>	3	<p>each correct answer = 1 mark</p> <p>Accept thick coat or thick hair or long fur</p> <p>Ignore sensitive ears or good sense of hearing</p> <p>Ignore good eyesight but Accept good eyesight to see prey in the dark</p> <p>Accept (idea of) good night vision or nocturnal eyes</p> <p>Note eyes that can see in the dark is not sufficient</p> <p>Ignore any adaptations to daytime conditions and any reference to teeth, jaws, claws or camouflage</p> <p>Ignore good sense of smell</p> <p>Accept forward facing eyes or binocular vision as an extra marking point</p>

(b)	<p>any two from</p> <p>no leaves or (leaves replaced by) spines</p> <p>swollen stems (to store food or store water)</p> <p>small surface area to volume ratio (to reduce water loss)</p> <p>extensive root system</p> <p>thick cuticle</p> <p>fewer stomata</p>	2	<p>each correct answer = 1 mark</p> <p>Accept spikes or thorns or needle like leaves</p> <p>Accept stem stores water</p> <p>Accept fleshy stems or thick stems</p> <p>Ignore body stores water or stores a lot of water or long and hollow</p> <p>Accept long roots or shallow roots or deep roots or horizontal roots</p> <p>Accept thick waxy layer or thick outer layer</p> <p>Ignore thick skin</p>
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Question	Answer	Marks	Further Information
4(a)	B and C	1	both needed for the mark Accept 2 and 4
(b)	$40 \div 2$ or distance \div time (average speed =) 20 (units) km / h	3	correct numerical answer by itself = 2 marks correct average speed formula = 1 mark correct units = 1 mark Accept km/hr or kmph Do not accept kph

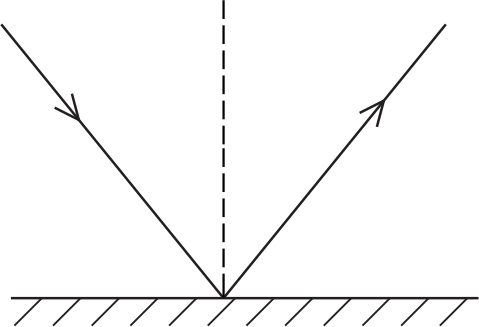
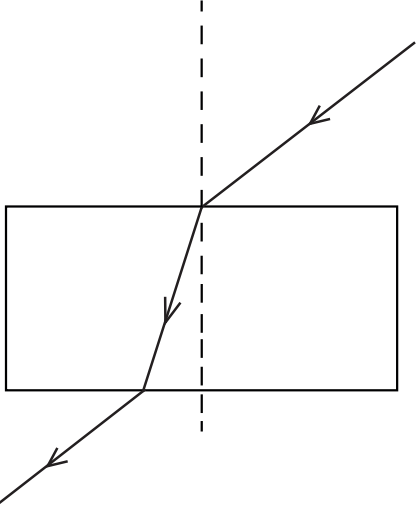
Question	Answer	Marks	Further Information								
5(a)	<table><tr><td>size of zinc</td><td>volume (of gas collected) in cm³</td></tr><tr><td>powdered</td><td>80</td></tr><tr><td>large pieces</td><td>6</td></tr><tr><td>small pieces</td><td>36</td></tr></table>	size of zinc	volume (of gas collected) in cm ³	powdered	80	large pieces	6	small pieces	36	3	<p>correct headings of size and volume = 1 mark</p> <p>Accept type of zinc or form of zinc or zinc used</p> <p>Note zinc unqualified is not sufficient</p> <p>Accept any order but volume and size must correspond</p> <p>units of cm³ for volume written in the heading = 1 mark</p> <p>Ignore units written within the table – the unit must be in the heading.</p> <p>data correctly added = 1 mark</p>
size of zinc	volume (of gas collected) in cm ³										
powdered	80										
large pieces	6										
small pieces	36										
(b)	size of zinc or surface area	1	<p>Accept form of zinc or type of zinc</p> <p>Do not accept amount of zinc or mass of zinc unless it is an ecf from 5(a)</p> <p>Accept ecf from heading of left-hand column of 5(a)</p>								

(c)	<p>any two from</p> <p>the smaller the size of the zinc the faster the reaction</p> <p>the smaller the size of zinc the greater the volume of gas</p> <p>powder or smaller size has a larger surface area</p> <p>powder or smaller particles will have more collisions</p> <p>powder or smaller size has more exposed particles</p> <p>the bigger the surface area the faster the reaction</p>	2	<p>each correct answer = 1 mark</p> <p>Accept ora</p> <p>Note answers must be comparative</p> <p>Accept answers such as: larger surface area gives more gas = 1 mark</p> <p>larger surface area has a faster reaction = 1 mark</p> <p>larger surface area has more collisions = 1 mark</p> <p>Accept smaller particles, smaller amount etc. for smaller size</p>
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Smaller particles for

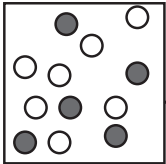
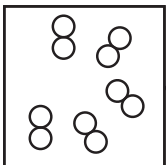
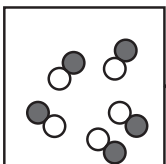
Question	Answer	Marks	Further Information
6(a)	<p>natural</p> <p>random</p> <p>relative</p> <p>selective</p>	1	more than one answer circled = 0 marks
(b)	<p>The foal inherits characteristics from his parents through genetic material.</p> <p>This material is found in the nucleus of the cell.</p>	2	<p>Accept gene or DNA</p> <p>Ignore chromosome or nucleus</p> <p>Accept nuclei or chromosome</p>

Question	Answer	Marks	Further Information
7(a)	granite and basalt	1	both needed either order for the mark
(b)	(similarity) rock does not fizz with acid/ grains are rounded (difference) sandstone has sand-like grains, but conglomerate has large rounded pebbles	2	one similarity = 1 mark Ignore they are both rocks one difference = 1 mark Accept grains are smaller in sandstone / ora Accept grains are different sizes
(c)	high temperature or high pressure	1	Accept heated or compressed or pressure or hot

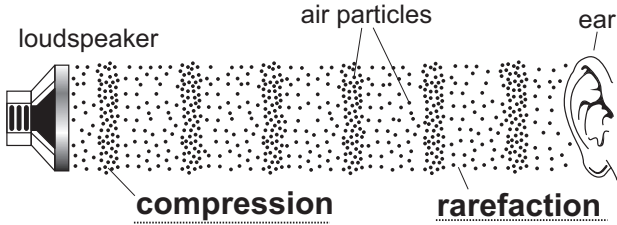
Question	Answer	Marks	Further Information
8(a)(i)		1	<p>angle of incidence approximately equal to angle of reflection by eye = 1 mark</p> <p>Note angle should be between 45 and 33°</p> <p>Note – if arrow is included it must be correct</p> <p>Note the line must be straight</p> <p>Do not accept more than one reflected ray</p>
(a)(ii)		2	<p>glass block – first refracted ray bends towards normal = 1 mark</p> <p>Note first refracted ray travelling along normal = 0 marks</p> <p>second refracted ray bends away from normal = 1 mark</p> <p>Note the line must be straight for 2 marks</p> <p>Ignore arrows on rays</p> <p>Ignore second normal if drawn</p> <p>Ignore any reflected rays drawn</p>
(b)	dispersion	1	<p>Ignore refraction</p> <p>Do not accept diffraction</p>

Question	Answer	Marks	Further Information
9(a)	any two from mass of peppers or size of peppers number of peppers height of plants	2	each correct answer = 1 mark Accept reference to number of leaves or area of leaves or size of leaves as an additional marking point Accept size of plant or size of roots or size of stem
(b)	result is more reliable or more representative or allows averages to be calculated	1	Accept in case some plants died or some plants were eaten Accept so can check results are similar or to identify anomaly Do not accept more accurate or (idea of) fair test

(c)	<p>any two from</p> <p>temperature</p> <p>amount of light</p> <p>amount of CO₂</p> <p>type of soil or amount of soil</p> <p>amount of water or humidity</p> <p>growing period or time</p> <p>amount of fertiliser or volume of fertiliser or concentration of fertiliser</p> <p>type of fertilizer</p> <p>way of applying fertiliser</p> <p>size or age of plant</p> <p>same species or same type of plant or same variety of plant</p>	2	<p>each correct answer = 1 mark</p> <p>Ignore same number of pepper plants</p> <p>Note same conditions is not sufficient</p> <p>Accept how often it was watered</p> <p>Note water unqualified is not sufficient</p> <p>Accept amount or volume of liquid</p> <p>Note fertiliser unqualified is not sufficient</p> <p>Accept (initial) height of plant or length of plant</p>
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Question	Answer	Marks	Further Information
10	   <div>mixture of compounds</div> <div>mixture of elements</div> <div>mixture of an element and a compound</div> <div>single compound</div> <div>single element</div>	3	<p>each correct line = 1 mark</p> <p>more than one line from a diagram to a different answer = 0 marks for that diagram</p>

Question	Answer	Marks	Further Information
11(a)	north (pole) and south (pole)	1	both needed either order for the mark
(b)	<div>Each field line has at least one arrow. <input checked="" type="checkbox"/></div> <div>Each field line is continuous. <input checked="" type="checkbox"/></div> <div>The field lines are all the same length. <input type="checkbox"/></div> <div>The field lines come out of N and go into S. <input checked="" type="checkbox"/></div> <div>The field lines cross over each other. <input type="checkbox"/></div>	2	all three correct ticks = 2 marks two correct ticks = 1 mark one or no correct ticks = 0 marks
(c)	magnetic field lines are close(r) together or more magnetic field lines or magnetic field lines are more concentrated	1	Accept a lot of field lines compared to weak bar magnet Accept lines for magnetic field lines

Question	Answer	Marks	Further Information
12(a)		2	each correct label = 1 mark
(b)	<p>Which letter shows one wavelength? A</p> <p>Which letter shows the amplitude of the wave? B</p>	2	each correct answer = 1 mark