5 (a)	Complete the equation for photosynthesis.				
(8)	light energy				
•	+ water +				
5 (b)	The rate of photosynthesis in a plant depends on several factors in the environment. These factors include light intensity and the availability of water.				
	Describe and explain the effects of <b>two other</b> factors that affect the rate of photosynthesis.				
	You may include one or more sketch graphs in your answer.				
1	• • • • • • • • • • • • • • • • • • •				
	•				
a a					
	<u></u>				
	(5 marks)				

Turn over ▶

8



## Question 5

question	answers	extra information	mark
5(a)	LHS - carbon dioxide / CO <sub>2</sub>	allow CO2 ignore CO <sup>2</sup>	1
	RHS glucose / carbohydrate / sugar	in either order allow starch allow $C_6H_{12}O_6$ / $C6H12O6$ ignore $C^6H^{12}O^6$	1
	oxygen	allow O <sub>2</sub> /O2 ignore O <sup>2</sup> / O	1

Question 5 continues on the next page...

## Question 5 continued...

question	answers	extra information	mark
5(b)	<ul> <li>any five from:</li> <li>factor 1: CO<sub>2</sub> (concentration)</li> <li>effect - as CO<sub>2</sub> increases so does rate and then it levels off or shown in a graph</li> <li>explanation:         <ul> <li>(graph increases) because CO<sub>2</sub> is the raw material or used in photosynthesis / converted to organic substance / named eg</li> </ul> </li> <li>or</li> <li>(graph levels off) when another factor limits the rate.</li> </ul>	accept points made via an annotated / labelled graph	5
,	<ul> <li>factor 2: temperature</li> <li>effect – as temperature increases, so does the rate and then it decreases or shown in a graph</li> <li>explanation:         <ul> <li>(rise in temp) increases rate of chemical reactions / more kinetic energy</li> </ul> </li> </ul>	allow warmth / heat allow 'it peaks' for description of both phases  allow molecules move faster / more collisions	
	(decreases) because the enzyme is denatured.	context must be clear = high temperature	•
		allow other factor plus effect plus explanation:  eg light wavelength / colour / pigments / chlorophyll / pH / minerals / ions / nutrients / size of leaves  2 <sup>nd</sup> or 3 <sup>rd</sup> mark can be gained from correct description and explanation	
Total			8