A level Biology A

H420/03 Unified biology

Question Set 10

1 Temperature and light intensity are two factors that affect the rate of photosynthesis.

A student investigated how temperature and light intensity affected the rate of photosynthesis in the aquatic plant *Elodea canadensis*. The rate of photosynthesis was measured by counting the number of bubbles produced by the plant per minute.

The student's results are shown in Table 3

Light intensity	Temperature (°C)	Number of bubbles produced / minute
8	25.0	10
32	25.0	31
127	25.0	102
510	25.0	108
8	40.5	25
32	40.5	28
127	40.5	118
510	40.5	133
8	70.0	2
32	70.0	4
127	70.0	12
510	70.0	16

Table 3

(a) (i) Identify the anomalous result in Table 3 and explain how this result could be confirmed as an anomaly. **[2]**

(ii)* Describe how the student could improve their experimental method **and** the presentation of their data. **[6]**

(b) Photosynthesis occurs in two stages: the light-dependent stage and the light-independent stage. The light-independent stage is affected by temperature more than the light-dependent stage.

Explain why temperature has a greater effect on the rate of the light-independent stage. **[2]**

(c) Scientists are able to clone desirable plants that show a high rate of photosynthesis. The following passage describes how plants are cloned.

Complete the passage using the most appropriate words or phrases.

Cells are removed from the meristem tissue in axial buds or ..... tips. The tissue sample that is removed is called the ..... . Ethanol can be used to..... the plant tissue. Hormones are used to stimulate mitosis, which produces a mass of cells called a ..... . **[4]**

Total Mark for Questions Set 10: 14