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NZQA

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QUALIFY FOR THE FUTURE WORLD
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Level 1 Biology, 2018

90927 Demonstrate understanding of biological ideas relating to micro-organisms

9.30 a.m. Tuesday 27 November 2018
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of biological ideas relating to micro-organisms.	Demonstrate in-depth understanding of biological ideas relating to micro-organisms.	Demonstrate comprehensive understanding of biological ideas relating to micro-organisms.

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 attempt ALL the questions in this booklet.

If you need more space for any answer, use the space provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–11 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.

TOTAL

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QUESTION ONE: USING MICROBES TO CLEAN UP AN OIL SPILL

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Some types of bacteria can be used to help clean up oil spills. When these bacteria come in contact with oil, they feed on it, breaking it down, producing carbon dioxide and water.

An oil spill

Source: www.smithsonianmag.com/innovation/scientists-find-natural-way-to-clean-up-oil-spills-with-plant-based-molecule-180955815/

Discuss how the life processes of bacteria enable them to clean up oil spills.

In your answer:

- describe how bacteria feed
- explain how different environmental factors (e.g. competition, oxygen availability, water availability, temperature) affect bacterial growth, reproduction and respiration
- discuss how TWO named environmental factors (e.g. competition, oxygen availability, water availability, temperature) can affect how successful the bacteria will be at cleaning up the spill.

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QUESTION TWO: SORE THROAT

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A sore throat can occur in humans for a variety of reasons. It is often caused by either a viral or a bacterial infection.

Causes and symptoms of a sore throat

Source: http://mytwitbox.com/2015/01/role-of-bacterial-infections-to-develop-sore-throat/

Discuss how the life processes of bacteria and viruses can cause infections such as a sore throat.

In your answer:

- describe how both bacteria and viruses reproduce
- explain how microbes that cause sore throats can be passed between different people
- compare and contrast how the life processes of bacteria and viruses, such as reproduction, can cause infections such as a sore throat.

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QUESTION THREE: MYRTLE RUST

Myrtle rust is a fungus that is killing our native plants. In the right conditions it grows quickly, making it easy to see.

Symptoms to look out for on plants are:

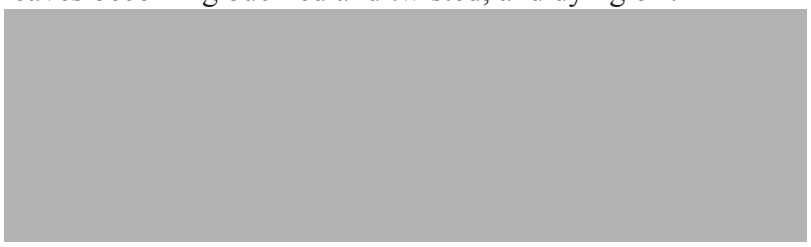
- bright yellow powder on leaves

www.wildernessmag.co.nz/myrtle-rust-set-explode/
www.radionz.co.nz/news/environment/344864/fears-myrtle-rust-could-spread

- brown and red spots

www.mpi.govt.nz/protection-and-response/responding/alerts/myrtle-rust
www.doc.govt.nz/myrtle-rust

- leaves becoming buckled and twisted, and dying off.



http://www.spiffa.org/myrtle-rust-invades-victoria.html
http://www.doc.govt.nz/myrtle-rust

New Zealand's Ministry for Primary Industries (MPI) is asking people to help them find this harmful fungus, so that they can control its spread. Their advice is as follows:

> *If you see myrtle rust, do not touch the plant or try to collect samples. Take photos and call the MPI Pest and Disease hotline so that someone from MPI can be sent to remove all affected plants, and other plants on the property can be marked for observation.*

Elaborate on MPI's advice, and explain why they are so concerned.

In your answer:

- describe how fungi feed, grow, and reproduce
- in relation to fungal reproduction, explain why the public are advised not to touch or disturb plants infected with myrtle rust
- discuss how the fungal life processes of nutrition, growth, and reproduction work together with the environmental factors of warmth and moisture, to make myrtle rust such a risk to our native plants.

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There is more space for your answer to this question on the following page.

ASSESSOR'S USE ONLY

Extra space if required.
Write the question number(s) if applicable.

QUESTION NUMBER

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