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Tick this box if there is no writing in this booklet.

Level 1 Biology 2020

90927 Demonstrate understanding of biological ideas relating to micro-organisms

2.00 p.m. Thursday 26 November 2020
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 2–8 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.

TOTAL

ASSESSOR'S USE ONLY

QUESTION ONE: TREATING SEWAGE

Some micro-organisms, for example bacteria, are useful in treating and processing wastewater and sewage so that they can be recycled and are harmless when released into the environment.

The process of treating sewage

www.open.edu/openlearn/nature-environment/microbes-friend-or-foe/content-section-2

Compare and contrast the life processes of bacteria and viruses to explain why bacteria are useful in treating sewage, while viruses are not.

In your answer:

- describe the life processes that enable bacteria to be effective in treating sewage
- explain how environmental factors, such as oxygen availability and temperature, impact on the effectiveness of treating sewage using bacteria
- discuss the life processes of bacteria and viruses to justify why bacteria are useful in treating and processing sewage, while viruses are not.

QUESTION TWO: MAKING BREAD

Yeast is a fungus, and it is used in making bread. Ana's teacher said it is important to add sugar when making bread. To investigate, she decided to make two loaves of bread; one with sugar, and one without sugar. Ana was careful to make the loaves exactly the same way, except for the sugar.

INGREDIENTS	
Bread with sugar	Bread without sugar
yeast warm water sugar flour	yeast warm water flour

The recipe tells Ana that to make good bread, she should:

- use warm water, and not cold
- remember to add the sugar
- leave the bread dough in a warm place for some time to allow it to rise.

The two loaves, after baking, are shown below:



Bread with sugar added

Bread without sugar added

www.kingarthurbaking.com/blog/2014/08/04/my-bread-didnt-rise

Discuss how the life processes of yeast and the environmental factors involved, work together to make good bread.

In your answer:

- describe and explain the life processes of yeast that are involved in making bread
- explain the impact on the bread if no sugar was added
- make links between the environmental factors involved in the process of bread making and the life processes of yeast, to discuss how they work together to make good bread.

QUESTION THREE: FOOD POISONINGASSESSOR'S
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Some bacteria are pathogens and can cause food poisoning (sometimes called gastroenteritis or “gastro”). When a person has food poisoning, they may vomit, have diarrhoea, abdominal pain, and cramping. The number of people in New Zealand with food poisoning increases in the summer.

Advice on ways to stop food poisoning caused by bacteria

<https://sciblogs.co.nz/news/2018/02/13/salmonella-mmm-concerns-raised-young-peoples-poor-food-safety-knowledge/>

Link the life processes of bacteria and the effect of changes in environmental factors to discuss how bacteria can cause food poisoning, and ways it can be prevented.

In your answer:

- describe the environmental factors bacteria require to carry out their life processes
- describe where the bacteria that cause food poisoning come from
- explain how the micro-organisms carry out the life processes that cause food poisoning
- discuss the effect of environmental factors on the life processes of bacteria that cause food poisoning, and ways of preventing it.
