**AQA Biology**

**Required Practical 6- Photosynthesis**

**Glossary**

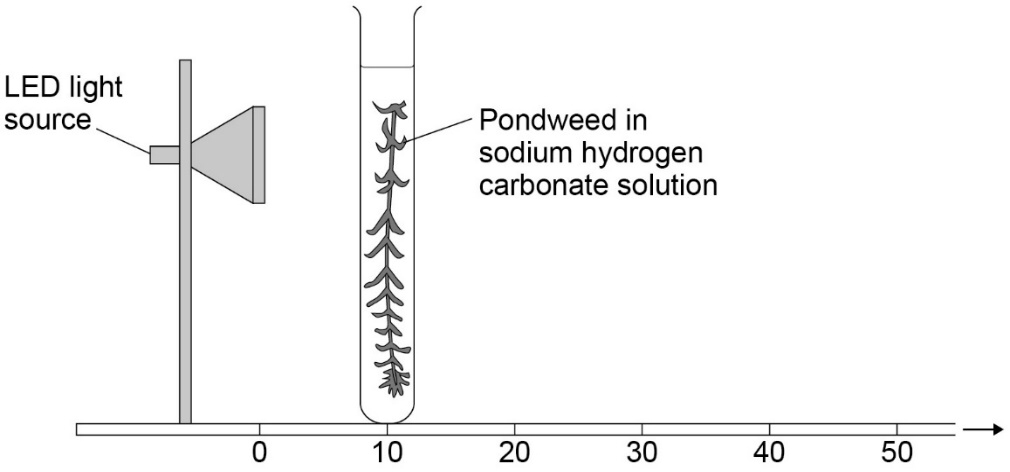
Photosynthesis-

Limiting Factor-

Anomalous-

***Aims***

* To investigate the effect of light intensity on the rate of photosynthesis.
* To accurately measure changes in the rate of photosynthesis.
* To describe how gas can be collected to provide results.



**Knowledge Check**

1. Identify the dependent variable in this experiment.

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1. Write down the word equation for photosynthesis.

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1. Identify the gas in the bubbles produced at the cut end of the pondweed.

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**Method**

1. Set up a test tube rack at a distance of 10cm away from the light source

**It is best to use an LED light source as they give off less heat. If a normal lightbulb is used it place a beaker of water in between the boiling tube and the lamp to reduce the temperature affecting the results.**

1. Fill a boiling tube with water and sodium hydrogen carbonate

**This increases the concentration of CO2, stopping CO2 being a limiting factor**

1. Put a piece of pondweed into the boiling tube and leave for a couple of minutes

**This is allow the pondweed to adjust to the new light intensity**

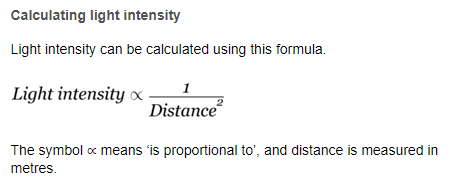
1. Start the stop watch and count the number of bubbles produced in 1 minute
2. Repeat (use data to calculate a mean)
3. Repeat at distances of 20cm, 30 cm and 40cm from the light source

**This experiment can also be done with a capillary tube attached to collect the gas bubbles.**

**Results**

***Hint- Remember that anomalous results should NOT be included when calculating a mean.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Distance from light source (cm)** | **Number of gas bubbles released per minute** | | | |
| **Test 1** | **Test 2** | **Test 3** | **Mean** |
| 10 |  |  |  |  |
| 20 |  |  |  |  |
| 30 |  |  |  |  |
| 40 |  |  |  |  |
| 50 |  |  |  |  |



**Higher: Explain the inverse square law**.

**Exam Practice**

1. Give the name of the structure in plant cells where photosynthesis takes place. (1 mark)
2. Describe 2 control variables for this investigation and ***how*** you will control them. (2 marks)

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1. Describe how a student could change the method to investigate the effect of carbon dioxide Concentration on the rate of photosynthesis. You should include:

* How to change the independent variable
* Two control variables. (3 marks)

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