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NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 2 Science, 2007

90772 Describe the factors and processes involved in the evolution of New Zealand's plants and animals

Credits: Four
2.00 pm 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 2–8 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 the factors and processes involved in the evolution of New Zealand's plants and animals.	Explain the factors and processes involved in the evolution of New Zealand's plants and animals.	Discuss the factors and processes involved in the evolution of New Zealand's plants and animals.
Overall Level of Performance		

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

QUESTION ONE: MUTATIONS

(a) Define the term **mutation**.

(b) Many things can act as mutation-causing agents.

Name **TWO** mutation-causing agents.

(1) _____

(2) _____

(c) Explain how a mutated allele is more likely to be **harmful** to an individual organism than a normal allele.

(d) Evolutionists argue that mutations are the key to genetic change and hence evolution.

Discuss how mutations are the key to genetic change and evolution.

Assessor's use only

QUESTION TWO: "FOSSILS REVEAL NEW ZEALAND'S INDIGENOUS MOUSE."

Assessor's use only

"Fossil bones of a mouse-sized creature that died out between 19 – 16 ma (million years ago) have been discovered in the South Island of New Zealand. It is the first hard evidence that New Zealand once had their own indigenous land mammals. The shape of the bones suggest a very primitive mammal that evolved 125 – 100 ma."

(New scientist.com news service 11/12/2006)

(a) Where could this mouse-sized mammal have come from 125-100 ma?

(b) Explain how this mouse-sized mammal became isolated in New Zealand.

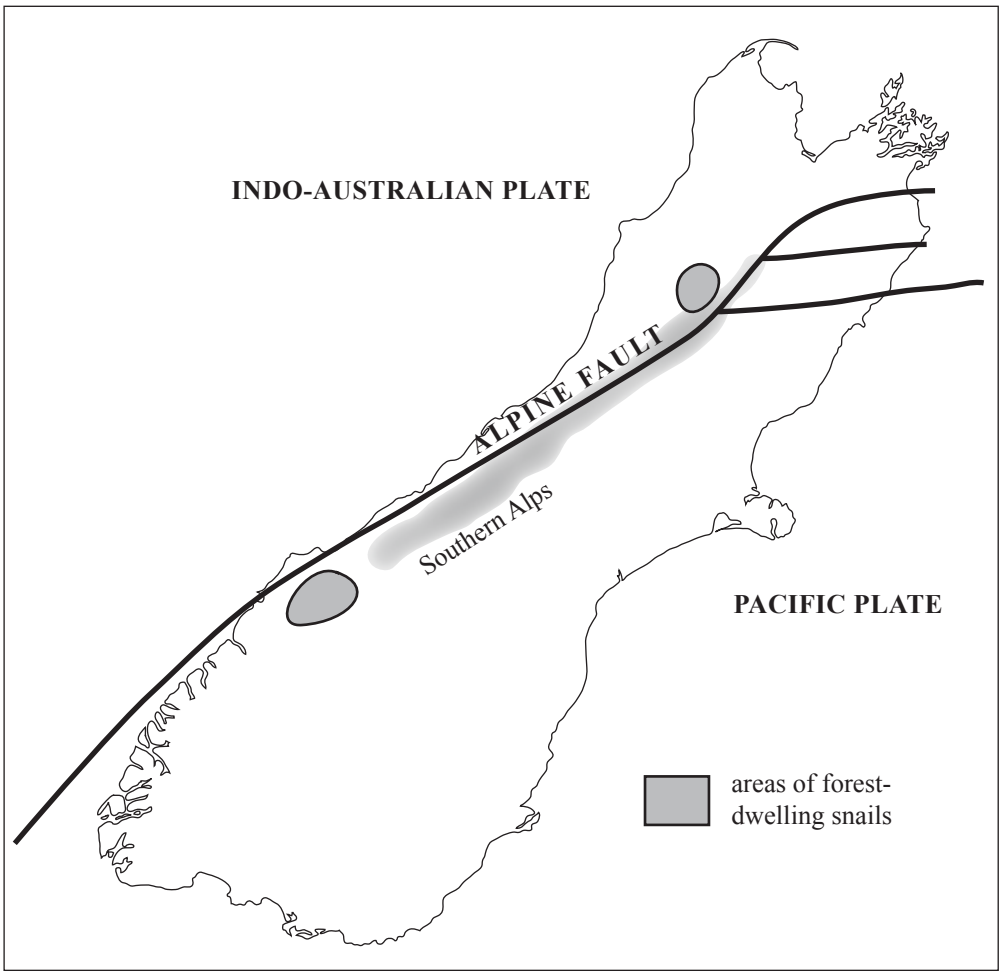
(c) Discuss how this mouse-sized mammal possibly became extinct 19 – 16 ma.

Assessor's use only

Keywords: New Zealand in the tertiary, mutations.

QUESTION THREE: FOREST-DWELLING LAND SNAILS IN THE SOUTH ISLAND

Assessor's use only



Map showing key areas where forest-dwelling snails are found

(a) Describe how the Alpine Fault has separated the two snail populations.

(b) Explain how ONE named biological factor affects the survival of the snails today.

Biological factor: _____

Explanation: _____

(c) It is assumed that the two groups of forest-dwelling land snails once existed together and had a common ancestor about 25 ma.

Discuss how a common ancestor of the forest-dwelling land snail gave rise to the two main groupings shown on the map on the opposite page.

Keywords: Different selection pressures, genetic isolation, mutations, founder effect, bottleneck effect.

Assessor's use only

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

Assessor's use only

Question number	