For Supervisor's use only

1

90167

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Level 1 Biology, 2006

90167 Describe plant processes

Credits: Four
9.30 am Thursday 30 November 2006

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(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–12 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.

For Assessor's use only	**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.

Assessor's use only

QUESTION ONE

To produce glucose by the process of photosynthesis, a green leaf needs light energy, chlorophyll and TWO substances obtained from the environment.

Name these two substances.

	and	

QUESTION TWO

Assessor's use only

The diagram shows a typical cross section of a leaf.

Adapted from *Excellence in Biology* by Martin Hanson

Describe ONE feature of the structure or arrangement of cells in ONE layer of the leaf that contributes to the efficiency of photosynthesis.

Cell layer 1 ☐ OR Cell layer 2 ☐

(Tick the cell layer that you will describe.)

Feature _____

_____

_____

QUESTION THREE

Assessor's use only

Stomata are microscopic pores or holes located in the epidermis layer of leaves.

(a) **Describe** the structure of the guard cells that control the opening and closing of these pores.

You may use a labelled diagram to help your answer.

(b) **Explain** how the opening and closing of stomata change the rate of photosynthesis.

QUESTION FOUR

Assessor's use only

A student made the statement, **'Light energy is needed for photosynthesis, but it is the colour and amount of light that is important.'**

Discuss the relationship between light energy and photosynthesis.

QUESTION FIVE

Assessor's use only

The diagram below shows two types of flowers.

Adapted from *Living Things* by V. Slaughter, Edward Arnold publishing.

(a) **Name** and **describe** the function of any THREE of the flower parts labelled **A** to **D** in the diagram for Flower type 1.

Letter	Name of flower part	Function

(b) **Explain** why the parts labelled **stigma** in Flower type 1 and Flower type 2 are different.

The diagrams below show the stages in plant reproduction that occur after pollination.

Assessor's use only

Adapted from *Living Things* by V. Slaughter

(c) **Explain** how the growth of a pollen tube leads to fertilisation.

QUESTION SIX

Assessor's use only

(a) **Name** ONE flowering plant that reproduces **asexually**, and **describe** its method of asexual reproduction.

Name of plant: _____

Method of asexual reproduction:

_____

_____

(b) **Explain** how asexual reproduction is **different** from sexual reproduction in flowering plants.

_____

_____

_____

_____

(c) 'Asexual reproduction in flowering plants has advantages and disadvantages.'

Discuss this statement with reference to **both** reproduction **and** dispersal.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

QUESTION SEVEN

Assessor's use only

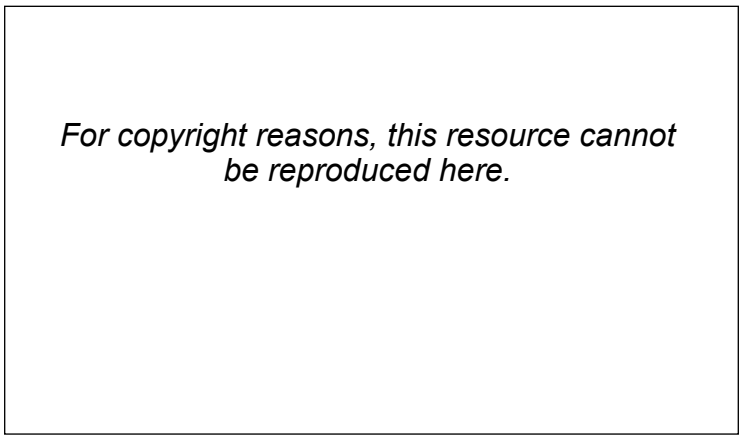
During a class discussion the teacher said '**pumpkins and lemons are both fruits**'.

Use the structure and development of fruit to **explain** why the pumpkin is biologically a fruit.

QUESTION EIGHT

Assessor's use only

The diagram below compares a typical monocotyledon and dicotyledon seed.



Adapted from the *Biozone Year 12 Student Resource and Activity Manual*, 2005 p.247

(a) **Describe** the function of the **endosperm** of a monocotyledon seed.

A seed only germinates in suitable environmental conditions.

(b) **Describe** the TWO main **environmental** conditions necessary before a seed can germinate.

(c) **Explain** how ONE structure of a seed enables it to survive for long periods of time, before it finally germinates.

Assessor's use only

QUESTION NINE

Describe the function of **cambium** cells in a young green stem.

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

Assessor's use only

Question number	