

GCSE Biology A (Gateway)

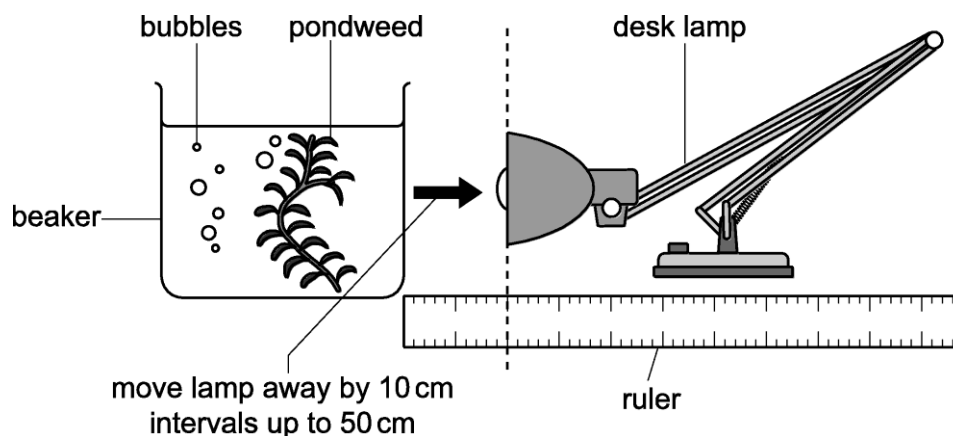
J247/03 B1-B3 and B7 Higher (Higher Tier)

Question Set 2

1

A student investigates how light intensity affects the rate of photosynthesis in pondweed.

The diagram shows how he sets up his investigation.



- He places the lamp at distances of 10, 30, 50, 70 and 90 cm from the beaker.
- At each distance, he measures how much gas is given off from the pondweed in 1 minute.

- (a) (i) The student counts the number of bubbles to get a measure of the amount of gas given off in photosynthesis.

Why is counting bubbles **not** an accurate way of measuring the amount of gas given off?

Bubbles can be different sizes and difficult to count.

[2]

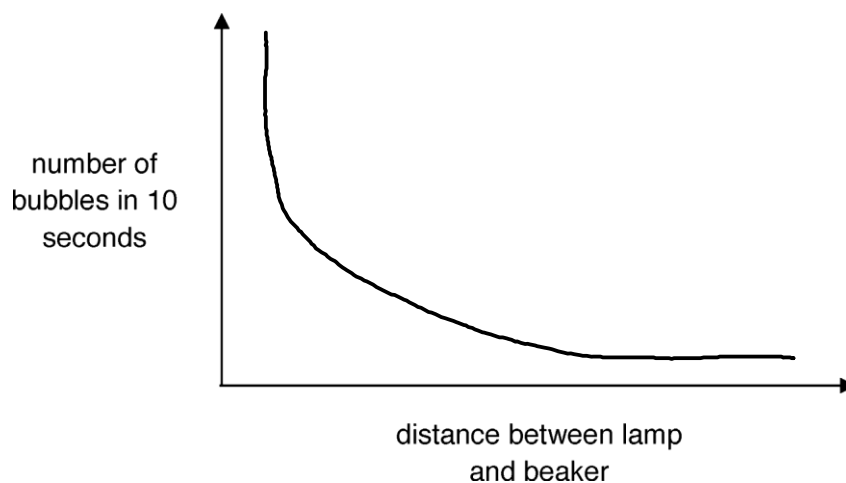
- (ii) The student's teacher says that collecting the gas, for example in a gas syringe, would give a more accurate measurement.

Explain why.

It would measure the total volume.

[1]

- (b) (i) Sketch a line on the axes below to show the results you would expect.



[2]

- (ii) Explain the shape of the graph. **Two** explanations are required.

As distance increases the light intensity decreases.
The line curves because the light will not decrease to zero.

[2]

- (c) (i) Describe how and where oxygen is produced in photosynthesis.

Light energy splits water in chloroplasts which produces O_2 .

[3]

- (ii) Explain why the amount of oxygen gas given off is **not** a true measure of the rate of photosynthesis.

Respiration is also occurring so some oxygen is used up here.

[2]

Total Marks for Question Set 2: 12

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