AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.4.1.3

Uses of glucose from photosynthesis

Mark schemes and examiner comments

Tier	**Foundation**
Question groups	**1**
Available paper years	**2024–2024**

Using this booklet

1. Booklet answer numbers match the question booklet.
2. Use the original question number within marking tables.
3. Examiner comments are included where available.

Name: _____ **Date:** _____

Where a precise marking extract is unavailable, the full source document is included in an appendix. Any missing mark scheme is explicitly identified.

4.4.1.3 Uses of glucose from photosynthesis

Answer 01 · Mark scheme

June 2024 | 8464/B/1F | Original Q5

Question 5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.1	(reactants) water (products) oxygen	 allow H_2O allow O_2	 1 1	AO1 4.4.1.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.2	$C_6H_{12}O_6$		1	AO1 4.4.1.1 4.4.2.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.3	any **two** from: • respiration • to convert to starch • to produce / store fat / oil • to produce cellulose • to produce amino acids **or** to produce protein	 allow energy (source) do **not** accept energy produced / made / created do **not** accept energy for respiration allow produce / store starch ignore used for growth of the plant	2	AO1 4.4.1.3 4.4.2.3

4.4.1.3 Uses of glucose from photosynthesis

Answer 01 · Mark scheme

June 2024 | 8464/B/1F | Original Q5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.4	higher / increase in temperature **or** more carbon dioxide	allow warmer allow combustion / burning releases carbon dioxide	1	AO3 AO2 4.4.1.2 4.4.1.3 4.4.2.3
	(so) more photosynthesis	allow faster photosynthesis	1	
	(so) more glucose / sugar made		1	
	(so) more protein / cellulose made		1	

Total Question 5	**9**

Answer 01 · Examiner comments

June 2024 | 8464/B/1F | Original Q5

Question 5 (low and standard demand)

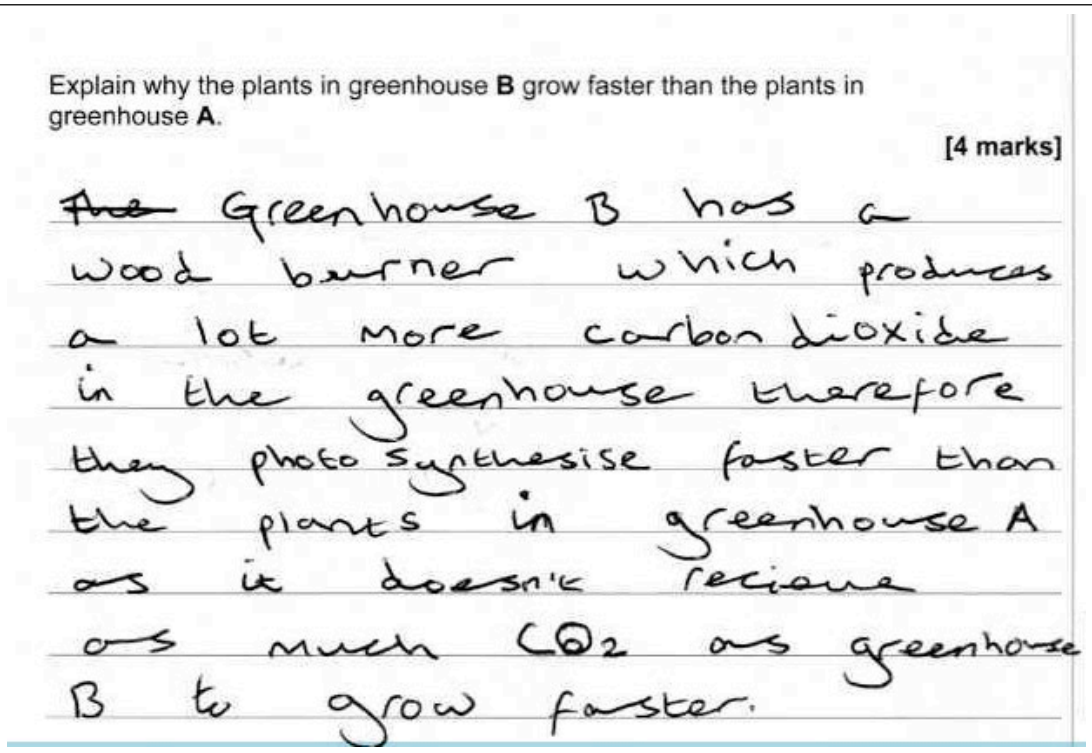
05.1 Just under two-thirds of students gave the correct reactant and product and very few (4%) gained only 1 mark. The most common reason for incorrect answers seems to be confusion between the reactants and products. Those students who correctly used formulae rather than the words were credited.

05.2 The vast majority (89%) of students identified the correct formula for glucose.

05.3 Students really struggled to gain credit in this question. Those who did gain credit usually met marking point 1 for respiration or energy: 'Used for energy' was the most common correct answer given. Convert/produce/make starch were also common responses which gained credit; however, many students simply wrote 'for storage', 'for food' or 'to store as food', which lacked the detail needed. Some students referenced fat and cellulose for marking point 3 and marking point 4, but very few students referenced amino acids or protein for marking point 5.

The most common incorrect answers were for growth and for repair.

05.4 Many students achieved a mark by stating that there is an increased temperature in greenhouse B, and that there is more carbon dioxide, or that combustion releases carbon dioxide. A reasonable number of students were then able to relate this to more photosynthesis or a faster rate of photosynthesis. A more limited number of students could relate this to an increase in glucose being made, but very few went on to relate this to more protein or cellulose being made.



Explain why the plants in greenhouse **B** grow faster than the plants in greenhouse **A**.

[4 marks]

~~The~~ Greenhouse B has a wood burner which produces a lot more carbon dioxide in the greenhouse therefore they photosynthesise faster than the plants in greenhouse A as it doesn't recieve as much CO_2 as greenhouse B to grow faster.

An example of a common 2-mark response, in which the student has given part of the answer but not gone on to relate the increase in photosynthesis to production of glucose, protein or cellulose.

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