



General Certificate of Education
Advanced Level Examination
June 2010

Biology

BIO6T/P10/TN

Unit 6T A2 Investigative Skills Assignment

Teachers' Notes

Confidential

A copy should be given immediately to the teacher(s) responsible for
GCE Biology

Teachers' Notes**CONFIDENTIAL**

These notes must be read in conjunction with *Instructions for the Administration of the Investigative Skills Assignment: GCE Biology* published on the ISA disk and on the AQA Website.

The effect of light intensity on the rate of photosynthesis

Candidates are required to measure the effect of light intensity on the rate of photosynthesis of an aquatic plant.

Materials

In addition to access to general laboratory equipment, each candidate needs

- sprig of an aquatic plant at least 6 cm long (*Cabomba* is recommended)
- 20 cm³ of 1 % sodium hydrogencarbonate solution (i.e. enough to fill the test tube)
- lamp of appropriate wattage to produce a reasonable rate of bubbling at 10 cm (e.g. 40W bench lamp). Alternatively, the starting distance of the plant from the lamp should be changed, so that a reasonable initial rate of bubbling is obtained. Low energy light bulbs should not be used.
- stopwatch or suitable alternative
- test tube
- test tube rack
- ruler to measure distances in mm
- scissors
- glass rod
- forceps
- AQA Students' Statistics Sheet (version 2) provided with the Task Sheet.

Technical Information

Either *Cabomba* or *Elodea* could be used as the aquatic plant in this investigation. It has been found that *Cabomba* is much more reliable and is therefore recommended. It can be obtained from tropical fish shops and some large garden centres. If *Elodea* is used, it is suggested that the plant is placed in a beaker of water in front of a lamp for 2–3 hours before starting the investigation.

Cabomba should be kept in a well aerated tank. In the laboratory its photosynthetic ability decreases with time, so fresh material should be used for the investigation.

This task must be trialled before use.

One week before sitting Stage 1 of the ISA, teachers may give their candidates the following information.

You will investigate the rate of photosynthesis of a plant.

In this investigation, teachers must not give candidates the following information

- the number of repeat measurements to take at each light intensity
- the number of different light intensities to use.