

Photosynthesis (equation, factors, uses of glucose)

Q1. (2018)

03.1	$6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$	1	AO2 4.4.1.1
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Q2. (2018)

03.2	endothermic	1	AO1 4.4.1.1
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Q3. (2021)

01.1	$6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$	1	AO1 4.4.1.1
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Q4. (2022)

04.1	to transfer energy or photosynthesis is an endothermic reaction	allow idea that light is the source of energy (for the reaction) do not accept to produce / make / create / use energy	1	AO1 4.4.1.1
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Q5. (2022)

04.2	$6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$	1	AO1 4.4.1.1
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Q6. (2023)

05	Level 3: Relevant points (reasons/causes) are identified, given in detail and logically linked to form a clear account.	5–6	AO2
	Level 2: Relevant points (reasons/causes) are identified, and there are attempts at logical linking. The resulting account is not fully clear.	3–4	AO1
	Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.	1–2	AO1
	No relevant content	0	

Indicative content**Bright light:**

- rate of photosynthesis is high due to high light intensity
- (extra) carbon dioxide is absorbed from the air
- (so) oxygen is released into the air
- carbon dioxide produced in respiration is used for photosynthesis
- (so) no carbon dioxide released from plant **or** into the air
- sufficient oxygen for respiration is produced by photosynthesis
- (so) no extra oxygen absorbed from the air
- rate of photosynthesis is greater than rate of respiration

Dim light:

- no net / overall flow / exchange of carbon dioxide or oxygen with the air
- (because) rate of respiration equals rate of photosynthesis
- carbon dioxide produced in respiration is used for photosynthesis
- no (extra) carbon dioxide is absorbed from the air
- oxygen produced by photosynthesis is used in respiration
- no (extra) oxygen is absorbed from the air

No light:

- no photosynthesis occurs as no light
- (so) no carbon dioxide is absorbed and no oxygen released / produced
- plant respire so takes in oxygen and releases carbon dioxide into the air

General points:

- plants photosynthesise when there is light using carbon dioxide and producing oxygen
- rate of photosynthesis depends on light intensity
- respiration occurs at all times of the day
- respiration uses oxygen and produces carbon dioxide

Level 3 response must include explanation at all three light intensities, demonstrating a good understanding of both photosynthesis **and** respiration.

For **Level 2** correct reference to **both** processes **and** to **both** gases

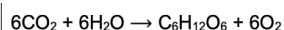
4.4.1.1

4.4.1.2

4.4.2.1

Q7. (2024)

04.1



1

AO2
4.4.1.1