
SCIENCE

1113/02

Paper 2

April 2018

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 an 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 consists of **16** printed pages.

Annotations and abbreviations

/ OR alternate responses for the same marking point

() the words or units in brackets do not need to be stated

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, however, full marks can still be achieved even with the answers that are ignored

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

note provides extra information when necessary

Question	Answer	Marks	Further Information
1(a)(i)	protein	1	Note if more than one food group given = 0 for the question
1(a)(ii)	muscle is made of protein / needed for growth / needed for repair	1	Accept develops muscle / strengthens muscles / for muscles Accept for cell division / make new cells / regenerate muscles quicker
1(b)	any two from (idea of) contains carbohydrate provides (lots of) energy needed for respiration	2	Accept contains carbs / (starch) broken down into glucose or sugar

Question	Answer	Marks	Further Information
2(a)	<p>Gases can flow to fill a container. <input checked="" type="checkbox"/></p> <p>Gases only form at temperatures above 100°C. <input type="checkbox"/></p> <p>The particles in a gas are arranged randomly. <input checked="" type="checkbox"/></p> <p>The particles in a gas are close together. <input type="checkbox"/></p> <p>The particles in a gas can only vibrate. <input type="checkbox"/></p>	2	<p>each correct tick = 1 mark</p> <p>three ticks and two correct = 1 mark</p> <p>three ticks and one correct = 0 marks</p> <p>four or five ticks = 0 marks</p>
2(b)	<p>any two from</p> <p>particles lose energy / (some) particles have less kinetic energy / (some) particles move slower</p> <p>(idea of) forces between particles increase / greater attraction between particles</p> <p>particles have moved closer together / distance between particles is smaller</p>	2	<p>Note the answer should refer to particles, atoms or molecules</p> <p>Accept intermolecular forces increase or get bigger</p>

Question	Answer	Marks	Further Information
3	<p>The sound with a higher pitch than A is E.</p> <p>The sound with a larger volume (louder) than A is B.</p> <p>The sound with a smaller frequency than A is D.</p> <p>The sound with a smaller amplitude than A is C.</p>	4	each correct sentence = 1 mark

Question	Answer	Marks	Further Information
4(a)	<p>any three from</p> <p>large eyes / wide eyes (to gather max light)</p> <p>forward facing eyes (for 3D vision)</p> <p>large ears / ears on side of head (for sensitive hearing)</p> <p>long fingers (to grasp trees)</p> <p>large snout / large nose (suggesting a keen sense of smell)</p> <p>big legs / strong legs / long legs</p> <p>long tail (for balance)</p>	3	<p>features must be visible in the diagram</p> <p>Accept large hands / large paws</p> <p>Accept muscular legs</p>

<p>4(b)</p>	<p>any two from (money can be used to:)</p> <ul style="list-style-type: none"> maintain the nature reserve / improve the nature reserve / money used to build more reserves for a breeding program / can release more into the wild / help improve chances of breeding idea that can improve the health of the tarsiers / can provide food create new habitats / avoids habitat destruction / control (number of people) destroying wild habitats increase education / idea of increase awareness / increase publicity to prevent poaching research into causes of decline reduce tourism in unprotected areas 	<p>2</p>	
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Question	Answer	Marks	Further Information										
5(a)	<table border="1"> <thead> <tr> <th>metal</th> <th>number of bubbles</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>(0)</td> </tr> <tr> <td>B</td> <td>(6)</td> </tr> <tr> <td>C</td> <td>15</td> </tr> <tr> <td>D</td> <td>3</td> </tr> </tbody> </table>	metal	number of bubbles	A	(0)	B	(6)	C	15	D	3	2	<p>correct heading = 1 mark</p> <p>Accept bubbles produced / count of bubbles produced / bubbles of incorrect gas produced</p> <p>15 and 3 in correct place = 1 mark</p>
metal	number of bubbles												
A	(0)												
B	(6)												
C	15												
D	3												
5(b)	<p>collect the gas in a measuring cylinder <input checked="" type="checkbox"/></p> <p>collect the gas in a test tube <input type="checkbox"/></p> <p>repeat the experiment the same way <input type="checkbox"/></p> <p>use a smaller piece of metal <input type="checkbox"/></p>	1	more than one box ticked = 0 marks										
5(c)	<p>yes</p> <p>and</p> <p>there were more bubbles in the tubes</p>	1	<p>no = 0 marks</p> <p>yes unqualified = 0 marks</p>										

Question	Answer	Marks	Further Information
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6(a)	asteroid Earth Moon planet star	1	more than one answer circled = 0 marks
6(b)	light reflected (off the comet) light from the Sun	2	Accept reflected sunlight = 2 marks Accept light from a star

Question	Answer	Marks	Further Information
7	<p>any two from</p> <p>(idea of) they were not afraid of humans so they were easy to catch</p> <p>(idea of) the new animals ate their food</p> <p>(idea of) the new animals ate their eggs / attacked their nests</p> <p>(idea of) they were hunted by humans</p> <p>(idea that) new animals were predators of dodo</p> <p>(idea that) they lost their habitat / no nesting sites</p> <p>(idea of) it couldn't fly to escape the new animals that were introduced / it could not fly to move to a new habitat</p> <p>(idea that) animals the humans brought had diseases</p>	2	<p>each correct answer = 1 mark</p> <p>Accept new animals or humans destroy eggs</p> <p>Accept humans killed dodos</p>

Question	Answer	Marks	Further Information
8(a)	lithium + water \longrightarrow lithium hydroxide + hydrogen	3	reactants in either order = 1 mark lithium hydroxide as one product = 1 mark hydrogen as one product = 1 mark
8(b)	lithium only contains one type of atom	2	Note if lithium hydroxide or water = 0 for the question
8(c)	increases / get more reactive	1	Accept becomes more vigorous Accept francium will be the most reactive / sodium is the least reactive

Question	Answer	Marks	Further Information
9	any two from the apparatus gets hot / risk of getting burnt the pins are sharp / risk of getting skin wound the wax catches fire	2	

Question	Answer	Marks	Further Information
10(a)	<p>any two from</p> <p>they are looking for a mate</p> <p>(idea that) smell carried (long distances) in air currents</p> <p>flowers look like (female) fly (from a distance)</p> <p>attracted to the scent / attracted to the smell</p>	2	Accept they think the flowers are (female) flies
10(b)	<p>transfer of pollen (grains from the anther)</p> <p>pollen (grains) going to the stigma of a flower</p>	2	<p>Accept the transfer of pollen from one flower to another flower = 1 mark</p> <p>Accept to transfer pollen from anther to the stigma = 2 marks</p>
Question	Answer	Marks	Further Information
11	<p>particle Y = neutrons</p> <p>particle Z = protons</p>	2	Accept Z = neutrons and Y = protons = 1 mark

Question	Answer	Marks	Further Information
12	weight of A = 6 (N)	2	correct answer = 2 marks if incorrect answer, accept correct method for 1 mark, e.g. $3 \times 4 = 2 \times A$ or $12 = 2 \times A$ or $\frac{3 \times 4}{2} = A$ or $\frac{12}{2} = A$

Question	Answer	Marks	Further Information
13	water / carbon dioxide	1	Accept chlorophyll Ignore chloroplast

Question	Answer	Marks	Further Information
14	<p>Like poles of magnets repel. <input checked="" type="checkbox"/></p> <p>Magnets always have N and S written on them. <input type="checkbox"/></p> <p>Magnets do not work if they are in water. <input type="checkbox"/></p> <p>Magnets attract iron, cobalt and nickel. <input checked="" type="checkbox"/></p> <p>The force of attraction is greater at the poles than in the middle of the magnet. <input checked="" type="checkbox"/></p>	2	<p>three correct ticks = 2 marks</p> <p>two correct ticks = 1 mark</p> <p>one correct tick = 0 marks</p> <p>four ticks, three correct = 1 mark</p>

Question	Answer	Marks	Further Information
15	<p>A Jupiter</p> <p>B Uranus</p> <p>C Neptune</p>	1	all three correct = 1 mark

Question	Answer	Marks	Further Information
16(a)	<p>parallel circuit with closed switch</p> <p>series circuit with closed switch</p> <p>parallel circuit with open switch</p> <p>parallel and series circuit with open switch</p> <p>series circuit with open switch</p>	1	more than one answer circled = 0 marks
16(b)	ammeter	1	

Question	Answer	Marks	Further Information
17	<p>(A) $40/30 = 1.33$ (m/s)</p> <p>(B) $120/60 = 2$ (m/s)</p> <p>(C) $30/60 = 0.5$ (m/s)</p> <p>or</p> <p>if no calculations done</p> <p>B (is faster than) C because in same time travels further = 1 mark</p> <p>in 60 seconds A travels 80 m and B (is faster) since travels 120 m = 1 mark</p>	2	<p>three calculations = 2 marks</p> <p>one or two calculations = 1 mark</p> <p>Accept speed = distance ÷ time, $120 \div 60$ is bigger than all the others = 1 mark</p> <p>Accept the time for B is double that of A but distance travelled by B is trebled = 1 mark</p>