

**Question 1**

Q1		Marks
<b>(a)</b>	N pointing at the nucleus of an onion cell	<b>3</b>
	N pointing at the nucleus of the human cheek cell	<b>3</b>
<b>(b): 5 + 2(2)</b>		
<b>(b)</b>	<i>Description of cell part</i>	<i>Name</i>
	<i>Controls the movement of substances in and out of cells</i>	<b>(Cell) membrane</b>
	<i>Found in plant cells only</i>	<b>(Cell) wall</b>
	<i>All of the material inside a cell, except for the nucleus</i>	<b>Cytoplasm</b>

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## Question 2


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- (c) (i) protein (amino acids) (3)
- (ii) A, B or C (3)
- (iii) suitable temperature for reaction to occur (3)
- (iv) food sample with no chemicals / chemical with water / chemical with no food (3)
- (v) translucent spot on brown paper (3)

Question 3

Q10				Marks
(a)	<b>Statement</b>	<b>True</b>	<b>False</b>	
	<i>The blood in vessel C is deoxygenated.</i>		✓	<b>9</b>
	<i>The organs found at location A are part of the respiratory system.</i>	✓		<b>1</b>
	<i>Carbon dioxide leaves the blood at location B.</i>		✓	<b>1</b>
	<i>Vessel D is a vein.</i>	✓		<b>1</b>
(b)	Blood under greater or higher pressure			<b>3</b>

Question 4

Q9			Marks	
(a)	A Mouth		2	<b>6</b>
	B Trachea		2	
	C Lung		2	
(b)	<ul style="list-style-type: none"> <li>• Diaphragm contracts / diaphragm lowers</li> <li>• Intercostal muscles contract / ribcage rises</li> <li>• Pressure decreases inside lungs</li> <li>• Lungs expand</li> <li>• Air taken in</li> <li>• Air travels through trachea</li> <li>• Oxygen leaves lungs / oxygen enters blood / gaseous exchange</li> <li>• Carbon dioxide leaves blood / carbon dioxide enters lungs / gaseous exchange</li> </ul> <p style="text-align: right;">[any three]</p> <p style="text-align: right;">[accept gaseous exchange once only]</p>		3 + 3 + 3	<b>9</b>

Question 5

Q8			Marks
	<b>Letter</b>	<b>Part of reproductive system</b>	
	<b>A</b>	<b>Ovary</b>	<b>3</b>
	<b>B</b>	<b>Fallopian Tube</b>	<b>3</b>
	<b>C</b>	<b>Uterus</b>	<b>3</b>
	<b>D</b>	<b>Testis</b>	<b>3</b>
	<b>E</b>	<b>Sperm duct</b>	<b>3</b>

Question 6

Q4		Marks
<b>11 + 4(1)</b>		
Melting		
Evaporation		
Physical		
Chemical		
Conservation		

Question 7

Q6		Marks								
(a)	<table border="1"><thead><tr><th>Substance</th><th>Acidic or Basic or Neutral</th></tr></thead><tbody><tr><td>Lemon juice</td><td>Acidic</td></tr><tr><td>Water</td><td>Neutral</td></tr><tr><td>Bleach</td><td>Basic</td></tr></tbody></table>	Substance	Acidic or Basic or Neutral	Lemon juice	Acidic	Water	Neutral	Bleach	Basic	3
	Substance	Acidic or Basic or Neutral								
	Lemon juice	Acidic								
	Water	Neutral								
Bleach	Basic									
		3								
		3								
(b)	Acidic	3								
(c)	Water	3								

### Question 8

Q10		Marks
(a)	(i) Neutron	3
	(ii) <u>Proton</u> : positive or +1 or + <b>and</b> <u>Neutron</u> : neutral or 0 or no charge	3
(b)	Diagram	3
	Label	3
(c)	Low carbon footprint (reduces carbon emissions) / reliable / efficient / clean / doesn't produce greenhouse gases / cost effective	3

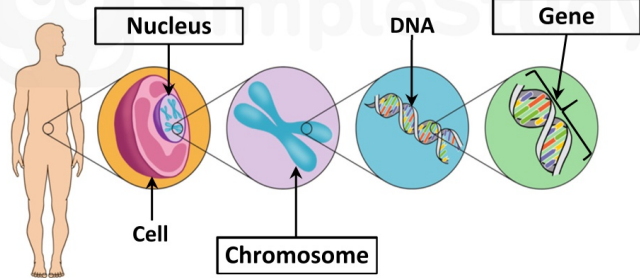
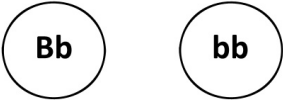
Question 9

Q5		Marks
(a)	Bulbs 2 and 3 would go out	<b>6+5+3+1</b>
(b)	Bulbs 2 and 3 would shine with the same brightness at before	
(c)	4 volts	
(d)	12 Volts	

Question 10

Q7			Marks												
	<table border="1"> <thead> <tr> <th>Property</th> <th>Comet or asteroid or both</th> </tr> </thead> <tbody> <tr> <td>Usually contains ice</td> <td>Comet</td> </tr> <tr> <td>Mostly located in a belt between Mars and Jupiter</td> <td>Asteroid</td> </tr> <tr> <td>Forms a tail when it passes through the inner solar system</td> <td>Comet</td> </tr> <tr> <td>Often found in orbit around the Sun</td> <td>Both</td> </tr> <tr> <td>Usually located in the outer solar system</td> <td>Comet</td> </tr> </tbody> </table>	Property	Comet or asteroid or both	Usually contains ice	Comet	Mostly located in a belt between Mars and Jupiter	Asteroid	Forms a tail when it passes through the inner solar system	Comet	Often found in orbit around the Sun	Both	Usually located in the outer solar system	Comet		<p>3</p> <p>3</p> <p>3</p> <p>3</p> <p>3</p>
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Mostly located in a belt between Mars and Jupiter	Asteroid														
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Often found in orbit around the Sun	Both														
Usually located in the outer solar system	Comet														

**Question 11**

Q12		Marks
(a)	 <p>The diagram illustrates the levels of genetic organization. On the left, a human figure is shown. An arrow points from the torso to a cross-section of a cell. Inside the cell is a nucleus. From the nucleus, an arrow points to a single chromosome. From the chromosome, an arrow points to a DNA molecule (double helix). From the DNA, an arrow points to a specific gene (a segment of the DNA helix).</p>	<p>3 3 3</p>
(b)	Microscope	3
(c)	23	3
(d)	46	3
(e)(i)	 <p>Two circles are shown side-by-side. The left circle contains the letters 'Bb' and the right circle contains the letters 'bb'.</p>	3+3
(e)(ii)	50%	3
(e)(iii)	100%	3

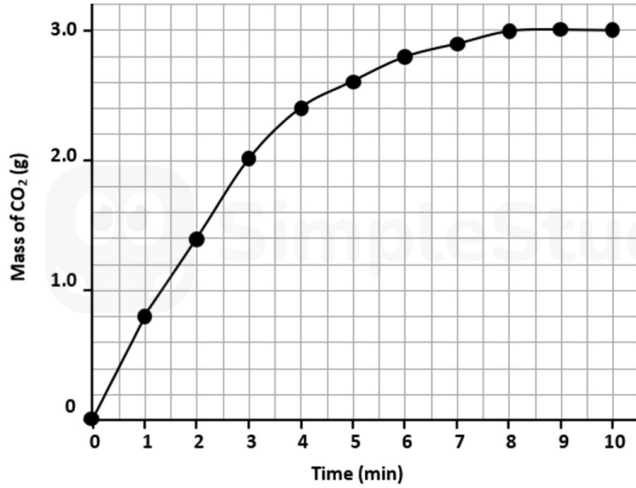
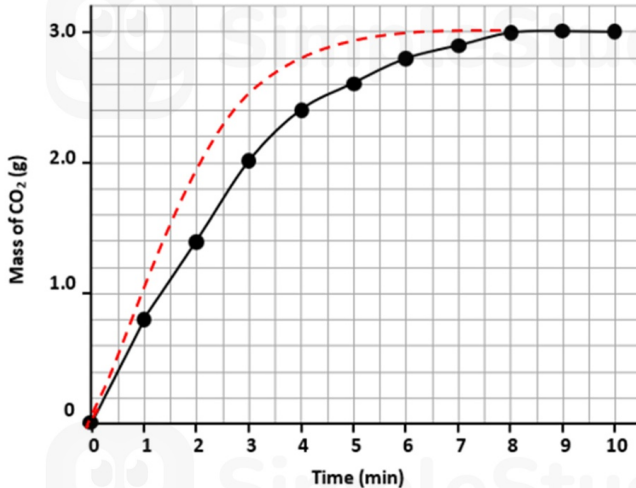
**Question 12**

<b>Q15</b>		<b>Marks</b>
<b>(a)</b>	(Identification) key	<b>3</b>
<b>(b)</b>	(Group) B Valid justification	<b>3</b> <b>3</b>
<b>(c)</b>	40 (%) (Award 2m for incomplete processing)	<b>3</b>
<b>(d)</b>	Quantitative (Based on) numbers	<b>6</b> <b>3</b>
<b>(e)</b>	0.25 (m <sup>2</sup> ) (Award 3m for incomplete processing)	<b>6</b>
<b>(f)</b>	28 000 (Award 2m for incomplete processing)	<b>3</b>

Question 13

Q11		Marks	
(a)	Any valid hypothesis	3	
(b)	Temperature at which a liquid turns to vapour throughout	3	
(c)	Balance / scales	3	
(d)	Container	3	9
	Source of heat in correct position	3	
	Thermometer in (or above) container [deduct 3 marks if no labels shown]	3	
(e)	105	3	
(f)	Reliability	3	
(g)	Yes / no – linked to (a)	3	6
	Valid explanation – linked to (a)	3	

Question 14

Q12		Marks
(a)	Student 3	3
(b)	Student 1	3
(c)	Student 2	3
(d)	<p><u>Graph</u>: 11 points plotted correctly All 11 points connected</p> 	11(1) 1
(e)	8 (mins)	3
(f)	<p>Steeper // Levels off at 3.0 g before 8 min</p> 	3 3

Question 15

Q17		Marks															
(a)	(i) We are made of carbon / we eat carbon / our economies (homes) (means of transport) are built on carbon	3															
	(ii) Rocks	3															
(b)	(i) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Reservoir A</th> <th>Reservoir B</th> <th>Carbon transfer process</th> </tr> </thead> <tbody> <tr> <td>Atmosphere</td> <td>Ocean water</td> <td>Dissolving</td> </tr> <tr> <td>Fossil fuel</td> <td>Atmosphere</td> <td>Combustion</td> </tr> <tr> <td>Land plants</td> <td>Soil</td> <td>Decomposition</td> </tr> <tr> <td>Limestone</td> <td>Ocean or fresh water</td> <td>Weathering/Dissolving</td> </tr> </tbody> </table>	Reservoir A	Reservoir B	Carbon transfer process	Atmosphere	Ocean water	Dissolving	Fossil fuel	Atmosphere	Combustion	Land plants	Soil	Decomposition	Limestone	Ocean or fresh water	Weathering/Dissolving	3 3 3
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Land plants	Soil	Decomposition															
Limestone	Ocean or fresh water	Weathering/Dissolving															
	(ii) Respiration	3															

Question 16

Q15		Marks
(a)(i)	Position 1 and/or Position 3	3
(a)(ii)	Position 1	3
(b)	Gravity	6
(c)	Friction / respiration	3
(d)	<p><i>Graph:</i></p> <p><b>Spring P</b> – 8 points plotted correctly (8 x 1) <span style="float: right;">8</span></p> <p><b>Spring P</b> – correct line drawn through all 8 plotted points <span style="float: right;">2</span></p> <p><b>Spring Q</b> - 8 points plotted correctly (8 x 1) <span style="float: right;">8</span></p> <p><b>Spring Q</b> – correct line drawn through all 8 plotted points <span style="float: right;">2</span></p> <p><b>Legend</b> (either line correctly labelled) <span style="float: right;">1</span></p>	
(e)	Two valid conclusions	3 + 3
(f)	13.5	6
(g)	<p>Mass – amount of matter / quantity of matter <span style="float: right;">3</span></p> <p>Weight – force acting on an object due to gravity / force of gravity on an object <span style="float: right;">3</span></p>	
(h)	<p>P <span style="float: right;">3</span></p> <p>Justify <span style="float: right;">3</span></p>	