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**SCIENCE**

**1113/01**

Paper 1

**October 2018**

MARK SCHEME

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 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.

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This document consists of **11** 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

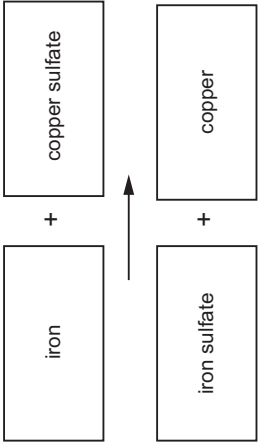
**note** provides extra information when necessary

Question	Answer	Marks	Further Information
1(a)	cell wall	1	
1(b)	has a cell wall could be a plant cell / has a (large) vacuole could be a plant cell lacks chloroplasts could be an animal cell	2	<b>Accept</b> has structure <b>X</b> so could be a plant cell <b>Accept</b> animal cells do not have a cell wall

Question	Answer	Marks	Further Information
2(a)(i)	found in the bottom layer (that contains fossils) / layer <b>D</b> is at the bottom / layer <b>D</b> is the deepest (that contains fossils)	1	
2(a)(ii)	sandstone	1	
2(b)	Metamorphic rocks form when other rocks are changed by <b>heat</b> and <b>pressure</b> .	2	either order

Question	Answer	Marks	Further Information
3	<div style="display: flex; flex-direction: column; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">(N)</div> <div style="display: flex; gap: 20px;"> <div style="border: 1px solid black; padding: 2px 10px;">S</div> <div style="border: 1px solid black; padding: 2px 10px;">S</div> </div> <div style="display: flex; gap: 20px;"> <div style="border: 1px solid black; padding: 2px 10px;">N</div> <div style="border: 1px solid black; padding: 2px 10px;">S</div> </div> </div>	<b>2</b>	<b>four correct = 2 marks</b> <b>two or three correct = 1 mark</b> <b>Ignore any labels unless the boxes are empty</b>

Question	Answer	Marks	Further Information
4(a)	pollen	<b>1</b>	
4(b)	pollination	<b>1</b>	<b>Ignore cross or self</b>
4(c)	fertilisation	<b>1</b>	

Question	Answer	Marks	Further Information
5(a)	 <p>The diagram shows a chemical reaction. On the left, a box labeled 'iron' is followed by a plus sign and a box labeled 'copper sulfate'. An arrow points to the right. On the right, a box labeled 'iron sulfate' is followed by a plus sign and a box labeled 'copper'.</p>	<b>2</b>	<p>correct reactants (either order) = 1 mark</p> <p>correct products (either order) = 1 mark</p>
5(b)	<p>most reactive    <b>zinc</b></p> <p>                          <b>iron</b></p> <p>least reactive    <b>copper</b></p>	<b>1</b>	<b>all correct = 1 mark</b>
5(c)	exothermic	<b>1</b>	
5(d)	<p>measure the temperature (before adding the metal)</p> <p>measure the temperature after adding the metal</p>	<b>2</b>	<p><b>Accept</b> measure the temperature change = 2 marks</p> <p><b>Accept</b> measure the temperature over time = 2 marks</p>

Question	Answer	Marks	Further Information
6	At <b>A</b> the wave has the highest <b>amplitude</b> . At <b>A</b> and <b>B</b> the wave has the same <b>frequency</b> .	<b>2</b>	each correct sentence = 1 mark

Question	Answer	Marks	Further Information
7(a)	thermometer stopwatch / clock / timer	<b>2</b>	
7(b)	<b>any one variable from</b> (same) external temperature / (same) temperature of surroundings (same) sized tubes / (same) amount of water / (same) material for tubes / (same) volume of water (same period of) time (same) <b>starting</b> temperature of water <b>explanation</b> 'fair test' / eliminate effect of other variables / so results can be compared	<b>2</b>	<b>Accept</b> in draught free conditions <b>Accept</b> (same) type of test-tube marking point <b>2</b> is <b>not</b> dependent on marking point <b>1</b> <b>Accept</b> explanation of not controlling the variable given

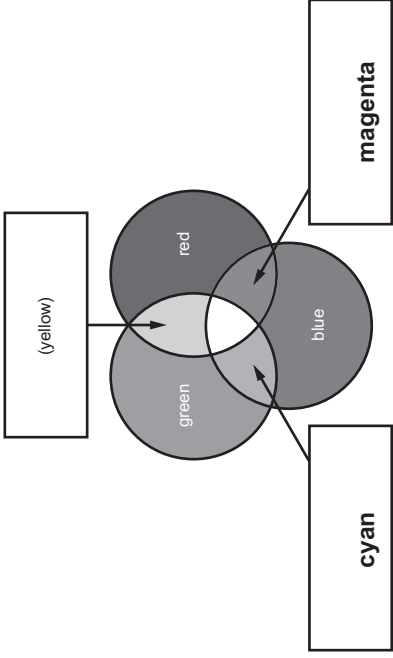
Question	Answer	Marks	Further Information
8(a)	<b>D</b> could be squashed (in the syringe) / only gases can be compressed	<b>2</b>	<b>note</b> marking point 2 dependent on correct letter
8(b)	<b>A and C</b> <b>then any one from</b> (idea that) could not fill the syringe with the substance did not take on the shape of the beaker	<b>2</b>	both correct = 1 mark  <b>Note</b> second marking point dependent on correct letters <b>Accept</b> have a fixed shape / maintain their shape

Question	Answer	Marks	Further Information
9(a)	<p><b>yes</b></p> <p><b>explanation:</b></p> <p>the green boxes have densities 7.2 9.8 and 6.4 = 1 mark</p> <p>the largest density for a red box is 6.3 = 1mark</p> <p><b>but</b></p> <p><b>all</b> the densities of green boxes are higher than the densities of the red boxes / the average density of green boxes is higher than the average density of the red boxes = 2 marks</p>	<b>2</b>	<p>no mark for just stating that the statement is correct</p> <p>if answer is no = 0 marks</p> <p><b>note</b> the explanation must involve use of the data in the table and not just restate the statement</p> <p><b>Accept</b> the total density of the green boxes is higher than the total density of the red boxes = 2 marks</p>
9(b)	<p><b>no</b></p> <p><b>explanation:</b></p> <p><b>A</b> is the largest box / the density of the largest box is 1.2</p> <p>1.2 is the lowest density / other boxes have a higher density</p>	<b>2</b>	<p>no mark for just stating that the prediction is wrong</p> <p>if answer is yes = 0 marks</p> <p>each correct explanation = 1 mark</p> <p><b>Accept</b> the largest box has a volume of 15 cm<sup>3</sup></p> <p><b>Accept D</b> has the highest density and lowest volume / <b>A</b> has the largest volume but the smallest density = 2 marks</p>



Question	Answer	Marks	Further Information
10	<p>They all eat the same food. <input type="checkbox"/></p> <p>They can all breed with each other. <input checked="" type="checkbox"/></p> <p>They share similar features. <input type="checkbox"/></p> <p>They live in the same habitat. <input type="checkbox"/></p> <p>Their offspring would all be able to have young. <input checked="" type="checkbox"/></p>	<b>2</b>	<p><b>two</b> correct ticks = 2 marks</p> <p>only <b>one</b> tick = 1 mark if correct</p> <p><b>two</b> correct ticks and <b>one</b> incorrect tick = 1 mark</p> <p><b>one</b> correct tick and <b>two</b> incorrect ticks = 0 mark</p> <p><b>four</b> or <b>five</b> ticks = 0 marks</p>

Question	Answer	Marks	Further Information
11(a)	electron(s)	<b>1</b>	
11(b)	has 4 electrons in outer shell	<b>1</b>	<p><b>Accept</b> 4 electrons on outer ring</p> <p><b>Accept</b> 4 electrons in the valence shell / 4 valence electrons</p>
11(c)	get bigger / gets larger / increases	<b>1</b>	<b>Ignore</b> heavier

Question	Answer	Marks	Further Information
12		2	<p>each correct colour in correct box = 1 mark</p> <p><b>Note</b> these are the only acceptable colours</p>
13(a)	<p><b>A</b> = otter</p> <p><b>B</b> = pike</p> <p><b>C</b> = water fleas and <b>D</b> = mosquito larvae</p>	3	<p>both required</p> <p>water fleas and mosquito larvae can be either way round</p>
13(b)	<p>reduce numbers of fish by otters eating the perch</p>	2	<p><b>Accept</b> pike have less food and starve</p> <p><b>Accept</b> otters eat fish / otters are predators of perch otters are predators of fish / otters kill perch or fish</p>

Question	Answer	Marks	Further Information
14(a)	Mercury and Venus	1	both required in either order
14(b)	reflects light from the Sun	1	

Question	Answer	Marks	Further Information
15(a)	<p>y axis – voltage in V  <b>and</b>  x axis – length in cm</p> <p>correct plots seen for  (40,0.28) <b>and</b> (50,0.22)</p>	2	<p><b>Accept</b> voltage / V  <b>Accept</b> voltage with V in brackets  <b>Accept</b> length / cm  <b>Accept</b> length with cm in brackets</p> <p><b>both</b> axes required for 1 mark</p> <p>needs both label and the unit</p> <p>plots correct to half a small square</p> <p><b>Ignore</b> any attempt at line of best fit or joining the plots</p>
15(b)	<p>Anomalous reading  <b>30 or 0.35</b></p> <p>they should  (idea of) <b>repeat the reading</b></p>	2	<b>Accept</b> third one