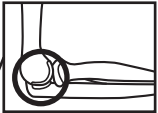







Question	Answer	Marks	Further Information
1(a)	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 20px;">ball and socket joint</div> <div style="border: 1px solid black; padding: 5px;">hinge joint</div> </div> <div style="display: flex; flex-direction: column; align-items: center; margin-top: 20px;">       </div>	2	<p>each correct answer = 1 mark</p> <p>if two lines from one type of joint and one is incorrect = 0 marks for that type of joint</p>
1(b)	antagonistic	1	<p>Accept agonist and antagonist muscles (both needed for the mark)</p> <p>Accept a named pair of antagonistic muscles e.g. biceps and triceps</p>

Question	Answer	Marks	Further Information
2(a)	positive or +	1	Accept plus or +ve
2(b)	negative or –	1	Accept minus or –ve
2(c)	positive charge (on protons) and negative charge (on electrons) (protons and electrons) attract each other	2	each correct answer = 1 mark Accept electrostatic attraction (between protons and electrons) = 2 marks

Question	Answer	Marks	Further Information
3	<p>(speed =) $\frac{\text{distance}}{\text{time}}$ or $\frac{15\,000}{20}$</p> <p>(speed =) 750</p> <p>(unit) km/h</p>	3	<p>Accept 750 km/h with working = 3 marks</p> <p>Accept 750 km/h without working = 2 marks</p> <p>Accept 750 without units or working out = 1 mark</p> <p>correct equation or evidence of correct substitution into equation = 1 mark</p> <p>Accept kmph or kilometres per hour</p> <p>Accept speed = $\frac{15\,000\,000}{20}$</p> <p>750 000 m/h</p> <p>Accept speed = $\frac{15\,000\,000}{20 \times 60 \times 60}$</p> <p>208.33 m/s</p> <p>Note unit must match values used</p> <p>Do not accept ecf from incorrect values for distance and time</p>

Question	Answer	Marks	Further Information
4	(idea that) nail into A has smaller area (idea that) with A there is a greater pressure	2	each correct answer = 1 mark Note assume the answer refers to block A but accept ora if block B specified

Question	Answer	Marks	Further Information
5(a)	<p>B and C</p> <p>(idea that) asteroids are smaller than any planet</p>	2	<p>each correct answer = 1 mark</p> <p>both correct in either order for the mark</p>
5(b)	<p>Hale-Bopp</p> <p>it is not made from rock or it is made from ice, dust and gas or asteroids are made from rock</p>	2	<p>each correct answer = 1 mark</p>
5(c)	<p>any two from</p> <p>(idea that) Vesta formed when our Solar System was being formed (billions of years ago)</p> <p>(idea that) Vesta was formed from rocks left over from the formation of planets</p> <p>(idea that) objects (that were there at the time) collided with each other and broke up into asteroids</p>	2	<p>each correct answer = 1 mark</p> <p>Accept (idea that) Jupiter (as it formed) stopped other planets forming in gap between Mars and Jupiter as an additional marking point</p>

Question	Answer	Marks	Further Information
6	<p>any three from</p> <p>mercury is toxic or poisonous</p> <p>bioaccumulation or there is a build-up of toxic chemicals in individuals</p> <p>(bioaccumulation) occurs when mercury cannot be excreted in individuals</p> <p>mercury is found at low levels at the bottom of food chains or much higher concentrations towards the top of food chains/higher stages in a food chain</p> <p>this build-up causes serious nervous system effects not seen at lower stages</p>	3	<p>each correct answer = 1 mark</p> <p>Accept mercury is a toxin</p> <p>Accept bioconcentration for bioaccumulation</p> <p>Accept biomagnification of mercury occurs in the food chain</p>

Question	Answer	Marks	Further Information
7(a)	(idea that) ink will dissolve in the solvent or pencil does not dissolve in the solvent	1	
7(b)(i)	distance to dot A = 37 ± 2 (mm) distance to solvent front = 42 ± 2 (mm)	1	both correct for the mark
7(b)(ii)	0.88	1	Accept ecf from (i) Accept at least two sig figs and truncation
7(c)	red and green and blue	1	all three correct in any order for the mark

Question	Answer	Marks	Further Information
8(a)	The teacher models the Earth, with the core of the Earth behaving as a magnet.	1	more than one answer ticked = 0 marks Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence
8(b)	(idea of) Oliver using a compass	1	Do not accept unqualified compass

Question	Answer	Marks	Further Information
9(a)(i)	<p>(question 1) Are there fish swimming in water?</p> <p>(question 2) Does the ecosystem have any trees?</p>	2	<p>each correct answer = 1 mark</p> <p>Note the questions must fit the information in the last column of the key</p> <p>Note the ecosystem has water is not sufficient</p> <p>Accept Does the ecosystem have fish?</p>
9(a)(ii)	(idea of) Are the trees close together?	1	Ignore (idea of) Is the ground around the trees very dark?
9(b)(i)	decreases	1	Ignore they become extinct or they die off
9(b)(ii)	<p>(idea that) farmers who keep animals use evidence to show the harm that eagles cause to their animals</p> <p>or</p> <p>(idea that) farmers who grow fruit use evidence that shows eagles are helpful in reducing crop losses</p>	1	<p>Accept ora</p> <p>Accept ora</p> <p>Accept (idea that) farmers are biased to evidence that suits them</p>

Question	Answer	Marks	Further Information
10(a)	4.0 (g/100cm ³)	1	Accept 4 (g/100cm ³)
10(b)	D concentration is the highest	2	each correct answer = 1 mark

Question	Answer	Marks	Further Information
11(a)	36(°)	1	Accept answer in range 34° to 38°
11(b)	angle of incidence = angle of reflection	1	Accept normal and angles marked on diagram with $\angle i = \angle r$ but answer line takes precedence
11(c)	(explanation) (idea that) beam is too wide (improvement) (idea that) narrowing the beam e.g. use a slit or cover the front of the flashlight (torch)	2	each correct answer = 1 mark Accept use a flashlight (torch) with a narrower beam Accept correct answers wherever they are written

Question	Answer	Marks	Further Information
12(a)	biased	1	Accept any indication of the correct answer, e.g. ticking, circling or underlining, but answer line takes precedence
12(b)	look at how global temperatures change over a period of thousands of years	1	more than one answer ticked = 0 marks Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence

Question	Answer	Marks	Further Information
13(a)	glucose + (oxygen) \longrightarrow carbon dioxide + (water)	1	both needed in correct order for mark Ignore sugar
13(b)	mitochondrion	1	Accept mitochondria

Question	Answer	Marks	Further Information
14	<p>no ticked (no mark)</p> <p>any three from</p> <p>most reactive is calcium as it has the lowest time</p> <p>magnesium has the second lowest time and is the next most reactive</p> <p>zinc has the third lowest time and is third in the list of reactivities</p> <p>copper does not react and is therefore the least reactive</p>	3	<p>each correct answer = 1 mark</p> <p>Note for 3 marks answers must quote information from the table</p> <p>Accept order of reactivity should be calcium, magnesium, zinc, copper = 2 marks</p>

Question	Answer	Marks	Further Information
15	<p>(equipment) <u>iron</u> rod</p> <p>power supply and wire</p> <p>(method) (idea that) connect wire to power supply</p> <p>(idea that) wrap wire around the rod</p>	4	<p>each correct answer = 1 mark</p> <p>Accept <u>iron</u> bar for <u>iron</u> rod Do not accept steel rod</p> <p>Accept cell, battery or battery of cells for power supply Accept lead for wire</p> <p>Accept marks from labelled diagram but written answer takes precedence</p>