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Level 1 Biology 2022

90928 Demonstrate understanding of biological ideas relating to the life cycle of flowering plants

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of biological ideas relating to the life cycle of flowering plants.	Demonstrate in-depth understanding of biological ideas relating to the life cycle of flowering plants.	Demonstrate comprehensive understanding of biological ideas relating to the life cycle of flowering plants.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2 – 12 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (▨). This area may be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

QUESTION ONE: REPRODUCTION

Some plants reproduce sexually, other plants reproduce asexually, while a third group of plants can reproduce both sexually and asexually. Taro plants can reproduce both sexually and asexually.

Taro plant in flower

Source: www.temarareo.org/TMR-Nga_Rongo.html

Taro plant (*Colocasia sp.*)

Source: www.researchgate.net/figure/General-characterization-of-taro-plant-parts_fig2_349505909

Flower of taro plant

Adapted from: www.pinterest.com.au/pin/56717276537260173

Compare and contrast the advantages to a plant of reproducing sexually, asexually, or both.

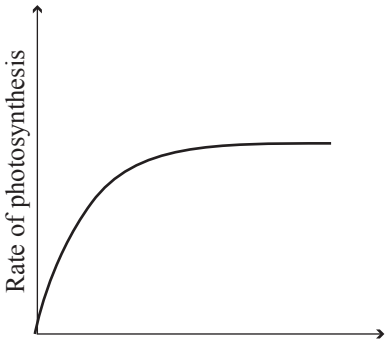
In your answer:

- describe the purpose of reproduction in plants
- explain how the processes of pollination and fertilisation occur in a flower
- discuss ONE advantage and ONE disadvantage to the plant for TWO of the following reproductive methods: plant uses sexual reproduction only, plant uses asexual reproduction only, plant uses both asexual and sexual reproduction.

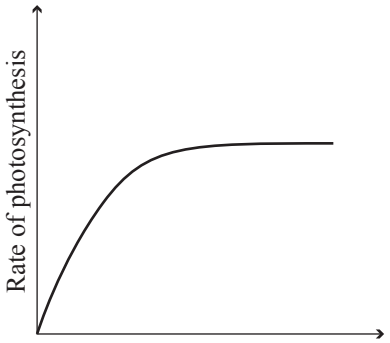
QUESTION TWO: PHOTOSYNTHESIS

The structures inside a leaf and environmental factors such as light intensity, carbon dioxide concentration, and temperature work together to enable photosynthesis to occur. Use the information below to help you answer the question.

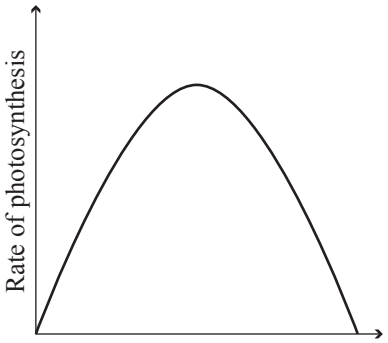
The effect of light intensity on the rate of photosynthesis



The effect of carbon dioxide concentration on the rate of photosynthesis



The effect of temperature on the rate of photosynthesis



Adapted from: http://fhs-bio-wiki.pbworks.com/w/page/12145771/Factors%20effecting%20the%20rate%20of%20photosynthesis

The cross-section of a leaf

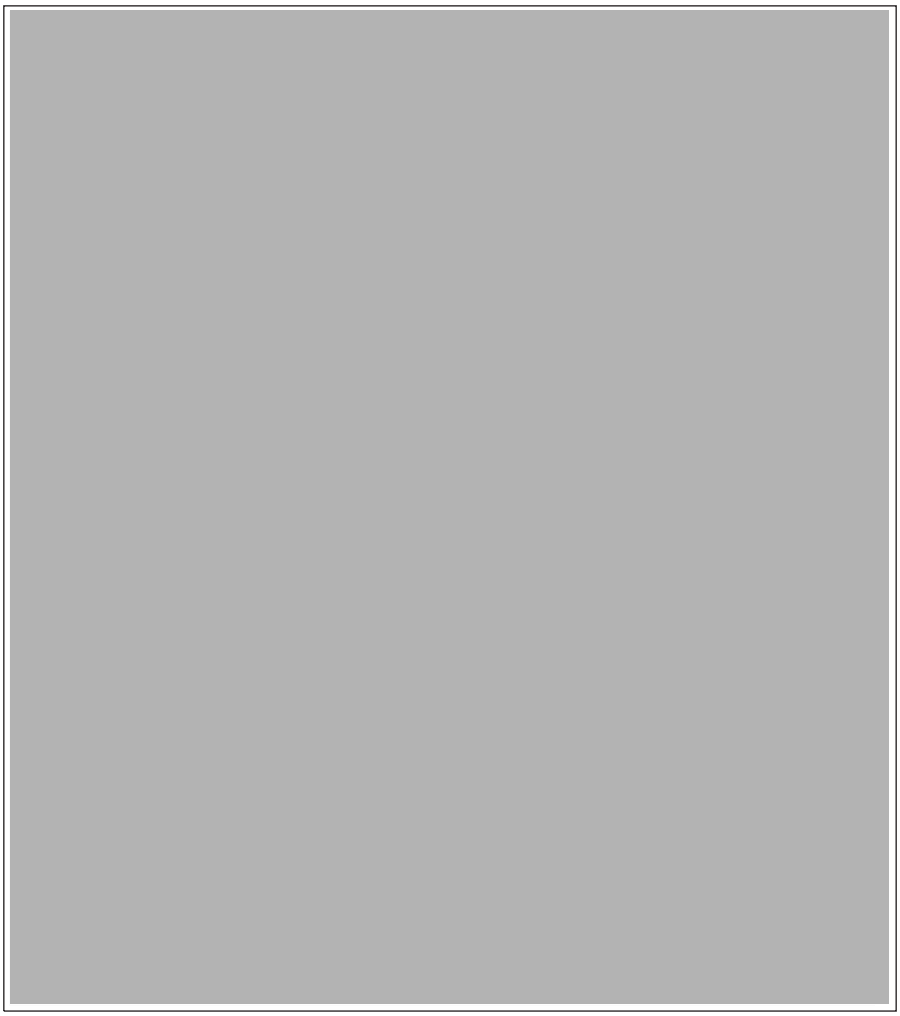
Source: https://byjus.com/questions/draw-a-well-labelled-diagram-of-internal-structure-of-the-leaf/

Discuss how environmental factors such as light intensity, carbon dioxide concentration, temperature, and the structures inside a leaf work together to enable photosynthesis to occur.

In your answer:

- describe how TWO environmental factors affect the rate of photosynthesis
- explain how TWO structures in a leaf function to allow photosynthesis to occur
- discuss how TWO of the environmental factors and TWO structures in a leaf work together to enable photosynthesis to occur.

QUESTION THREE: SEEDS



Adapted from: www.dreamstime.com/seed-anatomy-vector-illustration-labeled-educational-botany-structure-scheme-seed-anatomy-vector-illustration-labeled-educational-image176019760

Discuss how the structures inside a seed and environmental factors work together to allow seed germination to occur.

In your answer:

- describe THREE environmental factors required to allow seeds to germinate successfully
- explain the role of enzymes in the process of seed germination
- discuss how TWO structures inside a seed and TWO environmental factors work together to allow seed germination to occur.

Extra space if required.
Write the question number(s) if applicable.

QUESTION NUMBER

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