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90167

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 1 Biology, 2004

90167 Describe plant processes

Credits: Four
9.30 am Thursday 25 November 2004

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 answer ALL the questions in this booklet.

If you need more space for any answer, use the page 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.

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Achievement Criteria		
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Describe biological ideas relating to the functioning of plant processes.	Explain biological ideas relating to the functioning of a plant process.	Discuss biological ideas relating to the functioning of a plant process.
Overall Level of Performance		

You are advised to spend 50 minutes answering the questions in this booklet.

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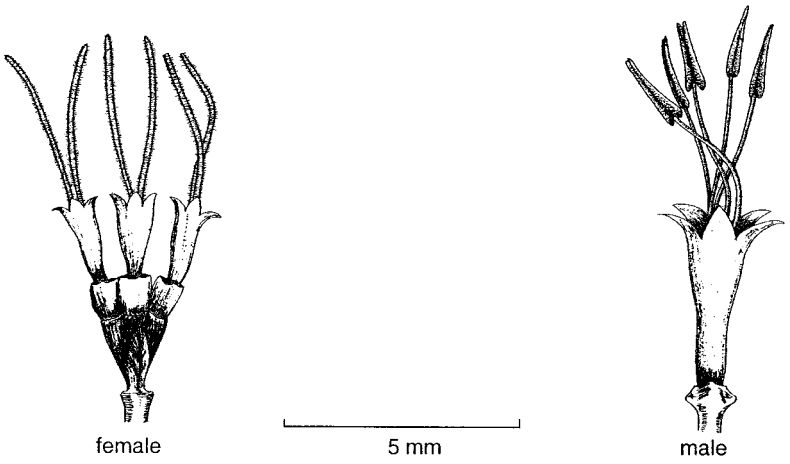
QUESTION ONE: NATIVE FLOWERS

A biology class was studying the variety of forms of some common native flowers. Some examples were the small, pale green, coprosma flowers (*Coprosma robusta*).



(a) **Describe** how pollination is most likely to occur in this Coprosma species.

(b) **Explain** how the structure of the coprosma flowers suits the type of pollination.

QUESTION TWO: LIFE AFTER POLLINATION

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Pollination is the transfer of pollen from male flower parts to female flower parts.

Fertilisation is necessary for the production of seeds, and follows soon after successful pollination.

Explain the role of the **pollen tube** in the process of fertilisation in a flower.

QUESTION THREE: GETTING SEEDS FROM A TO B

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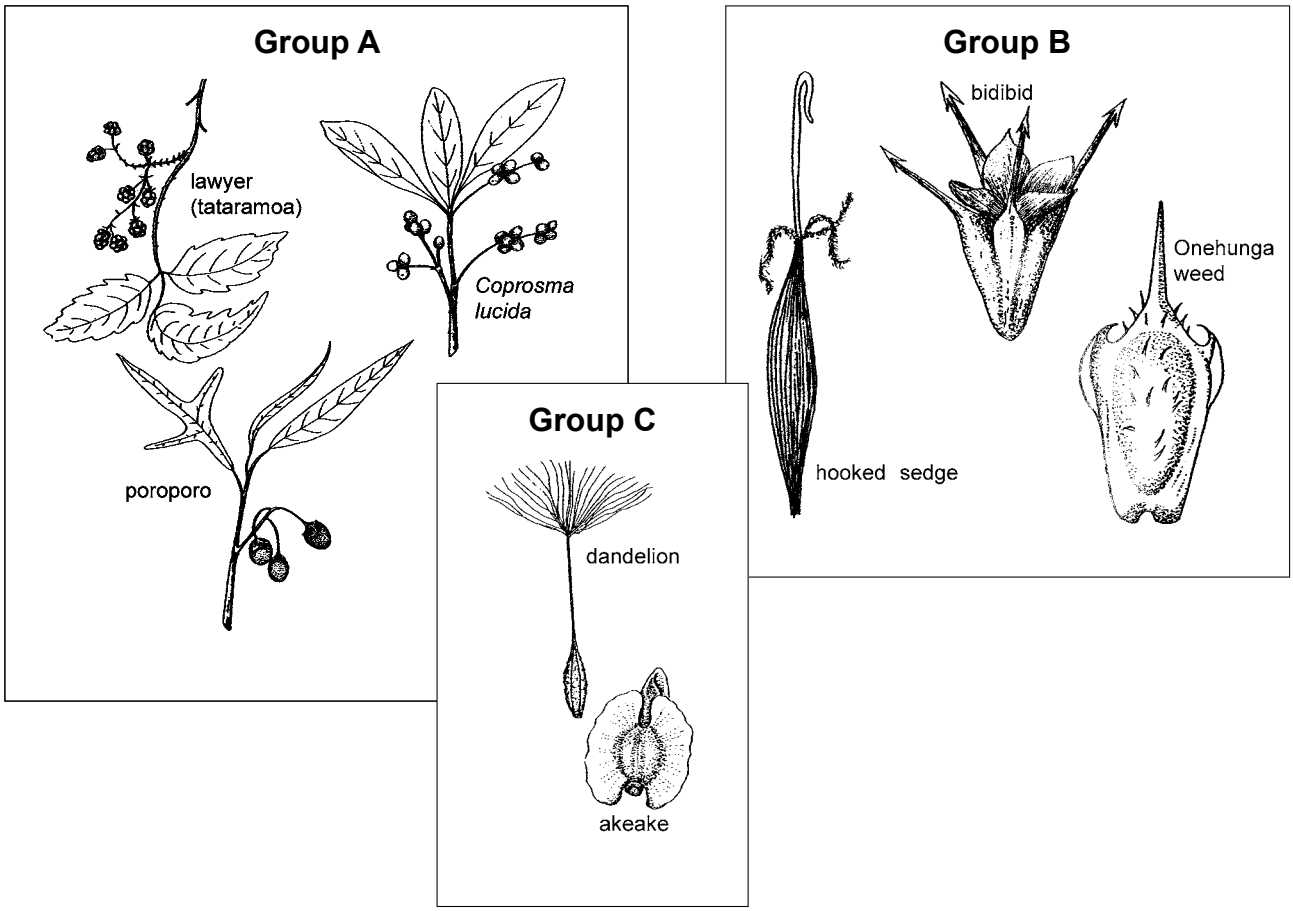
The class arranged some fruits into three groups based on the method of seed dispersal.



In the table provided, **describe** each method used to disperse the seeds.

Group	Method of seed dispersal
A	
B	
C	

QUESTION FOUR: THE AMAZING KUMARA

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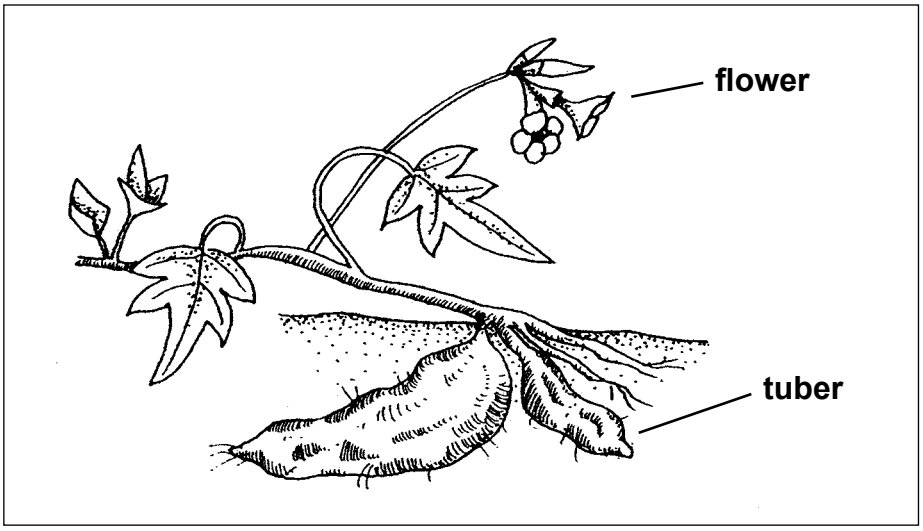
The diagram below shows reproduction in a kumara plant.



The kumara is capable of reproducing using two different methods – seeds and tubers.

Discuss the **advantages** and/or **disadvantages** to the kumara plant of each type of reproduction.

QUESTION FIVE: SEEDS, THOSE LITTLE PACKAGES OF LIFE

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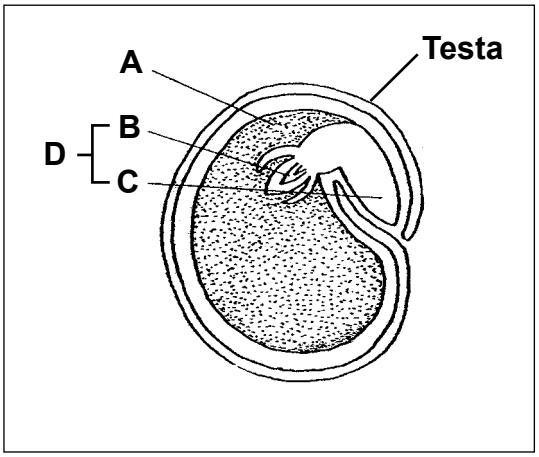
The diagram shows a pea seed cut in half to show the internal structure of a typical dicotyledon seed. Letters A to D indicate the important parts of the seed.



(a) **Describe** the **internal** structure of the seed. You should include the names of the parts indicated by the letters A to D, in your description.

(b) **Describe** the function of ONE of the parts labelled A, B, C in the germination of a seed.

QUESTION SIX: MINI GARDENS IN THE CLASSROOM

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Three environmental factors are essential for seeds to germinate.

Discuss how each of the THREE environmental factors needed for successful seed germination (not seedling growth) help a seed to germinate, **and** why soil and sunlight are only needed some days later when the seedlings have appeared above the soil surface.

QUESTION SEVEN: AMAZING WHAT A TREE STUMP WILL TELL YOU!

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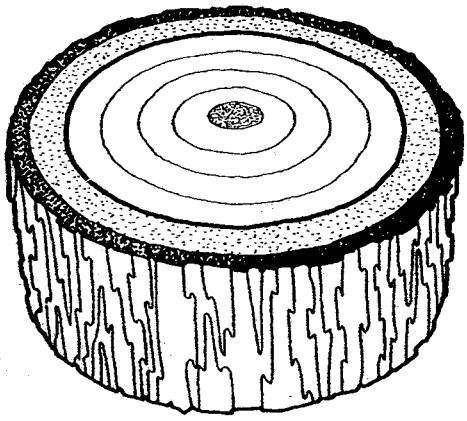
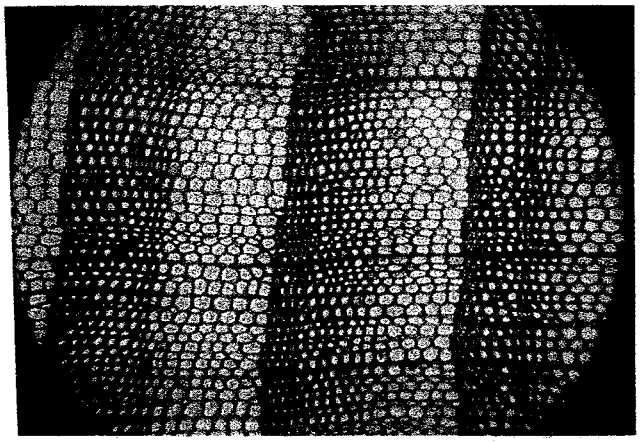
The diagram below shows a young woody stem in cross section. Part of the cross section has been photographed under a microscope.





Explain how different climatic conditions cause differences in the appearance of the light and dark rings.

QUESTION EIGHT: THE FOOD FACTORIES OF PLANTS

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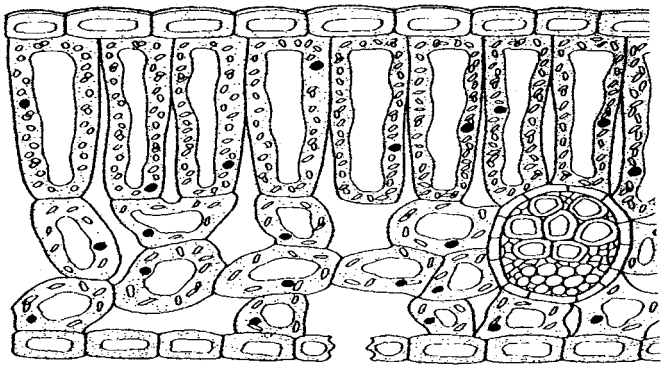
The diagram below shows a cross section of a typical leaf from a dicotyledon flowering plant.



(a) **Describe** the appearance **and** position of the palisade mesophyll cells.

(b) **Explain** how CO_2 from the air reaches the chloroplasts of a palisade mesophyll cell.

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Although leaves of plants have many different shapes and sizes, the basic function of a leaf is to carry out photosynthesis as efficiently as possible.

(c) **Discuss** how the general shape, structure and position of a leaf can help make photosynthesis more efficient.

Extra paper for continuation of answers if required.
Clearly number the question.

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Question number