90927M

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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Koiora, Kaupae 1, 2016

90927M Te whakaatu māramatanga mō ngā ariā koiora e pā ana ki te moroiti

9.30 i te ata Rāapa 23 Whiringa-ā-rangi 2016
Whiwhinga: Whā

Paetae	Kaiaka	Kairangi
Te whakaatu māramatanga mō ngā ariā koiora e pā ana ki te moroiti.	Te whakaatu māramatanga hōhonu mō ngā ariā koiora e pā ana ki te moroiti.	Te whakaatu māramatanga matawhānui mō ngā ariā koiora e pā ana ki te moroiti.

Tirohia mēnā e rite ana te Tau Ākonga ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi.

Me whakamātau koe i ngā tūmahi KATOA kei roto i tēnei pukapuka.

Mēnā ka hiahia whārangi atu anō koe mō ō tuhinga, whakamahia te (ngā) whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i te tau tūmahi.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–15 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

ME HOATU RAWA KOE I TĒNEI PUKAPUKA KI TE KAIWHAKAHAERE Ā TE MUTUNGA O TE WHAKAMĀTAUTAU.

TAPEKE

MĀ TE KAIMĀKA ANAKE

© Mana Tohu Mātauranga o Aotearoa, 2016. Pūmau te mana.
Kia kaua rawa he wāhi o tēnei tuhinga e whakahuatia ki te kore te whakaaetanga tuatahi a te Mana Tohu Mātauranga o Aotearoa.

MĀ TE KAIMĀKA ANAKE

TŪMAHI TUATAHI: TE TOHU KAI

Ka kino, ka pirau hoki te kai mata nā te moroiti. Ko te tauraki-tio tētahi tikanga mō te tohu kai kia ukauka ai mō tētahi wā roa hei kai ā tōna wā. E whakaatu ana te hoahoa i raro me pēhea te tauraki-tio.

He mea urutau mai i: http://www.lio-licious.com/useful-info

Matapakitia he pēhea te tukanga tauraki-tio e āwhina ai ki te tohu kai.

I tō tuhinga me:

- whakaahua i ngā take taiao e hiahiatia ana mō ngā moroiti ki te whakahaere i ngā tukanga koiora
- whakaahua ka ahu mai ngā moroiti e whakakino nei i ngā kai i hea
- whakamārama mai he pēhea te whakahaere a ngā moroiti i ngā tukanga koiora e whakakino, e pīrau rānei ai ngā kai
- whakamārama mai he aha te mahi a te tauraki-tio e āwhina nei ki te tohu kai.

He wāhi anō mō tō tuhinga mō tēnei tūmahi kei te whārangi 4.

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QUESTION ONE: PRESERVING FOOD

Fresh food can be spoiled and go off due to the presence of micro-organisms. Freeze-drying is one way of preserving food so that it can be stored for a long time before use. The diagram below shows how freeze-drying is carried out.

Adapted from: http://www.lio-licious.com/useful-info

Discuss how the process of freeze-drying helps to preserve food.

Your answer should:

- describe the environmental factors required for micro-organisms to carry out life processes
- describe where the micro-organisms that spoil food come from
- explain how micro-organisms carry out life processes that cause food to spoil or go off
- explain what the freeze-drying process does that helps to preserve food.

There is more space for your answer to this question on page 5.

MĀ TE KAIMĀKA ANAKE

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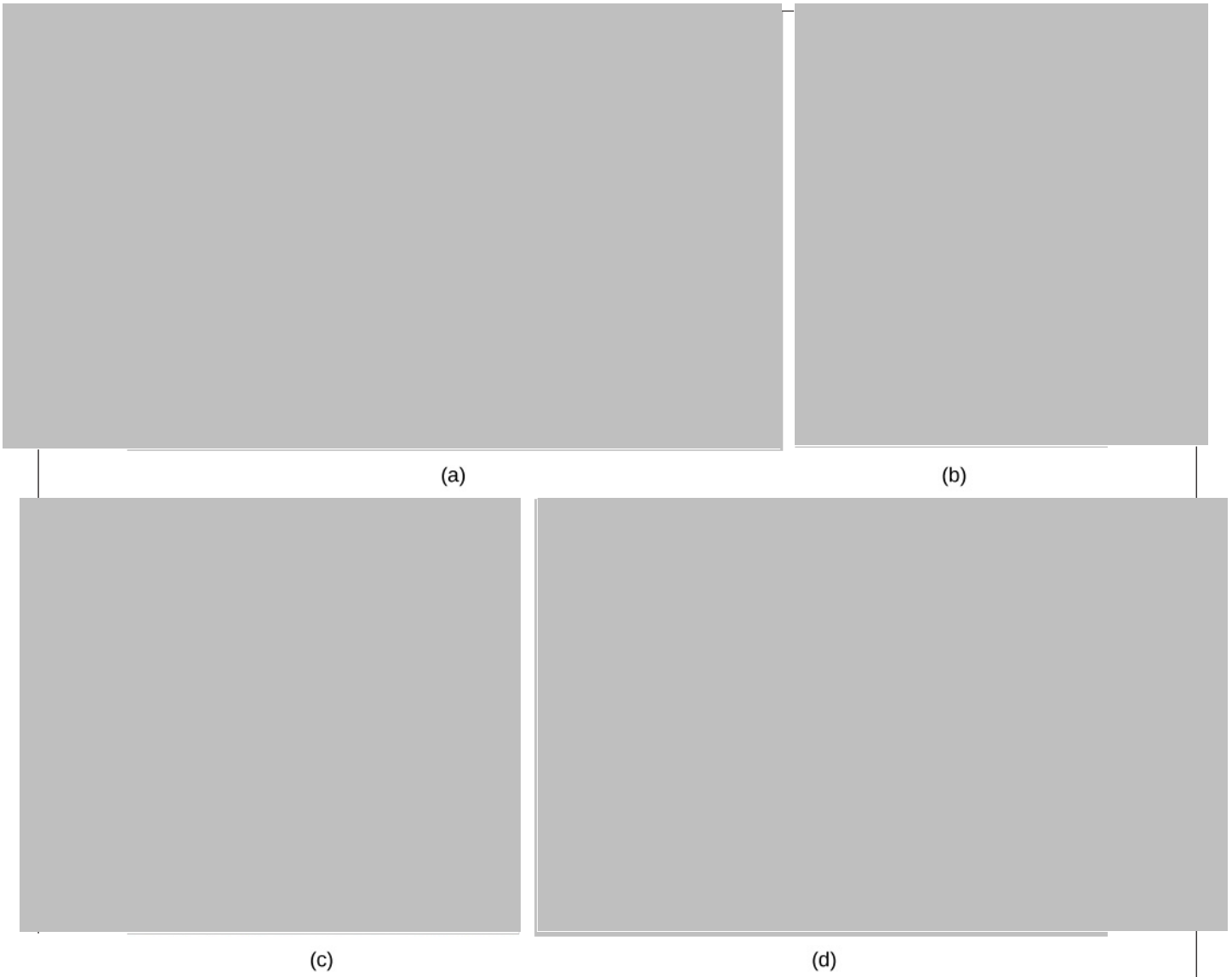
TŪMAHI TUARUA: NGĀ HEKAHEKA HEI TUKUMATE TIPU

He pānga nui tō te rironga o ngā māra, te kino rānei o ngā kai ki ngā putunga kai nā ngā mate i ahu mai i ngā tukumate hekaheka.



Kei roto i ētahi tukumate hekaheka ko te (a) pūhekaheka kākāriki i ngā huarepe, (b) te puehu hōpurupuru i ngā zinnia, (c) te waikura tātā i ngā pāri, me (d) te pirau pūmā i ngā kerepe.

Mātāpuna: www.boundless.com/biology/textbooks/boundless-biology-textbook/fungi-24/fungal-parasites-and-pathogens-152/fungi-as-plant-animal-and-human-pathogens-600-11819

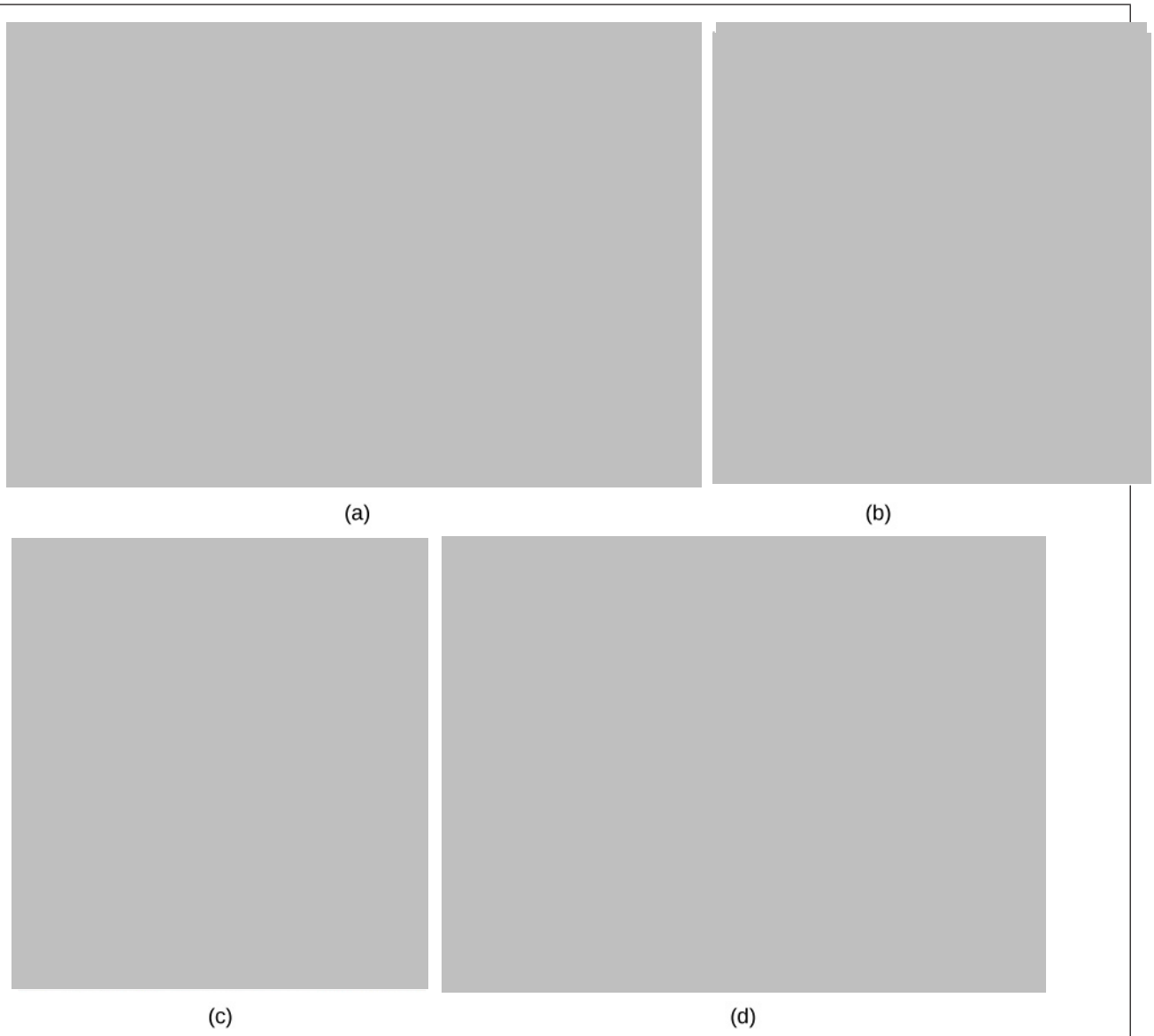
Matapakitia he pēhea te kai, te tipu me te whakaputa uri a ngā hekaheka hei tukumate i runga tipu, ā, me pēhea te whakaiti i te kinotanga o ngā māra, te kino rānei o ngā kai nā ngā tukumate hekaheka.

I tō tuhinga me:

- tautuhi te kupu tukumate
- whakamārama mai he pēhea te kai, te tipu me te whakaputa uri a te hekaheka i runga tipu
- whakamārama mai he pēhea te tere tipu o te hekaheka i runga tipu nā ngā take taiao
- whakamārama mai me pēhea te whakaiti i te kinotanga o ngā māra, te kino rānei o ngā kai mai i te tipu o te hekaheka
- whakataurite ngā hono i waenga i ngā tikanga ka whakamahia hei ārai i te hekaheka me ngā rerekētanga e tūmanakohia ana ki te tipu me te whakaputa uri a te hekaheka.

QUESTION TWO: FUNGI AS PLANT PATHOGENS

Loss of crops or food spoilage due to fungal diseases caused by fungal pathogens can have a large impact on human food supplies.



Some fungal pathogens include (a) green mould on grapefruit, (b) powdery mildew on a zinnia, (c) stem rust on barley, and (d) grey rot on grapes.

Source: www.boundless.com/biology/textbooks/boundless-biology-textbook/fungi-24/fungal-parasites-and-pathogens-152/fungi-as-plant-animal-and-human-pathogens-600-11819

Discuss how fungi feed, grow, and reproduce as pathogens on plants, and how damage to crops or food spoilage from fungal pathogens can be minimised.

Your answer should:

- define the term pathogen
- explain how fungi feed, grow, and reproduce on plants
- explain how environmental factors allow fungi to grow quickly on plants
- explain how crop damage or food spoilage from fungal growth could be minimised
- compare the links between the methods used to control fungi and the expected changes to fungal growth and reproduction.

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MĀ TE KAIMĀKA ANAKE

TŪMAHI TUATORU: TE HURIHANGA TAIORA

Ko te hauota me te waro ētahi taiora waiwai e rua ka huria haerehia e ngā moroiti.

Te Hurihanga Hauota

Ngā Mātāpuna: https://en.wikipedia.org/wiki/Nitrogen_fixation

Te Hurihanga Waro

www.thinglink.com/scene/700750299547041793

Whakatauritea te mahi a ngā moroiti i te hurihanga taiora i roto i ngā hurihanga hauota me te waro.

I tō tuhinga me:

- whakaaahua te mahi a ngā moroiti i roto i te hurihanga taiora mō te hurihanga hauota
- whakaaahua te mahi a ngā moroiti i roto i te hurihanga taiora mō te hurihanga waro
- whakamārama mai he aha i hira ai te hurihanga taiora ki te pūnaha rauropi
- matapaki ngā ōritetanga me ngā rerekētanga o ngā mahi a ngā moroiti i roto i te hurihanga taiao mō ngā hurihanga hauota me te waro.

He wāhi anō mō tō tuhinga mō tēnei tūmahi kei te whārangi 12.

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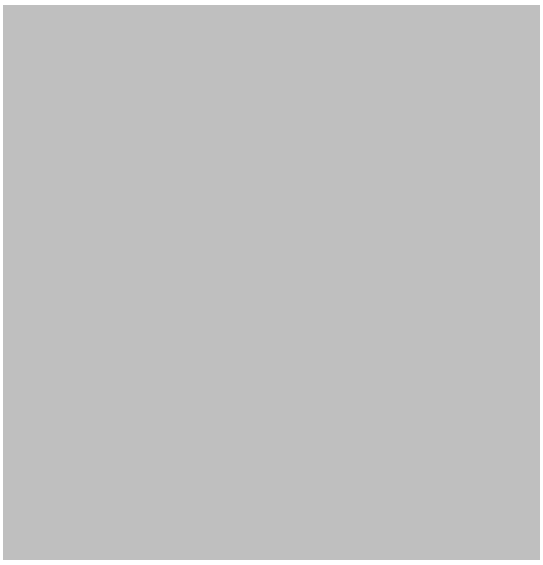
QUESTION THREE: NUTRIENT CYCLING

Nitrogen and carbon are two essential nutrients cycled by micro-organisms.

The Nitrogen Cycle

Sources: https://en.wikipedia.org/wiki/Nitrogen_fixation

The Carbon Cycle



www.thinglink.com/scene/700750299547041793

Compare and contrast the role of micro-organisms in nutrient cycling in the nitrogen and carbon cycles.

Your answer should:

- describe the role of micro-organisms in nutrient cycling in the nitrogen cycle
- describe the role of micro-organisms in nutrient cycling in the carbon cycle
- explain why nutrient cycling is important to the ecosystem
- discuss the similarities and the differences in the role of micro-organisms in nutrient cycling for the nitrogen and the carbon cycles.

There is more space for your answer to this question on page 13.

MĀ TE KAIMĀKA ANAKE

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He whārangi anō ki te hiahiatia.
Tuhia te (ngā) tau tūmahi mēnā e tika ana.

TAU TŪMAHI

MĀ TE KAIMĀKA ANAKE

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

QUESTION NUMBER

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English translation of the wording on the front cover

Level 1 Biology, 2016

90927 Demonstrate understanding of biological ideas relating to micro-organisms

9.30 a.m. Wednesday 23 November 2016
Credits: Four

90927M

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 2–15 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.