

Photosynthesis 2 MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	photosynthesis		1
b)	oxygen		1
c)	chlorophyll		1
d)	starch		1
Total marks			4

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any three from: <input type="checkbox"/> ((mean) mass) increases up to 7 / 8 units (of light) then levels off <input type="checkbox"/> light limiting factor up to 7 / 8 units <input type="checkbox"/> for photosynthesis <input type="checkbox"/> other factor / temperature limiting above 7 / 8 units	must be in correct context	3
b)	any two from: <input type="checkbox"/> cost of providing conditions / heat / light / CO ₂ <input type="checkbox"/> effect of treatment on profit <input type="checkbox"/> relevant use of data from graph eg limiting factors <input type="checkbox"/> named other factors eg fertiliser / pest control / weeds / density of planting	allow too much of factor is wasteful allow taste / appearance	2
c)	nitrate function produce amino acids / proteins / enzymes nitrate deficiency stunted growth magnesium function produce chlorophyll	ignore DNA do not allow chlorophyll allow description ignore plant dies ignore chloroplasts	1 1 1

	magnesium deficiency yellow leaves / plant	ignore plant dies	1
Total marks			9

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	water / H ₂ O oxygen / O ₂ / O	answers must be in this order allow hydrogen oxide allow upper and lower case symbols and superscripts	1 1
a)ii)	respiration in the plant	allow clear indication of correct response	1
b)	light (: no light) / light intensity chlorophyll (: no chlorophyll) / chloroplast	ignore references to the card / covered / uncovered allow leaf colour or both green and white given	1 1
c)i)	no light (received) or it's dark	allow no photosynthesis do not allow little light / photosynthesis ignore sun apply list principle for other factors	1
c)ii)	no chlorophyll / chloroplasts (present)	allow no / little photosynthesis allow white or not green or little chlorophyll / few chloroplasts apply list principle for other factors	1
Total marks			7

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	the starch is stored for later use.		1
b)i)	any two from: ☐ carbon dioxide (concentration) ☐ light intensity ☐☐☐ light colour / wavelength ☐ pH ☐☐☐ size / amount plant ☐☐☐ same / species / type plant ☐☐☐ amount of water in the tube	do not accept temperature apply list principle ignore reference to time allow one mark for light if neither intensity or colour are awarded allow 'the plant' ignore amount of water alone	2
b)ii)	number / amount of bubbles or amount of gas / oxygen (relevant reference to) time / named time interval	allow volume of bubbles (together) ignore 'the bubbles' unqualified allow how long it bubbles for	1 1

		do not accept time bubbles start / stop ignore speed / rate bubbles ignore instruments do not accept other factors eg temperature accept how many bubbles per minute for 2 marks	
c)i)	temperature	allow heat / ° C / cold	1
c)ii)	carbon dioxide / CO ₂	allow CO ₂ / CO ² / Co ₂ / Co ² / co ₂₇	1
Total marks			7

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	increase (and then level off) and max / up to at 0.15(%) (carbon dioxide)	ignore references to oxygen concentration only ignore mention of 23	1
a)ii)	CO ₂ is limiting at low CO ₂ / at first light is limiting at high CO ₂ / at end	ignore specific numbers	1 1
b)	effect: (oxygen) falls explanation: (oxygen) used for respiration	mark both parts together if no other marks awarded allow (effect) no change and (explanation) no photosynthesis for 1 mark	1 1
c)	more chlorophyll / chloroplasts allows more photosynthesis / description	for both marks must refer to more at least once	1 1
Total marks			7

QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	(LHS) water / H ₂ O (RHS) glucose / sugar / C ₆ H ₁₂ O ₆	allow H ₂ O do not accept H ₂ O allow starch / carbohydrate allow C ₆ H ₁₂ O ₆ do not accept C ₆ H ₁₂ O ₆	1 1
b)i)	1 arbitrary unit	extra box ticked – cancel	1
b)ii)	210		1
b)iii)	carbon dioxide / CO ₂ / CO ₂ or temperature / heat / warmth	ignore mineral ions ignore water do not accept CO ²	1
Total marks			5

