

Question	Answer	Marks	Further Information
1(a)	<p>The diagram consists of three boxes on the left, each connected by a line to a larger box on the right containing a description of its function:</p> <ul style="list-style-type: none"> cell membrane is connected to a box stating: "controls the movement of substances into and out of the cell" cytoplasm is connected to a box stating: "contains genetic information and controls what happens inside the cell" mitochondria is connected to a box stating: "jelly-like substance, where chemical reactions happen" mitochondria is also connected to a box stating: "where most respiration reactions happen" 	2	<p>three lines correct = 2 marks</p> <p>one or two lines correct = 1 mark</p> <p>if two lines from a part of a cell drawn and one is incorrect = 0 marks for that part of a cell</p>
1(b)	<p>any two from</p> <p>(are packed with many) chloroplasts</p> <p>(idea that) column-shaped</p> <p>large vacuole</p>	2	<p>each correct answer = 1 mark</p> <p>Accept (are packed with many) chloroplasts so they can absorb light (energy) = 2 marks</p> <p>Accept (idea that) column-shaped so they can be arranged closely together = 2 marks</p> <p>Accept (idea that) large vacuole so chloroplasts are towards the edge of the cell or close to the cell membrane or closer to the light = 2 marks</p> <p>Ignore chlorophyll</p>

Question	Answer	Marks	Further Information
1(c)	has (plant) chloroplasts but no cell wall	1	Accept has (animal) flagella or eye spot instead of no cell wall

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2	<p>The diagram shows three boxes on the left: 'alloy', 'compound', and 'element'. Lines connect 'alloy' to 'a pure substance containing the same type of atom' and 'a mixture containing two different types of metal atoms'. Lines connect 'compound' to 'a pure substance containing different types of atoms bonded together' and 'a mixture containing two different types of metal atoms'. Lines connect 'element' to 'a pure substance containing the same type of atom' and 'an impure substance containing the same type of atom'.</p>	3	<p>each correct line = 1 mark</p> <p>if two lines from a material drawn and one is incorrect = 0 marks for that material</p>

Question	Answer	Marks	Further Information
3(a)	echo	1	
3(b)	(distance travelled by sound wave =) time x 1500 or 4 x 1500 or 6000 (m) 3000 (m)	2	Accept correct answer with or without working = 2 marks Accept ecf from distance travelled by sound wave for second marking point

Question	Answer	Marks	Further Information
4(a)	crust (uppermost part of) mantle	2	each correct answer = 1 mark Accept lithosphere = 2 marks
4(b)	(idea of fold) mountain building earthquake volcanic eruption	3	each correct answer = 1 mark Accept fold mountains Accept tsunami Accept volcano Accept (idea of) subduction Accept sea floor spreading Accept rift valleys
4(c)	any two from shows the magma (in the mantle) moving shows the plates moving shows volcanoes or mountains forming shows what happens deep under the Earth's surface shows the different layers of the Earth it is not a moving model or (idea that) it does not show the speed of movement	2	each correct answer = 1 mark Accept shows plates move in the same direction as the magma (in the mantle) = 2 marks

	<p>(idea that) there are no labels, e.g. no temperature, no depth</p> <p>(idea that) it does not show how long the mountains take to form</p> <p>does not show earthquakes</p>		
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5	<pre> graph TD A[vertebrate] --> B[fur] A --> C[no fur] B --> D[mammal] C --> E[feathers] C --> F[no feathers] E --> G[bird] F --> H[dry scaly skin] F --> I[moist skin] H --> J[reptile] I --> K[scales] I --> L[no scales] K --> M[fish] L --> N[amphibian] </pre>	3	<p>all five correct = 3 marks</p> <p>three or four correct = 2 marks</p> <p>one or two correct = 1 mark</p>

Question	Answer	Marks	Further Information
6(a)	4 or four	1	
6(b)	purple	1	
6(c)	7 or seven	1	Ignore green
6(d)	lemon juice	1	

Question	Answer	Marks	Further Information
7(a)	<p>electrical (energy) →</p> <p>light (energy) sound (energy) thermal (energy)</p>	1	<p>all four correct = 1 mark</p> <p>Accept heat (energy) for thermal</p> <p>Accept light, sound and thermal in any order</p>
7(b)(i)	20 (J)	1	
7(b)(ii)	it dissipates or it is transferred to the environment or surroundings	1	<p>Accept it spreads out</p> <p>Accept any reasonable energy transfer process involving sound or thermal energy, e.g. thermal energy makes molecules move faster</p> <p>Ignore it is wasted or it is lost</p>

Question	Answer	Marks	Further Information						
8	<table border="1"> <tr> <td>gas</td> <td>percentage by volume</td> </tr> <tr> <td>nitrogen</td> <td>(78)</td> </tr> <tr> <td>(oxygen)</td> <td>21</td> </tr> </table>	gas	percentage by volume	nitrogen	(78)	(oxygen)	21	2	each correct answer = 1 mark Accept N or N₂ for nitrogen
gas	percentage by volume								
nitrogen	(78)								
(oxygen)	21								

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9	donkey and horse species produce fertile offspring / ora	2	both ticked = 1 mark correct explanation = 1 mark

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10(a)	precipitation	1	more than one answer circled = 0 marks Accept any indication of the correct answer, e.g. ticking or underlining, but circling takes precedence
10(b)	increases or rises or gets bigger acid is being neutralised (by the alkali) / ora	2	each correct answer = 1 mark

Question	Answer	Marks	Further Information
11(a)	<p>a force</p> <p>(that) pulls objects towards each other or pulls objects towards the centre of the planet</p>	2	<p>each correct answer = 1 mark</p> <p>Accept pulls objects towards a named planet, e.g. Earth</p> <p>Accept a force of attraction between two objects = 2 marks</p>
11(b)(i)	Jupiter	1	
11(b)(ii)	<p>as mass (of most planets) increases so does gravity and relevant data to support, e.g. Jupiter has the biggest mass and the most gravity</p> <p>or</p> <p>as mass (of most planets) increases so does gravity except for Uranus and relevant data to support, e.g. Uranus has more mass than Earth but has less gravity</p> <p>or</p> <p>(idea that) there is no relationship and relevant data to support, e.g. Uranus has more mass than Earth but has less gravity</p>	2	<p>relationship = 1 mark</p> <p>correct data to support = 1 mark</p>

Question	Answer	Marks	Further Information
12	(sulfuric acid) corrosive (ethanol) flammable (mercury nitrate) toxic or poisonous	3	each correct answer = 1 mark Accept inflammable Do not accept harmful

Question	Answer	Marks	Further Information
13(a)	iron, steel, graphite, aluminium	1	all four correct any order for the mark Accept symbols, i.e. Fe for iron, Al for aluminium, C for graphite
13(b)	electron(s)	1	Accept ions(s)
13(c)	insulator(s)	1	Ignore non-conductor

Question	Answer	Marks	Further Information
14(a)	grass → grasshopper grasshopper → lizard grasshopper → hawk lizard → hawk	2	all four correct = 2 marks two or three correct = 1 mark one correct = 0 marks but one incorrect arrow = maximum 1 mark three or more incorrect arrows = 0 marks
14(b)	(hawk) excretes waste (hawk) decays or decomposes	2	each correct answer = 1 mark Accept excretion Accept faeces or urine or uric acid Accept decomposition