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NZQA

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Level 1 Biology, 2015

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

2.00 p.m. Friday 20 November 2015
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 space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–11 in the correct order and that none of these pages is blank.

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

TOTAL

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QUESTION ONE: POLLINATION, FERTILISATION, SEEDS, AND FRUIT

The pūriri is one of the few New Zealand native trees with colourful flowers. Birds, like the tūī, pollinate the flowers of the pūriri.

After pollination, followed by fertilisation, fleshy fruits develop with seeds inside.

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Pūriri flowers
https://farm5.staticflickr.com/4084/5050412356_8e85e09524.jpg

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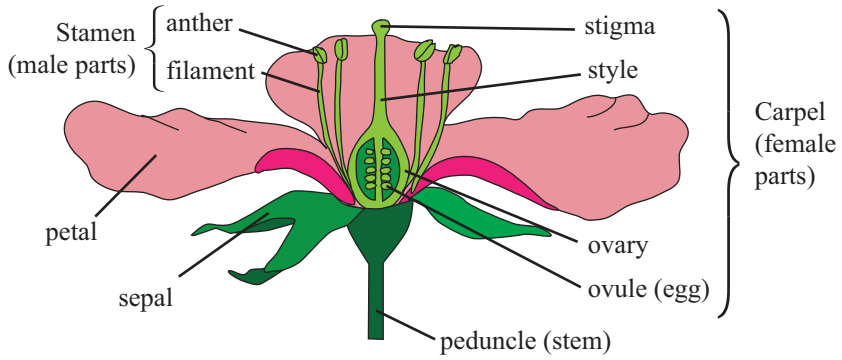
Pūriri fruit
http://ketenewplymouth.peoplesnetworknz.info/image_files/0000/0001/3929/Vitex_lucens_fruit__Puriri-2.JPG

Generalised flower diagram



Discuss why the processes of pollination and fertilisation are important in the life cycle of a flowering plant, and how different parts of the flower develop into the seed and the fruit in plants such as the pūriri.

In your answer you should:

- explain how the processes of pollination and fertilisation occur in a flower
- explain why the processes of pollination and fertilisation are important to the plant
- explain how the parts of the flower develop into a seed. Include names of parts of the flowers that are involved in this process
- explain how a fruit forms once fertilisation has occurred in a flower. Explain why seed and fruit formation are important to the plant.

You may use labelled diagrams to help you explain your answers.

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There is more space for your answer to this question on the following page.

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The examination continues on the following page.

QUESTION TWO: GERMINATION

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The picture below shows a bean seed germinating, and the graph next to it shows how the dry mass and the live mass of the seed change over time.

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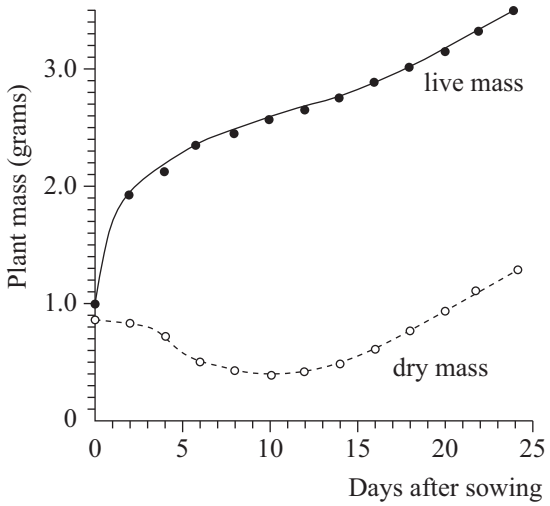
http://garden.lovetoknow.com/image/138556~lifecyclebeanplant.jpg



Discuss how environmental factors and the parts of the seed work together to allow germination to occur.

In your answer you should:

- describe the process of germination
- name the environmental factors required for germination to occur
- explain why these environmental factors are required for germination to occur
- explain how named parts of the seed are involved in the process of germination
- discuss the changes in the dry mass and the live mass of the seed as it germinates and grows from Day 0 to Day 25.

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QUESTION THREE: PHOTOSYNTHESIS AND GROWTH

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The energy required for plants to grow comes from the process of photosynthesis. The diagram below shows the structures inside a leaf that are involved in photosynthesis. Use this diagram to help you answer the questions below.

For copyright reasons, this resource cannot be reproduced here.

Discuss how different parts of the plant use materials and resources from the environment to allow for photosynthesis and growth.

In your answer you should:

- describe the overall process of photosynthesis
- explain how the different parts of the leaf are involved in the process of photosynthesis
- explain how raw materials from the environment are used by the plant during photosynthesis
- explain what happens to the products of photosynthesis
- explain the link between photosynthesis and the growth of a plant.

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

QUESTION NUMBER

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