

Science - Biology

B2

Question	Marking details	Marks Available
1	<p>(a) (i) Selling to <u>florists/ floral industry/ bouquets</u>;</p>	1
	<p>(ii) Cutting too many leaves/ cutting too often/ removing too many leaves; NOT cutting down</p>	1
	<p>(b) (Decrease) loss of (animal) <u>species/ species</u> becoming extinct/ less or fewer <u>species</u>; Reject animals haven't got enough food/ numbers decreasing/ species will die/ not enough food to feed all the species Reject type instead of species</p>	1
	<p>(c) (Palm) tree slow growing/ long time needed to produce (enough) leaves (to sell)/ <u>only</u> two leaves are produced each year; NOT two leaves are produced each year</p>	1
	<p>(d) Employment/ local economy/ lose source of money/ no crops for farmers/ can't sell them to make money/ ORA;</p>	1
	Question 1 total	[5]

Question	Marking details	Marks Available						
2 (a)	(i) <table style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding-right: 10px;">protein</td> <td style="border-left: 1px solid black; padding-left: 10px; padding-right: 10px;">glucose</td> </tr> <tr> <td style="padding-right: 10px;">starch</td> <td style="border-left: 1px solid black; padding-left: 10px; padding-right: 10px;">fatty acids and glycerol</td> </tr> <tr> <td style="padding-right: 10px;">fats</td> <td style="border-left: 1px solid black; padding-left: 10px; padding-right: 10px;">amino acids</td> </tr> </table> 2/3 correct lines;; (1 correct = 1 mark)	protein	glucose	starch	fatty acids and glycerol	fats	amino acids	2
protein	glucose							
starch	fatty acids and glycerol							
fats	amino acids							
	(ii) For absorption/ pass through cell/ for getting into blood/ for use by cells/ pass through cell membrane;	1						
	(iii) {for /to release / to get} source of energy; NOT produce energy/ make energy	1						
(b)	(i) <table style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding-right: 10px;">I</td> <td style="padding-right: 10px;">F</td> <td rowspan="2" style="font-size: 2em; vertical-align: middle;">}</td> </tr> <tr> <td style="padding-right: 10px;">II</td> <td style="padding-right: 10px;">G;</td> </tr> </table>	I	F	}	II	G;	1	
I	F	}						
II	G;							
	(ii) C and E;	1						
(c)	Benedicts (reagent); Protein;	2						
Question 2 total		[8]						

Question	Marking details	Marks Available
3	(a) (i) Suitable scale properly labelled;	1
	(ii) Correct plots; $\frac{1}{2}$ small square tolerance 1 error = 1 mark 2 errors = 0 No extrapolation	2
	(iii) Good quality line through the centre of the points with ruler;	1
	(b) (i) <u>Rises</u> then <u>falls/ goes up</u> and then <u>goes down/</u> goes to maximum and then drops;	1
	(ii) Correct readings from graph shown in working; Ideally (51 – (Any reading between 23 and 24)) Consequent correct answer; (27/ 27.5/ 28)	1
	Accept ecf <i>If no working shown accept correct answer for 2 marks if consistent with graph</i>	1
	(c) (i) 1 (cm ³) and 5 (cm ³);	1
	Fair test/ comparison;	1
	(ii) (Boiled) enzyme – <u>denatured/ destroyed</u> ; NOT 'killed'	1
	(d) Fat;	1
Question 3 Total		[11]

Question	Marking details	Marks Available								
4	(a) A <u>Cytoplasm</u> ; B <u>Cell</u> membrane;	2								
(b)	(i) <table border="1"> <thead> <tr> <th>Part of algal cell</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>nucleus</td> <td><u>Controls</u> cells (activities)/ <u>holds</u> or <u>contains</u> {chromosomes/ DNA/ genes/ genetic information} ;</td> </tr> <tr> <td>Chloroplast;</td> <td>photosynthesis</td> </tr> <tr> <td>Cell wall</td> <td>Shape/ support/ <u>rigid</u> structure/ stops cell expansion; NOT protection/ structure unqualified/ keeps it strong/ gives stability</td> </tr> </tbody> </table>	Part of algal cell	Function	nucleus	<u>Controls</u> cells (activities)/ <u>holds</u> or <u>contains</u> {chromosomes/ DNA/ genes/ genetic information} ;	Chloroplast;	photosynthesis	Cell wall	Shape/ support/ <u>rigid</u> structure/ stops cell expansion; NOT protection/ structure unqualified/ keeps it strong/ gives stability	3
Part of algal cell	Function									
nucleus	<u>Controls</u> cells (activities)/ <u>holds</u> or <u>contains</u> {chromosomes/ DNA/ genes/ genetic information} ;									
Chloroplast;	photosynthesis									
Cell wall	Shape/ support/ <u>rigid</u> structure/ stops cell expansion; NOT protection/ structure unqualified/ keeps it strong/ gives stability									
	(ii) I chloroplast/ cell wall; II nucleus/ chloroplast;	2								
Question 4 Total		[7]								

Question	Marking details	Marks Available
5 (a)	B;	1
(b)	Phosphate and sugar; (either order) Bases; Helix;	3
(c)	Code (for amino acids); NOT 'code for life'	1
	Question 5 Total	[5]

Question	Marking details	Marks Available
6/1 (a)	(Obama) believes that embryonic stem cell research will lead to the {treatment/ cure} of many diseases/ treat {damaged tissue/ or correct example}. (OWTTE);	1
	(Gingrich) – reference to the ethical issues involved eg destruction of {embryos/ foetus/ <u>unborn</u> children}/ life is lost/ destroying (potential human) life; NOT - playing God	1
(b)	(i) <u>stem</u> cells;	1
	(ii) avoids ethical issues of {using/killing} {unborn children/ embryos/ foetus}/ cells more likely to be accepted by the body/less likelihood of rejection; NOT less chance of transfer of disease/ nothing is killed/ less controversial unqualified	1
Question 6/1 Total		[4]

Question	Marking details	Marks Available
7/2 (a)	(i) Bronchiole;	1
	(ii) carbon dioxide/CO ₂ (not CO ² /Co ₂ /CO2 etc);	1
(b)	dissolves in {moist/ water} lining (of alveolus)(not dissolves in water vapour)/ passes in solution; diffuses (no ref. to diffusion gradient required); diffuses in solution = 2 marks	2

(c)	<table border="1"> <thead> <tr> <th>Gas</th> <th>Inspired air (%)</th> <th>Expired air (%)</th> </tr> </thead> <tbody> <tr> <td>Oxygen</td> <td>21</td> <td>16;</td> </tr> <tr> <td>Carbon dioxide</td> <td>0.04;</td> <td>4</td> </tr> <tr> <td>Nitrogen</td> <td>79</td> <td>79</td> </tr> <tr> <td>Water vapour</td> <td>varies</td> <td>1</td> </tr> </tbody> </table>	Gas	Inspired air (%)	Expired air (%)	Oxygen	21	16;	Carbon dioxide	0.04;	4	Nitrogen	79	79	Water vapour	varies	1	2
Gas	Inspired air (%)	Expired air (%)															
Oxygen	21	16;															
Carbon dioxide	0.04;	4															
Nitrogen	79	79															
Water vapour	varies	1															

Question 7/2 Total

[6]

Question	Marking details	Marks Available
8/3 (a)	<u>carbon dioxide/CO₂</u> (not CO ² or Co ₂ etc) required for <u>photosynthesis/starch manufacture</u> ;	1
(b)	(i) {Boil/ heat} in {alcohol/methanol/ethanol}; Boiling water = neutral	1
	(ii) Iodine (solution);	1
	(iii) no CO ₂ / CO ₂ absorbed by sodium hydroxide; no photosynthesis; no starch produced;	3
(c)	Control/ to make a comparison;	1
(d)	because you wouldn't know whether it was the lack of light or lack of carbon dioxide which prevented photosynthesis/starch production; Answer must refer to <u>both</u> carbon dioxide and light limiting photosynthesis	1
Question 8/3 Total		[8]

Question	Marking details	Marks Available
9/4	<p>Indicative content</p> <p>The balloons represent lungs. The rubber sheet represents diaphragm. When rubber sheet is pulled down, the volume of air-tight space around balloons increases and pressure decreases/ drops/ goes down. The balloons inflate/ expand/ blow up as air is drawn in.</p> <p>5-6 marks</p> <p>The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3-4 marks</p> <p>The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1-2 marks</p> <p>The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks</p> <p>The candidate does not make any attempt or give a relevant answer worthy of credit</p>	6
Question 9/4 Total		[6]