Variation and selection – 2021 IGCSE 0610

1. Nov/2021/Paper_11/No.35

A species of insect usually has pale-coloured wings. This helps to camouflage them on pale-coloured tree trunks. A few of the insects in this species have darker coloured wings.

After a number of years the tree trunks become darker in colour due to environmental changes. The insects with dark-coloured wings become more common than insects with pale-coloured wings in this species.

Which process causes this change in the proportion of insects with dark-coloured wings?

A biotechnology

B conservation

C natural selection

D selective breeding

2. Nov/2021/Paper_21/No.33

Which statement is correct?

A Genetic variation can be caused by phenotypic variation.

B Mutations can be caused by phenotypic variation.

C Phenotypic variation can be caused by genetic variation.

D Phenotypic variation cannot be caused by mutations.

3. Nov/2021/Paper_22/No.33

What is an adaptive feature of xerophytes?

A They do not have root hair cells.

B Their leaves have a large surface area.

C They have many stomata.

D Their leaves have thick cuticles.

4. Nov/2021/Paper_22/No.35

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5. Nov/2021/Paper_23/No.33

A man with blood group AB and a woman with blood group O have a child.

What are the correct percentages of the possible blood groups for this child?

A 50% A and 50% B

B 50% AB and 50% O

C 25% A, 25% B and 50% O

D 25% AB, 25% A, 25% B and 25% O

6. Nov/2021/Paper_23/No.35

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7. Nov/2021/Paper_31/No.6

(a) (i) State the word equation for photosynthesis.

..... [2]

(ii) State the source of energy for photosynthesis.

..... [1]

(iii) State the name of the structure in a cell where photosynthesis takes place.

..... [1]

(b) The effect of carbon dioxide concentration on the rate of photosynthesis in an aquatic plant was investigated.

- 10 test-tubes were prepared. Each contained water, an aquatic plant and a different concentration of carbon dioxide.
- Each test-tube was placed next to a lamp and the temperature in the test-tubes was maintained at 20 °C.
- The number of bubbles produced by each aquatic plant in one minute was counted.

Fig. 6.1 shows the apparatus that was used.

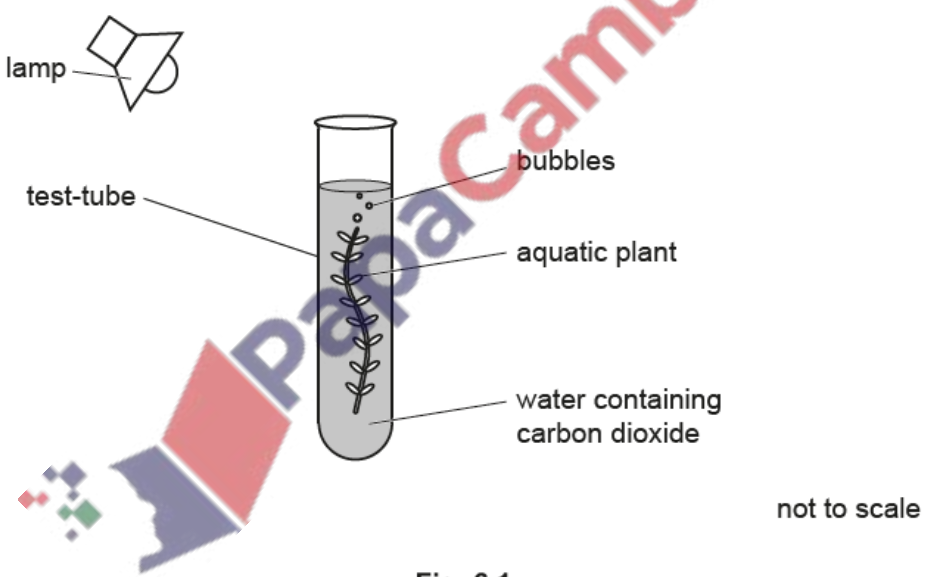

Fig. 6.1

The results of the investigation are shown in Fig. 6.2.

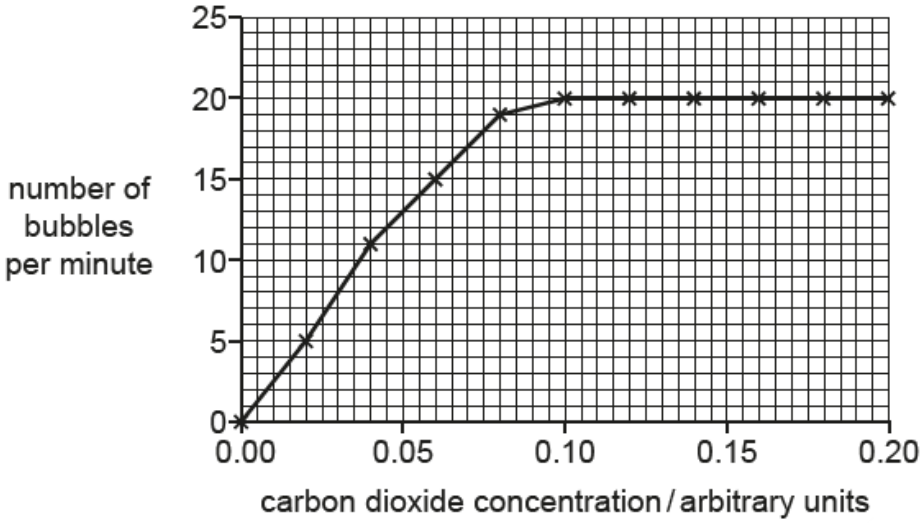

Fig. 6.2

(i) State the maximum number of bubbles produced in one minute.

..... [1]

(ii) The investigator concluded that 0.10 arbitrary units was the optimum (best) concentration of carbon dioxide for photosynthesis in this investigation.

Describe the evidence shown in Fig. 6.2 that supports the investigator's conclusion.

.....

.....

.....

.....

..... [2]

(iii) The investigation described in **6(b)** was repeated but the temperature was reduced from 20 °C to 10 °C.

Predict the effect of reducing the temperature on the number of bubbles produced and explain your answer.

prediction .....

.....

explanation .....

.....

.....

[2]

(c) Carbon dioxide is a greenhouse gas.

State the name of **one** other greenhouse gas.

..... [1]

[Total: 10]