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NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 2 Biology, 2008

90461 Describe concepts and processes relating to ecology

Credits: Three
2.00 pm Monday 17 November 2008

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 concepts and processes relating to ecology. ☐	Explain biological concepts and processes relating to ecology. ☐	Discuss biological concepts and processes relating to ecology. ☐
Overall Level of Performance ☐		

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

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QUESTION ONE

(a) **Explain** the process of **succession**, including the difference between **primary** and **secondary** succession in your answer.

(b) Pioneer species are those that are able to colonise an area in the first stages of succession. A common pioneer species that has been introduced to New Zealand is the tree lupin (*Lupinus arboreus*). The tree lupin has a symbiotic relationship with certain soil bacteria that form nodules on the plant's roots. The bacteria are able to fix atmospheric nitrogen.

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Discuss why the tree lupin is an important pioneer species in a newly forming community.

(c) Zonation is a common ecological pattern. Some New Zealand examples of zonation include rocky shores and mountainous areas.

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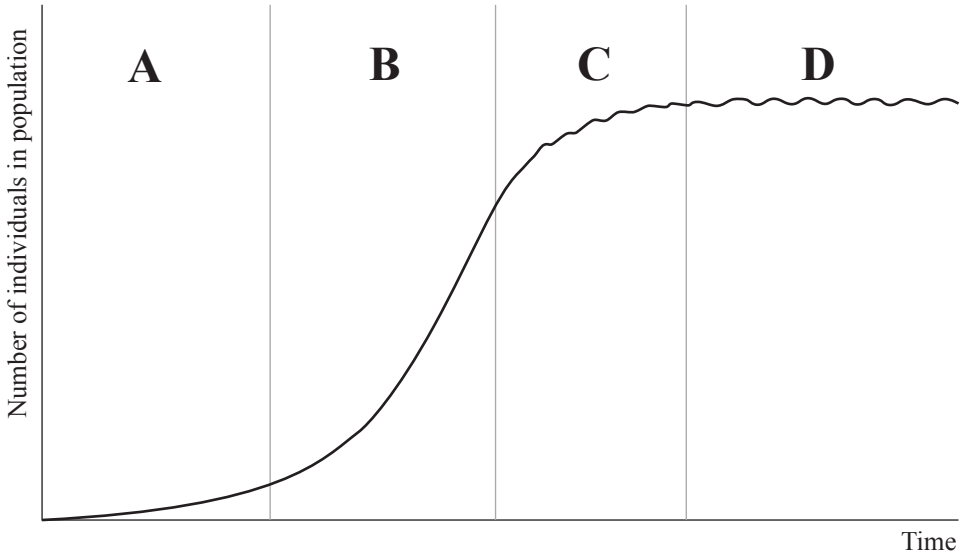
For a named habitat in New Zealand, explain what is meant by zonation, and why it occurs.

Name of habitat: _____

QUESTION TWO

Assessor's use only

The diagram below shows the number of individuals in a population plotted against time.



Explain what is happening in terms of the growth of this population in **each** of the zones A, B, C and D.

QUESTION THREE

A single tree can provide the home to many thousands of insects, from many different species.

http://www.aetoma.com/nz2/lg_x20021214-08h10m51s-M.jpg

(a) Draw and label a pyramid of numbers to show FOUR trophic levels of a food chain that exists in a tree such as the one shown.

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(b) Explain why the biodiversity of a natural forest is far greater than that of a planted and managed area, such as a pine forest.

(c) Discuss the reasons for the co-existence of many species of insect in a forest ecosystem.

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

Assessor's use only

Question number