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90163

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Level 1 Biology, 2006

90163 Describe the transfer of genetic information

Credits: Three
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 2–8 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 transfer of genetic information.	Explain biological ideas relating to transfer of genetic information.	Discuss biological ideas relating to transfer of genetic information.
Overall Level of Performance		

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

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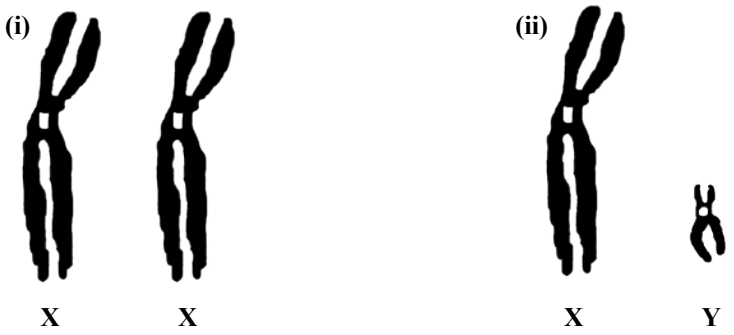
QUESTION ONE



The diagram shows the sex chromosomes from two different people.

(a) What sex are the two individuals shown above?

(i) _____

(ii) _____

(b) The sex of a child is set at the moment of fertilisation.

Explain how the type of chromosome results in some children being male, and others being female.

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QUESTION TWO

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(a) **Describe** the THREE main components of a DNA molecule. You may use a labelled diagram in your answer.

(b) Using one or more examples, **discuss** how DNA determines the characteristics of an individual.

QUESTION THREE

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from www.hydroempire.com/store/hydroponic-cloning.php

(a) Fruit farmers can grow new plants from a small 'cutting,' which is a piece of an existing plant. Usually, it is a piece of stem with a few leaves.

Explain the advantages to a fruit grower of using this method of reproduction compared to growing plants from seeds.

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(b) **Explain** how genetic modification could be used to change the genetic makeup and improve the production of a food crop such as apples.

QUESTION FOUR

(a) **Describe** the purpose of **meiosis**.

The diagram below shows the process of **mitosis**.

(b) **Explain why** this process occurs, including an example of **where** this process might take place.

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adapted from www.genetics.gsk.com/chromosomes.htm

QUESTION FIVE

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In pea plants, yellow seeds (**E**) are dominant to green seeds (**e**), which are recessive.

(a) **Describe** what is meant by the terms **dominant** and **recessive**.

Dominant: _____

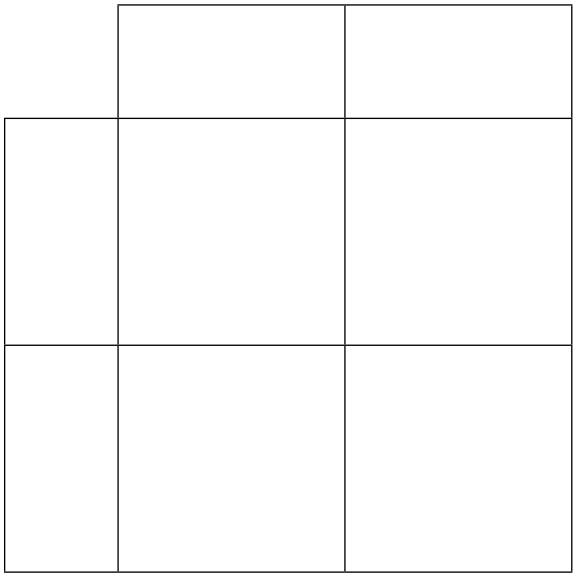
_____

Recessive: _____

_____

(b) A homozygous yellow-seed pea plant is crossed with a heterozygous yellow-seed pea plant.

Complete the Punnett square below to show the **genotypes** of the offspring.



(c) Referring to your answer to part (b), explain the difference between **genotype** and **phenotype**.

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(d) Two students were given a number of yellow pea-seeds and asked to find out if the seeds were pure-breeding or not.

Discuss how the students could solve this problem without the need for specialist equipment or techniques.

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

Assessor's use only

Question number	