EXEMPLAR

90168

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For Supervisor's use only

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Level 1 Biology, 2007

90168 Describe how humans use and are affected by micro-organisms

Credits: Two
9.30 am Tuesday 27 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 biological ideas relating to how humans use and are affected by micro-organisms. ✓	Explain biological ideas relating to how humans use and are affected by micro-organisms. ✓	Discuss biological ideas relating to how humans use and are affected by micro-organisms. ✓
Overall Level of Performance E		

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

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QUESTION ONE

Some bacteria can be harmful to humans.

(a) **Describe** THREE conditions that bacteria require for reproduction.

Warmth, moisture and a food source. -ageguate food availalble.

A

(b) **Describe** how bacteria can cause food poisoning.

Bacteria can cause food poisoning because they can excrete toxins into the human body that are poisonous, making the human sick.

A

(c) Micro-organisms can be very useful in making food.
Answer (i) and (ii) below for a food that requires micro-organisms to make it.

(i) Name of food made: Brewed Cheese

The micro-organism used: ~~Yeast~~ Bacteria

The life-process of the micro-organism used in making the food ~~Yeast ferment~~ ~~Bacteria feed by extracellular digestion~~ Extracellular digestion

A

(ii) **Explain** how the life-process of the micro-organism is used in making the food.

Bacteria feed by extracellular digestion. After milk is made the ~~fog~~ solids remain as curds. Enzymes are placed into the food so bacteria feed off the curds by excreting enzymes and breaking down the food then it is reabsorbed by the bacteria to live off. Therefore this life process is useful in the process of making cheese.

N

QUESTION TWO

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(a) **Describe** the function of the **sporangium** in fungi.

They produce spores genetically identical to itself and hold the spores until they are ready to be released and then the sporangium splits to release the spores.

A

(b) **Explain** how fungi feed.

Fungi feed by extracellular digestion. This happens by the hyphae. They secrete enzymes into the food to break it down into smaller molecules and then these smaller molecules are absorbed back into the hyphae for the fungi to feed off.

A

M

(c) **Discuss** the role that fungi such as mushrooms have in nutrient cycles and **explain** how this role benefits other living organisms.

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A

M

E

Fungi decompose dead material. They break down dead things such as plants or animals and release carbon dioxide back into the atmosphere. This carbon dioxide benefits other organisms because it is what plants need in order to carry out photosynthesis to produce glucose for energy. Fungi also release nitrogen ~~back~~ out of the dead material as this is needed by all other living organisms because cells ~~are~~ contain nitrogen so therefore they need to absorb nitrogen in order for the organisms to function efficiently.

- for **A**: fungi decompose / break down
- for **M**: **A** and specific nutrient, eg C or N
- for **E**: usefulness of nutrient, eg CO_2 for photosynthesis

Note that Question Three begins on the next page.

QUESTION THREE

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Meningitis can be caused by either a viral or a bacterial infection. MeNZB is a vaccine used against the most common strain of bacterial meningitis in New Zealand.

(a) **Describe** how meningitis can be passed between people.

By sharing the same drink bottle, contacting other body fluid such as kissing and also coughing or sneezing over other people. The viral or bacterial particles are passed from one person to another.

A

(b) **Explain** how a vaccine works to prevent bacterial infections such as meningitis.

A vaccine prevents bacterial infections because it stimulates the body to produce antibodies for that particular infection. for example if a person became infected with meningitis the body is able to quickly produce those antibodies for that infection (because it has been vaccinated against the disease) before it has any chance to do harm to the human body, so the antibodies kill the infection quickly.

A

M

M for idea that the body is already prepared for future attack by pathogen

(c) The life processes of bacteria and viruses can cause illness like meningitis.

Assessor's use only

Discuss how the **life processes** of bacteria and viruses **cause** illness.

Bacteria reproduce by binary fission. This means ~~is~~ each cell splits into two, two into four, four into eight and so on. In correct conditions such as adequate food supply, warmth and moisture bacteria reproduce every twenty minutes. This causes exponential growth faster than the body can produce antibodies to defend against the bacteria therefore causing harm to the human and disease. Viruses reproduce by replicating their DNA inside a host cell and then when the host cell splits the many new viruses take over another host cell causing many good cells to die as the virus takes over quickly. This causes disease because the virus is a pathogen and always needs a living host organism such as a ~~Re~~ human cell, to live and reproduce in order for it to survive. Viruses also feed off the living organism causing damage to the cells and disease. Bacteria feed by extracellular digestion where enzymes are excreted + break down food then absorbed back into the bacteria and this causes disease as well as nutrients in the body are being ...

A

must state specific harmful effects:
- **A**: for virus
- **M**: for bacteria
- **E**: for **A** and **M** AND comparison statement