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NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Science, 2007

90188 Describe aspects of biology

Credits: Five
9.30 am Wednesday 28 November 2007

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 2–10 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 aspects of biology.	Explain aspects of biology.	Discuss aspects of biology.
Overall Level of Performance		

You are advised to spend 40 minutes answering the questions in this booklet.

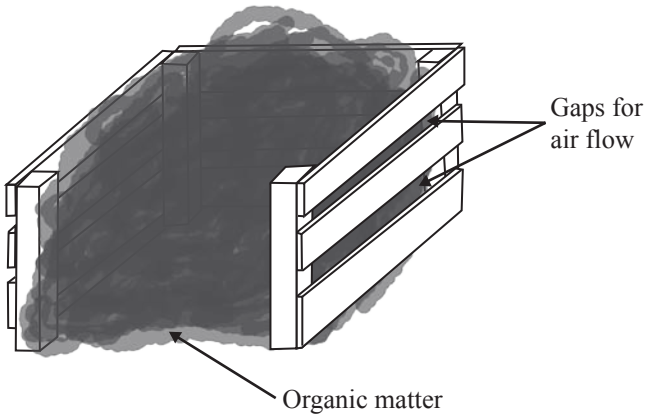
Assessor's use only

QUESTION ONE

Compost is formed by the action of **saprophytic** micro-organisms producing carbon dioxide, water, heat, and humus (the end-product).

(a) Describe the term **saprophytic**.

An example of a compost heap:



(b) Explain why good air flow is necessary for the decomposition of the organic matter.

The graph shows the temperature of the compost over a few days.

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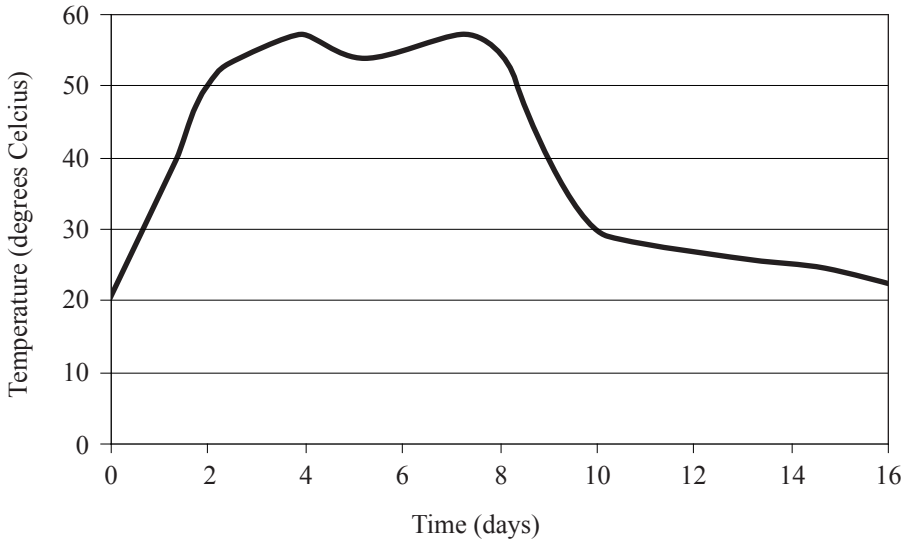


The increase in temperature is caused by the action of bacteria and fungi on the organic matter.

(c) From day 8 there is a marked drop in the temperature of the compost heap.

Explain why this occurs.

QUESTION TWO

Assessor's use only

(a) Describe how a **fungus** gains its nutrition.

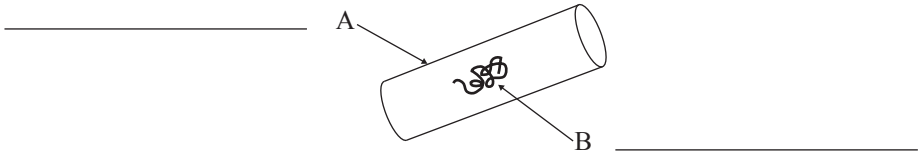
(b) Discuss how hyphae **and** sporangia aid the spread of a fungus. You should consider their **function** and **role** in the spread.

QUESTION THREE

Assessor's use only

(a) Below is a general diagram of a virus.

On the lines provided, name the structures A and B.



(b) The life processes of viruses differ from bacteria.

Compare and contrast the life processes of viruses **and** bacteria.

QUESTION FOUR

Assessor's use only

(a) Describe the relationship between a **chromosome** and a **gene**.

There are 23 pairs of chromosomes in each human **body** cell.
One of these pairs of chromosomes is the sex chromosomes.

(b) Give the **genotype** for the sex chromosomes of a human **female**. _____

(c) Discuss why sex cells have 23 chromosomes, whereas body cells have 46. Refer to the cell division processes involved.

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QUESTION FIVE

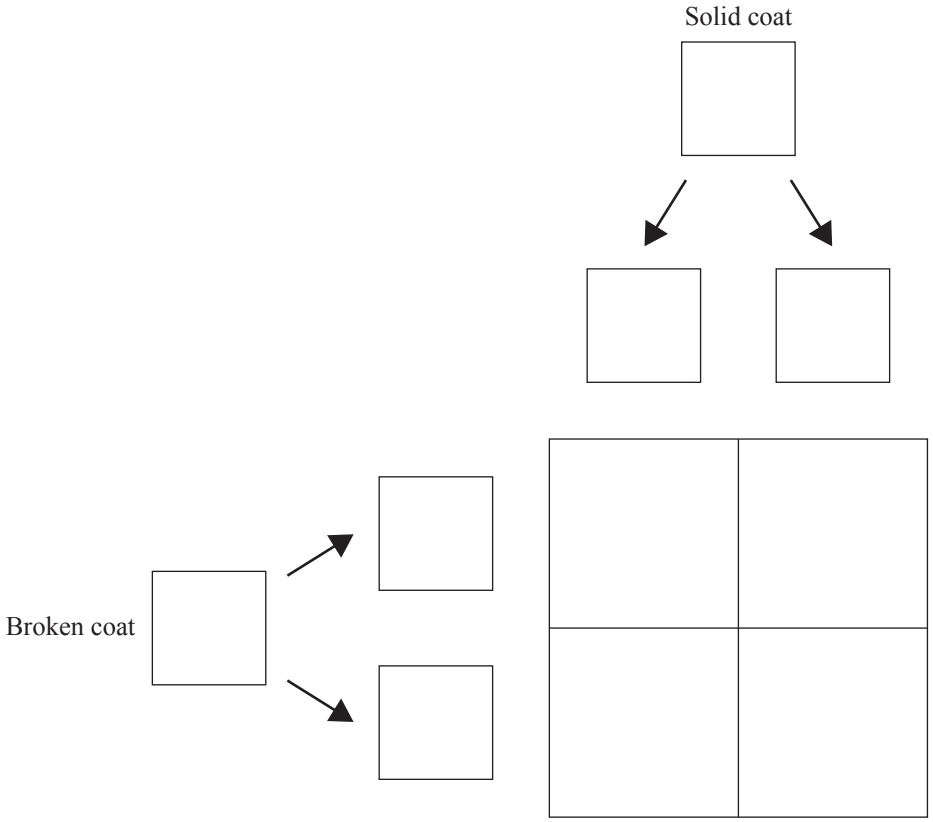
Assessor's use only

In some breeds of rabbit, a plain coat colour is called **solid**; a blotchy coat colour is called **broken**. Broken coat (**B**) is dominant to solid coat (**b**).

A solid-coated rabbit is crossed with a **heterozygous** broken-coated rabbit.

(a) Give the genotype of the solid-coated rabbit. _____

(b) Complete the Punnett square for this cross.



(c) Use the information in the Punnett square to determine the proportion of the offspring that are able to **pass on** the solid coat trait to their own offspring.

_____

_____

(d) Explain your answer to question (c) above.

_____

_____

_____

_____

(e) Define the term **homozygous**.

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(f) A breeder buys a rabbit with the broken coat trait.

Discuss the process that could be used to identify whether this rabbit is homozygous or heterozygous for broken coat.

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

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Question number	