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NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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SUPERVISOR'S USE ONLY

Level 1 Biology, 2014

90927 Demonstrate understanding of biological ideas relating to micro-organisms

2.00 pm Monday 17 November 2014
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 page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–12 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: MICRO-ORGANISMS

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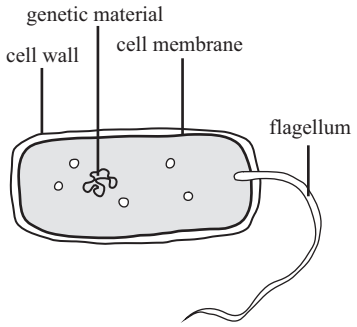
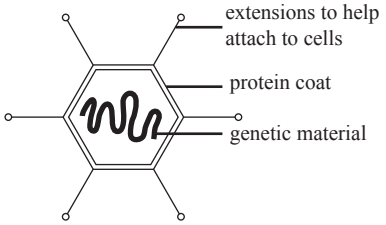
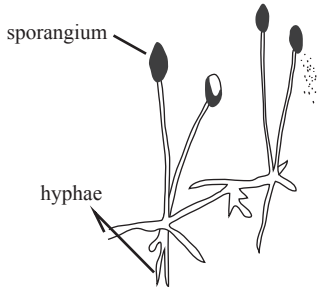
Bacteria	Viruses	Fungi
		

Source (adapted): G. Hunt, *Science Year 11 (NCEA Level 1): Student Topic Notes* (Auckland: Longman, 2003), pp 72, 74, 75.

(a) Describe each of the micro-organisms: bacteria, viruses, and fungi.

(b) Explain the method of reproduction used by each of these micro-organisms.
You may use diagrams to support your answer.

Reproduction in bacteria:

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Reproduction in viruses:

Reproduction in fungi:

(c) Compare the similarities AND differences between the way bacteria, viruses, and fungi reproduce.

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QUESTION TWO: VIRUSES

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(a) Describe why viruses are non-living.

(b) Because viruses are non-living, it makes them difficult to culture (grow) in the laboratory.

Explain why viruses are difficult to culture in the laboratory.

You may use diagrams to support your answer.

(c) The picture below shows different forms of the virus that cause the common cold.

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Source: http://dalje.com/en-world/the-common-cold-could-have-a-cure/234647

Pathogens are organisms that cause disease. The common cold is a viral pathogen and it is an infection repeatedly experienced by many New Zealanders.

Discuss why the 'common cold' is so common and why a person can catch it more than once.

Your answer should include:

- an explanation of why people can catch a cold more than once
- an explanation of why antibiotics are not used to treat viruses
- a justification of why viruses are always pathogens.

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QUESTION THREE: FUNGI

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(a) Describe the conditions required for fungi to grow.

FUNGI INVESTIGATION

A student investigated the effect of temperature on the growth of bread mould (a common fungus). The student set up the investigation by placing three slices of bread in clear bags and labelling them Sample A, B, and C, as shown in the photos below. All conditions of the investigation except for the temperature were kept the same. Sample A was stored at room temperature, Sample B in the fridge, and Sample C in the freezer.

Results

Sample A Room temperature (20°C)	**Sample B** Fridge temperature (4°C)	**Sample C** Freezer temperature (–12°C)
		

The data collected from the experiment is shown in the graph on the next page.

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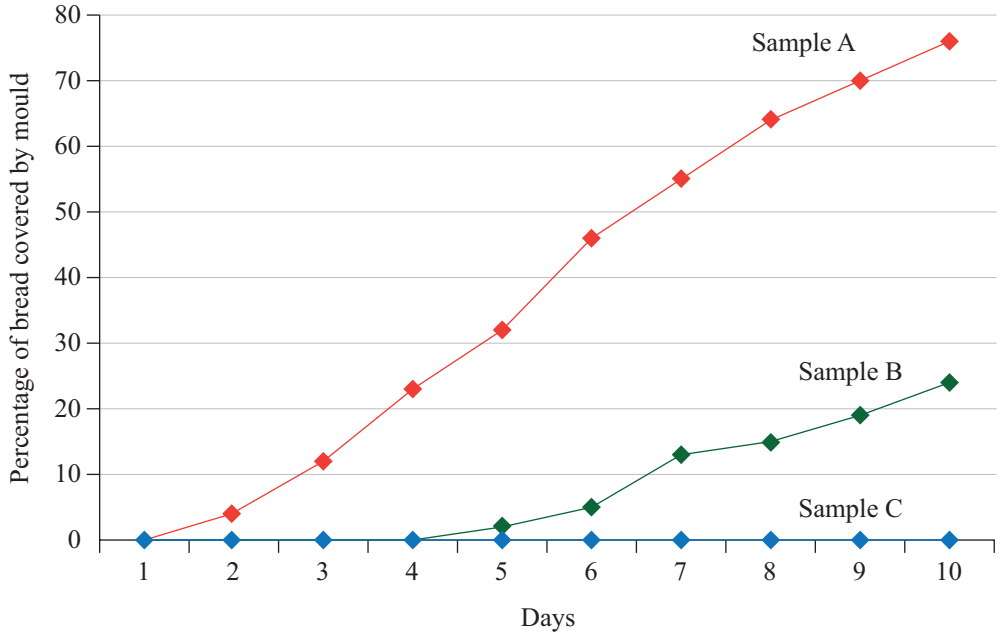
Graph showing the percentage of bread covered by mould over the 10-day investigation



Source (adapted): http://explorable.com/mold-bread-experiment

(b) Explain why the percentage of bread covered by mould is so much higher for Sample A than for Samples B and C.

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(c) To retrieve nutrients from food, fungi use extra-cellular digestion, and to get energy from food, they carry out respiration.

Discuss how people use fungi in food production.

Your answer should:

- explain how fungi retrieve nutrients from their food source using extra-cellular digestion
- explain why the processes of extra-cellular digestion and respiration are important to food production
- give an example of a fungus that is used in food production
- link a feature (eg flavour or texture) of the food example to the process of extra-cellular digestion or respiration.

You may use diagrams to support your answer.

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

QUESTION NUMBER

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