
SCIENCE

1113/01

Paper 1

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 **12** printed pages.

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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


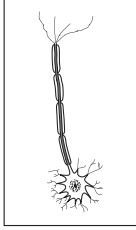
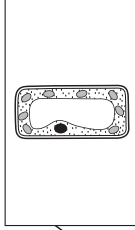
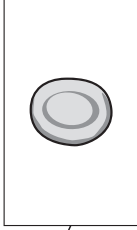
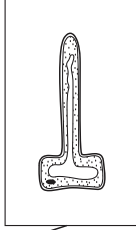
Do not accept indicates an incorrect response that would contradict another otherwise correct alternative

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
<p>1</p>	<p>cell function</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">absorbs water and mineral salts</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">contracts to cause movement</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">transports oxygen around the body</div> <div style="border: 1px solid black; padding: 5px; width: 150px; text-align: center;">uses light energy to make food</div> </div> <p style="text-align: center;">type of cell</p> <div style="display: flex; justify-content: space-around; align-items: center;">      </div> <p>Lines connect the functions to the cells: 'absorbs water and mineral salts' to the bean-shaped cell; 'contracts to cause movement' to the plant root cell; 'transports oxygen around the body' to the rectangular plant cell; 'uses light energy to make food' to the leaf cell.</p>	<p>4</p>	<p>each correct line = 1 mark</p> <p>Note if 2 lines from one 'function box' or 2 lines to one 'cell type box' then award no marks for the 2 lines even if one is correct.</p>

Question	Answer	Marks	Further Information
2		4	<p>first two columns</p> <p>four correct matching = 2 marks</p> <p>two or three correct matching = 1 mark</p> <p>one correct match = 0 marks</p> <p>last two columns</p> <p>four correct matching = 2 marks</p> <p>two or three correct matching = 1 mark</p> <p>one correct match = 0 marks</p>

Question	Answer	Marks	Further Information
3(a)	A	1	more than one answer = 0 marks
3(b)(i)	3	1	more than one answer = 0 marks Accept scratched by copper coin
3(b)(ii)	6	1	more than one answer = 0 marks Accept scratched by steel file
3(c)	igneous (rock)	1	Accept magmatic (rock) Accept pumice / basalt / granite / obsidian Ignore intrusive or extrusive Ignore magma

Question	Answer	Marks	Further Information
4	A = trachea B = bronchus C = diaphragm	3	

Question	Answer	Marks	Further Information
5(a)	The reaction between an acid and an alkali is called neutralisation .	1	
5(b)	The reaction between iron and copper sulfate to form iron sulfate and copper is called displacement .	1	
5(c)	This is because the reaction is endothermic .	1	

Question	Answer	Marks	Further Information
6(a)	A red B no light	2	each correct colour = 1 mark Accept black / no colour
6(b)	A blue B blue	2	each correct colour = 1 mark

Question	Answer	Marks	Further Information
7(a)(i)	as the mass increases the heart rate decreases / negative correlation between body mass and heart rate	1	Accept ora
7(a)(ii)	<p>any one from</p> <p>monkey (1) its heart rate is too high for its mass (1)</p> <p>or</p> <p>cat (1) its heart rate is too low for its mass (1)</p>	2	<p>the reason is dependent on the correct animal</p> <p>the answer must refer to both mass and heart rate</p> <p>Accept reverse argument</p>
7(a)(iii)	use of a line graph / bar chart / bar graph	1	Accept scatter graph
7(b)	<p>any one from</p> <p>(idea that) a chicken is a bird / chicken is not a mammal</p> <p>you would expect the chicken to have a smaller mass than the rabbit given its heart rate</p> <p>you would expect chicken's heart rate to be between 150 and 205 bpm given its mass</p>	1	Accept recognise that it has a different metabolism or physiology

Question	Answer	Marks	Further Information
8(a)	(idea of) to check whether it is correct	1	
8(b)	(idea of) adding litmus or pH indicator or pH solution or pH paper or Universal Indicator (solution) correct colour of named indicator in acid – dependent on name of correct indicator	2	(Litmus) turns red (pH/Universal) turns red or orange or yellow Accept other named indicators with correct colour in acid

Question	Answer	Marks	Further Information
9(a)(i)	3 (g)	1	
9(a)(ii)	mass of each ball is small / not very accurate to measure small mass / to increase the accuracy / reduces error / makes results more reliable	1	Accept so all balls have the same mass / so it is fair
9(b)	The volume of water in the measuring cylinder is 21 cm³ . The volume of the water and 10 balls in the measuring cylinder is 36 cm³ . The difference in volume between these two readings is 15 cm³ . The volume of one ball is 1.5 cm³ .	2	four readings correct = 2 marks two or three readings correct = 1 mark one reading correct = 0 marks Accept ecf for the difference in volume between the candidates two readings e.g. if readings are 20 and 37 then difference is 17 and volume of 1 ball is 1.7
9(c)	2 (g / cm³)	1	Accept ecf from (a) and (b) for mass and volume measurements

Question	Answer	Marks	Further Information
10(a)(i)	natural selection	1	Accept evolution
10(a)(ii)	(Charles) Darwin	1	
10(b)	species A = akiapolaaau species D = Nihoa finch	2	
Question	Answer	Marks	Further Information
11(a)	13	1	
11(b)	Rutherford	1	
11(c)	3	1	Accept 13 / III / 3 rd group
11(d)	(good) conductor of electricity	1	Accept ductile / flexible / malleable / low density
11(e)	aluminium oxide	1	

Question	Answer	Marks	Further Information
12	<p>thermal energy lost from surface of skin by radiation</p> <p>thermal energy lost by air movements by convection</p> <p>thermal energy gained from rock by conduction</p>	2	three correct = 2 marks one or two correct = 1 mark

Question	Answer	Marks	Further Information
13	<p>water</p> <p>carbon dioxide</p>	2	each correct answer = 1 mark either order

Question	Answer	Marks	Further Information
14	<p>any two from</p> <p>light source / lamp</p> <p>the same type of water plant</p> <p>size of the water plant</p> <p>temperature</p> <p>time taken (for experiment)</p>	2	<p>Accept light intensity / distance from beaker or light</p> <p>Accept same number of leaves / same mass of water plant</p> <p>Accept the amount of carbon dioxide / concentration of carbon dioxide / mass of carbon dioxide</p> <p>Accept volume of water / amount of water / mass of water / level of water</p>