

Question	Answers	Extra information	Mark
01.1	C: water + carbon dioxide → glucose + oxygen		1
01.2	$C_6H_{12}O_6$		1
01.3	energy is absorbed	ignore light	1 1
01.4	produces food / energy (for animals) produces oxygen for respiration		1 1
02.1	oxygen		1
02.2	to allow water to circulate and provide carbon dioxide (to pondweed)		1 1
02.3	measure the volume of gas produced or count the number of bubbles produced in a given time or every minute / hour		1 1
02.4	any three from: <ul style="list-style-type: none"> • light intensity • concentration of carbon dioxide • amount of chlorophyll • temperature 	ignore amount of water	3
03.1	step 1 – to kill the leaf or to stop any further reactions step 2 – to remove the chlorophyll / green colour step 3 – to remove the ethanol or to soften the leaf step 4 – to detect / stain any starch		1 1 1 1

03.2	wear goggles		1
	keep away from naked flames or switch off the Bunsen burner		1
03.3	chlorophyll is needed to make starch	allow for 1 mark starch is only made in the green part of a leaf	2

04			
0 marks	Level 1 (1–2 marks)	Level 2 (3–4 marks)	Level 3 (5–6 marks)
No relevant content	Some raw materials are referred to	The raw materials for photosynthesis are included and a reference to sugar and starch / protein being produced.	A clear description of photosynthesis is given and the use of glucose to produce starch and protein. for full marks a reference to nitrates in protein synthesis is also required.
04	examples of the points made in the response <ul style="list-style-type: none"> • carbon dioxide needed • (carbon dioxide) absorbed from the air • water needed • (water absorbed from the soil) • light required • (which is) absorbed by chlorophyll / chloroplasts • for photosynthesis • to produce glucose / sugar • sugar / glucose join together to make starch 		6