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**SCIENCE**

**1113/02**

Paper 2

**October 2017**

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 and **1** blank page.

## Annotations and abbreviations

/ OR alternate responses for the same marking point

( ) the words or units in brackets do not need to 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
<b>1(a)(i)</b>	carbohydrates	<b>1</b>	<b>Accept</b> fibre / starch
<b>1(a)(ii)</b>	for energy	<b>1</b>	<b>Accept</b> to prevent constipation if fibre given in (a)(i) <b>Accept ecf</b> if protein given
<b>1(b)</b>	vitamins	<b>1</b>	<b>Ignore</b> letter of vitamin
<b>1(c)</b>	<b>any one from</b> heart disease / obesity / high blood pressure	<b>1</b>	<b>Accept</b> diabetes / stroke / high cholesterol / plaque in blood vessels

Question	Answer	Marks	Further Information
<b>2(a)</b>	<p>The particles in solids are close together which means solids cannot <b>be squashed</b>.</p> <p>When a liquid evaporates the particles <b>separate</b>.</p> <p>When a solid changes into a liquid it is said to <b>melt</b>.</p>	<b>3</b>	
<b>2(b)</b>	<p>idea that particles are moving = 1 mark</p> <p>but</p> <p>idea that particles are spreading out / move further apart = 2 marks</p>	<b>2</b>	<b>Accept</b> particles move anywhere = 2 marks

Question	Answer	Marks	Further Information
<b>3(a)(i)</b>	6 (complete) waves	1	
<b>3(a)(ii)</b>	stays the same	1	<b>Accept</b> nothing happens
<b>3(b)</b>	<p><b>any two from</b></p> <p>height of wave decreases</p> <p>amplitude of wave decreases</p> <p>(because) less sound (reaches the microphone) / the sound is quieter</p> <p>frequency remains the same / pitch remains the same</p> <p>wavelength remains the same</p>	2	<p><b>Accept</b> amplitude is lower</p> <p><b>Accept</b> (because) volume (of sound) decreases / loudness decreases</p> <p><b>Accept</b> number of complete waves stays the same</p>

Question	Answer	Marks	Further Information
4(a)	amphibians    bird    fish <b>mammals</b> reptiles	1	
4(b)	presence of hair / fur presence of external ears	2	features must be exclusive to mammals

Question	Answer	Marks	Further Information
5(a)(i)	colour goes red / pink	1	
5(a)(ii)	the idea of many colour changes available / will give you a pH value	1	<b>Accept</b> can tell how acidic the soil is
5(b)	evaporation    fertilization    fossilization <b>neutralisation</b> respiration	1	more than one answer circled = 0 marks

Question	Answer	Marks	Further Information
<b>6(a)</b>	(idea that) the Earth has moved	<b>1</b>	
<b>6(b)</b>	same as the pattern in June same as the pattern in December <b>a different pattern</b>	<b>1</b>	more than one answer circled = 0 marks

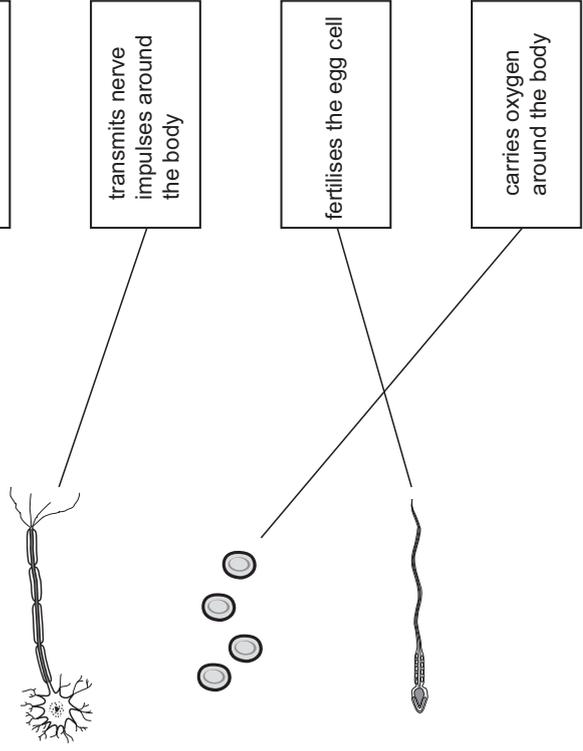
Question	Answer	Marks	Further Information
<b>7(a)</b>	<b>any two from</b> the number of bubbles / the volume of oxygen or gas the distance of the lamp from the water plant time	<b>2</b>	
<b>7(b)</b>	The further the lamp is from the water plant the fewer the bubbles of gas produced. <b>or</b> The further the lamp is from the water plant the slower it photosynthesises.	<b>1</b>	<b>Accept ora</b> e.g. The closer the lamp is to the water plant the more bubbles of gas were produced.

Question	Answer	Marks	Further Information
8(a)	(B) C A D	1	
8(b)	magnesium zinc iron lead	2	magnesium and zinc = 1 mark iron and lead = 1 mark
8(c)	zinc nitrate lead	2	each correct answer = 1 mark either order

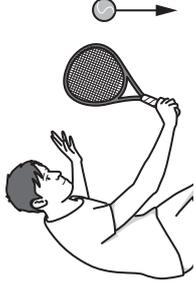
Question	Answer	Marks	Further Information
9	$\frac{4000}{400}$ 10 (N/cm <sup>2</sup> )	2	

Question	Answer	Marks	Further Information
<b>10(a)</b>	<p>any two from</p> <p>honey is not the longest time / corn syrup has the longest time</p> <p>corn syrup has the most friction</p> <p>most friction would have the longest time</p>	<b>2</b>	<p>no mark for yes or no</p> <p><b>note</b> if yes = 0 marks for the question</p> <p><b>note</b> just quoting the times is <b>not</b> sufficient a comparison must be made</p>
<b>10(b)</b>	<p>increase the depth of the liquid / idea of changing the temperature</p>	<b>1</b>	<p><b>Accept</b> changes to liquids e.g. use thicker liquids</p> <p><b>Accept</b> increase amount of liquid / use a taller container</p>

Question	Answer	Marks	Further Information
<b>11(a)</b>	<b>Jupiter and Mars</b>	<b>1</b>	<p>both required</p> <p>either order</p>
<b>11(b)</b>	Saturn is closer to the Sun so should have less time to orbit the Sun (compared to Uranus)	<b>1</b>	<b>Accept ora</b>

Question	Answer	Marks	Further Information
<p><b>12</b></p>	<p>cell</p> <p>function</p>  <p>absorbs water and mineral ions from the soil</p> <p>transmits nerve impulses around the body</p> <p>fertilises the egg cell</p> <p>carries oxygen around the body</p>	<p><b>2</b></p>	<p>all <b>three</b> correct = 2 marks</p> <p><b>two</b> correct = 1 mark</p> <p><b>one</b> correct = 0 marks</p>

Question	Answer	Marks	Further Information
<p><b>13</b></p>	<p><b>A and C</b></p> <p>different types of atoms are not joined / different elements are not bonded / different substances not bonded together</p>	<p><b>3</b></p>	<p>each correct letter = 1 mark</p> <p>marking point 3 is dependent on all letters being correct</p>

Question	Answer	Marks	Further Information
14(a)		1	<b>note</b> arrow must be vertically downwards <b>note</b> arrow can be any length
14(b)	friction	1	
14(c)	air resistance	1	<b>Accept</b> friction / drag

Question	Answer	Marks	Further Information
15(a)	fan-tailed has an extra set of tail feathers	1	<b>note</b> assume unqualified answers refer to the fan-tailed dove <b>Accept</b> has a fan-tail
15(b)	streamlined shape / large wings / big wings / powerful wings	1	<b>Accept</b> aerodynamic shape

Question	Answer	Marks	Further Information
<b>16</b>	<b>A<sub>4</sub> = 0.4 amps</b> <b>A<sub>5</sub> = 1.8 amps</b>	<b>2</b>	

Question	Answer	Marks	Further Information
<b>17(a)</b>	bacteria / fungi	<b>1</b>	<b>Accept</b> named bacteria or fungi
<b>17(b)</b>	soil <b>C</b> is alkaline /soil <b>C</b> has a higher pH /	<b>1</b>	<b>note</b> assume unqualified answers refer to soil <b>C</b> <b>Accept ora</b>

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