

Question	Answer	Marks	Further Information
1(a)	C B A	2	all three correct = 2 marks one or two correct = 1 mark
1(b)(i)	(advantages) any one from easy to obtain cheap fast/quick way to get results no need to have the equipment to carry out experiments yourself (disadvantages) any one from quality/accuracy of data unknown could be biased unknown experimental method	2	each correct answer = 1 mark Accept any other reasonable response Accept any other reasonable response
1(b)(ii)	no ticked (no marks) and correct use of data from the table, e.g. the dog has less mass than the horse but has red blood cells with a larger diameter	1	if both boxes are ticked = 0 marks if neither box ticked accept no within the explanation Accept any correct example from the table

Question	Answer	Marks	Further Information
1(c)	diffusion	1	Accept any indication of the correct answer, e.g. ticking, circling or underlining, but answer line takes precedence

Question	Answer	Marks	Further Information
2(a)(i)	(paper) chromatography	1	
2(a)(ii)	any two from ink would dissolve in the solvent (idea that) solvent becomes stained with ink (idea that) ink spreads out not getting a clear result	2	each correct answer = 1 mark
2(b)	B (idea of) identical pattern of spots	2	each correct answer = 1 mark Note both have 3 spots is not sufficient

Question	Answer	Marks	Further Information
3	(Oliver) shakes marbles in the tray marbles collide with the side of the tray	2	each correct answer = 1 mark Ignore just marbles collide (with each other)

Question	Answer	Marks	Further Information
4(a)(i)	will not run out or is not finite	1	Ignore (idea that) can be used again
4(a)(ii)	(idea that) Sun may be covered by clouds or affected by weather or does not work in the dark or affected by daylight length or affected by seasons	1	
4(a)(iii)	wind or tidal	1	Accept any suitable example, e.g. wave or hydroelectric or geothermal or (renewable) biomass Do not accept nuclear
4(a)(iv)	natural gas or oil or fossil fuels or coal	1	Accept nuclear
4(b)	bioplastic	1	more than one answer circled = 0 marks Accept any indication of the correct answer, e.g. ticking or underlining, but circling takes precedence

Question	Answer	Marks	Further Information												
5	<table border="0"> <tr> <td>nutrient</td> <td>function in the body</td> </tr> <tr> <td>calcium</td> <td>for healthy eyesight</td> </tr> <tr> <td>carbohydrate</td> <td>to prevent dehydration</td> </tr> <tr> <td>vitamin A</td> <td>to make strong bones and teeth</td> </tr> <tr> <td>protein</td> <td>to provide energy and to be used as an energy store</td> </tr> <tr> <td>water</td> <td>for tissue growth and repair</td> </tr> </table>	nutrient	function in the body	calcium	for healthy eyesight	carbohydrate	to prevent dehydration	vitamin A	to make strong bones and teeth	protein	to provide energy and to be used as an energy store	water	for tissue growth and repair	3	<p>all five correct = 3 marks</p> <p>three or four correct = 2 marks</p> <p>one or two correct = 1 mark</p> <p>if more than one line from any nutrient to different functions = 0 marks for that nutrient</p>
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6(a)(i)	<p>any two from</p> <p>nucleus should have a positive charge or nucleus should not have a negative charge</p> <p>proton label should be electron</p> <p>circles outside nucleus should have a negative charge</p>	2	<p>each correct answer = 1 mark</p> <p>Accept electrons are not arranged (in shells)</p> <p>Accept protons should be in the nucleus</p>
6(a)(ii)	Rutherford	1	
6(b)	<p>attraction between protons and electrons</p> <p>(idea of) attraction between positive and negative particles or electrostatic attraction</p>	2	<p>each correct answer = 1 mark</p> <p>Accept attraction between nucleus and electrons</p> <p>Note if no other marks awarded Accept attraction between opposite charges = 1 mark</p>

Question	Answer	Marks	Further Information
7(a)(i)	E	1	
7(a)(ii)	(idea that) difficult to measure distance in space	1	
7(a)(iii)	formed from rocks left over from formation of a planetary system	1	
7(b)	repeats with different sized balls references to controlling a variable, e.g. drops ball from same height each time	2	each correct answer = 1 mark

Question	Answer	Marks	Further Information
8	connect wire to cell or connect wire to battery or connect wire to power supply wrap wire around a piece of iron (core or rod)	2	each correct answer = 1 mark Note marks may be awarded from a labelled diagram

Question	Answer	Marks	Further Information
9		4	<p>all five correct = 4 marks</p> <p>four correct = 3 marks</p> <p>three correct = 2 marks</p> <p>one or two correct = 1 mark</p> <p>Accept answers written on answer lines, but answers in the crossword take precedence</p>

Question	Answer	Marks	Further Information
10(a)(i)	magnetic field	1	
10(a)(ii)	<p>B is a S pole</p> <p>C is a N pole</p>	1	<p>both correct for the mark</p> <p>Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence</p>
10(b)	<p>Pole D and pole E are both S poles.</p> <p>Pole D and pole E are both N poles.</p>	2	<p>each correct answer = 1 mark</p> <p>Note if one incorrect answer ticked = max 1 mark</p> <p>if two or more incorrect answers ticked = 0 marks</p> <p>Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence</p>

Question	Answer	Marks	Further Information										
11(a)(i)	normal (line)	1											
11(a)(ii)	C	1	Accept any indication of the correct answer, e.g. ticking, circling, underlining or x and y, but letter on answer line takes precedence										
11(b)	<table border="1"> <thead> <tr> <th>angle of incidence in °</th> <th>angle of reflection in °</th> </tr> </thead> <tbody> <tr> <td>(20)</td> <td>20</td> </tr> <tr> <td>(30)</td> <td>30</td> </tr> <tr> <td>(40)</td> <td>40</td> </tr> <tr> <td>(50)</td> <td>50</td> </tr> </tbody> </table>	angle of incidence in °	angle of reflection in °	(20)	20	(30)	30	(40)	40	(50)	50	1	all four correct = 1 mark
angle of incidence in °	angle of reflection in °												
(20)	20												
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11(c)	<p>(safety hazard) ray box may be hot</p> <p>(description) leave to cool or use gloves/cloth or turn off when not in use</p>	2	<p>correct hazard = 1 mark</p> <p>correct description associated with the hazard = 1 mark</p> <p>Accept the equipment may be hot</p> <p>Accept (hazard) electric shock (description) keep away from water or turn power supply off when connecting ray box</p> <p>Note award marks for correct answers wherever written</p>										

Question	Answer	Marks	Further Information
12(a)	temperature (of water)	1	
12(b)	higher the temperature the more salt dissolves	1	Accept ora
12(c)	results for 30 °C and 40 °C are too close together or results for 40 °C seems too low or results for 40 °C is an anomaly only one set of results or needs to repeat the investigation	2	each correct answer = 1 mark