

2

91156M



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

SUPERVISOR'S USE ONLY

Koiora, Kaupae 2, 2017

91156M Te whakaatu māramatanga ki ngā tukanga ora e pā ana ki te pūtau

2.00 i te ahiahi Rāapa 22 Whiringa-ā-rangi 2017
Whiwhinga: Whā

Paetae	Kaiaka	Kairangi
Te whakaatu māramatanga ki ngā tukanga ora e pā ana ki te pūtau.	Te whakaatu māramatanga hōhonu ki ngā tukanga ora e pā ana ki te pūtau.	Te whakaatu māramatanga matawhānui ki ngā tukanga ora e pā ana ki te pūtau.

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 mō ō tuhinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i ngā tau tūmahi.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–19 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

HOATU TE PUKAPUKA NEI KI TE KAIWHAKAHARE HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

TAPEKE

MĀ TE KAIMĀKA ANAKE

© Mana Tohu Mātauranga o Aotearoa, 2017. Pūmau te mana.

Kia kaua rawa he wāhi o tēnei tuhinga e whakahuatia ki te kore te whakaetanga tuatahi a te Mana Tohu Mātauranga o Aotearoa.

TŪMAHI TUATAHI: AHOTAKAKAME

(a) Whakaahuahia te rerewai ME TE whakamārama mai ka pēhea tōna puta mai i ngā pūtau pakiaka o tētahi tipu.

MĀ TE
KAIMĀKA
ANAKE

QUESTION ONE: PHOTOSYNTHESIS

(a) Describe osmosis AND explain how it occurs in root cells of a plant.

ASSESSOR'S
USE ONLY

- (b) Tuhia te whārite kupu mō te ahotakakame ka tātuhi i te hoahoa tapanga o tētahi pūmāota¹ e whakaatu ana i te kirihi o roto, te kirihi o waho, ngā wēkāriki (stroma), me ngā tāpae kōpaeiti (thylakoid stacks).

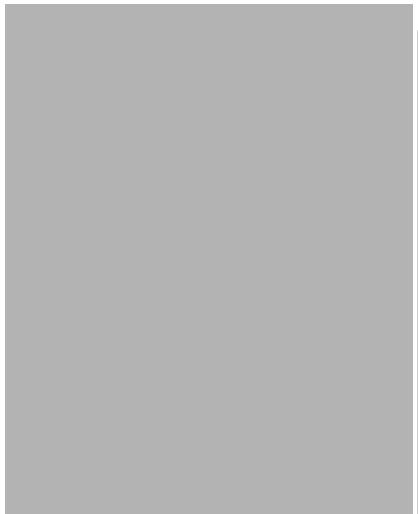
¹ pūkāriki

- (b) Write the word equation for photosynthesis AND draw a labelled diagram of a chloroplast showing the inner membrane, outer membrane, stroma, and thylakoid stacks.

(c) Matapakitia he pēhea te puta mai o te ahotakakame, me ngā āhuatanga ka pā mai ki tēnei.

I tō tuhinga, me:

- whakamārama i ngā tauhohenga tūrama-kore ME NGĀ tauhohenga a-tūrama
 - tautohu ki tō tātuhinga pūmāota (whārangī tōmua) kei hea ēnei tauhohenga e puta ana
 - whakamārama he pēhea te whakaawe o te wai ME tētahi atu āhuatanga ki te pāpātanga o te ahotakakame.

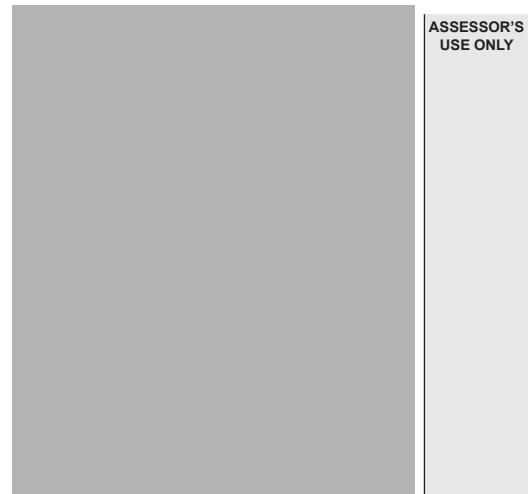


[www.behance.net/gallery/13665729/
Corn-Plant-Root-Systems](http://www.behance.net/gallery/13665729/Corn-Plant-Root-Systems)

- (c) Discuss how photosynthesis occurs, and the factors that affect it.

In your answer:

- explain light-independent AND light-dependent reactions
- indicate on your chloroplast drawing (previous page) where these reactions occur
- discuss how water AND one other factor can affect the rate of photosynthesis.



[www.behance.net/gallery/13665729/
Corn-Plant-Root-Systems](http://www.behance.net/gallery/13665729/Corn-Plant-Root-Systems)

MĀ TE
KAIMĀKA
ANAKE



**ASSESSOR'S
USE ONLY**

TŪMAHI TUARUA: TE TUKUPŪNGAO PŪTAU

MĀ TE
KAIMĀKA
ANAKE

<http://taputeranga.org.nz/the-marine-life/molluscs/why-are-mussels-absent-from-the-wellington-south-coast/>

<http://naturewatch.org.nz/taxa/117650-Mytilus-edulis>

Ka whirinaki atu ngā kararehe ā-tai pērā i te kuku kikorangi, *Mytilus edulis*, ki te wai tai hei whiwhi hāora memeha mō te tukupūngao ā-hāora. I te tai timu kua rakerake ngā kuku ki te hau, ā, ka kaha te kakati o ngā anga kia kore ai e pūtī. I te wā o te tai timu ka whirinaki atu ki te tukupūngao hāora-kore kia mahi tonu ai ngā tino tukanga ora.

Whakatauritea te tukupūngao hāora-kore me te tukupūngao ā-hāora i roto i ngā kuku kikorangi ā-tai.

Me whakauru ki tō tuhinga, tētahi:

- whakamāramatanga o te tukupūngao hāora-kore e kōrero ana kei hea tēnei i roto i te pūtau, ā, me ngā hua ka whakaputaina
 - whakamāramatanga o te tukupūngao ā-hāora e kōrero ana kei hea tēnei i roto i te pūtau, ā, me ngā hua ka whakaputaina
 - matapakinga o tētahi painga me tētahi mate mō te tukupūngao ā-hāora ME TE hāora-kore i roto i ngā kuku kikorangi.

QUESTION TWO: CELL RESPIRATION

<http://taputeranga.org.nz/the-marine-life/molluscs/why-are-mussels-absent-from-the-wellington-south-coast/>

<http://naturewatch.org.nz/taxa/117650-Mytilus-edulis>

Intertidal animals such as the blue mussel, *Mytilus edulis*, rely on seawater to get dissolved oxygen for aerobic respiration. At low tide the mussels are exposed to the air and tightly close their shells to prevent desiccation (drying out). During low tide they rely on anaerobic respiration to maintain essential life processes.

Compare and contrast anaerobic and aerobic respiration in intertidal blue mussels.

In your answer include:

- an explanation of anaerobic respiration that includes where it takes place in the cell, and the products formed
 - an explanation of aerobic respiration that includes where it takes place in the cell, and the products formed
 - a discussion of one advantage and one disadvantage for BOTH anaerobic AND aerobic respiration in blue mussels.
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-
-

**ASSESSOR'S
USE ONLY**

E whakaatu ana te tūtohi i raro he pēhea te pā mai o te whāū pūira i ngā pāpātanga rerekē i roto i ngā momo pūtau tangata rerekē.

Momo Pūtau	Pāpātanga Whāū Pūira (Te auau o te whakakapi pūtau)
Pūtau kiri	2 wiki
Pūtau ate	300 – 500 rā
Kōpiro – kiriroto	4 – 5 rā
Kōpiro – uaua me ētahi atu kikonga	16 tau

Matapakitia he aha i rerekē ai te pāpātanga whāū pūira i ngā pūtau tangata rerekē, mā te whakamahi i ngā tauira mai i te tūtohi i runga.

I tō tuhinga, me:

- whakamārama mai te pūtake o te whāū pūira, Ā, he pēhea te mahi
 - homai take he aha i rerekē ai te pāpātanga o te whāū pūira i roto i ngā momo pūtau tangata rerekē
 - whakataurite ngā momo pūtau rerekē KATOA kei te tūtohi ME TE parahau i te pāpātanga whāū pūira e ai ki te taumahi pūtau.

Ka whakaaetia te whakamahi hoahoa hei tautoko i tō tuhinga.

The table below shows how mitosis occurs at different rates in different types of human cells.

Cell Type	Mitosis Rate (How often cells are replaced)
Skin cell	2 weeks
Liver cell	300 – 500 days
Intestinal – internal lining	4 – 5 days
Intestinal – muscle and other tissues	16 years

Discuss why the rate of mitosis varies in different human cells, using examples from the table above.

In your answer:

- explain the purpose of mitosis AND how it occurs
 - provide reasons why the rate of mitosis varies in different types of human cells
 - compare and contrast ALL the different types of cells in the table AND justify the mitosis rate in terms of cell function.

You may use diagrams in your answer.

ASSESSOR'S
USE ONLY

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

TAU TŪMAHI

MĀ TE
KAIMĀKA
ANAKE

QUESTION
NUMBER

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

ASSESSOR'S
USE ONLY

English translation of the wording on the front cover

Level 2 Biology, 2017

91156 Demonstrate understanding of life processes at the cellular level

2.00 p.m. Wednesday 22 November 2017

Credits: Four

91156M

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of life processes at the cellular level.	Demonstrate in-depth understanding of life processes at the cellular level.	Demonstrate comprehensive understanding of life processes at the cellular level.

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 2–19 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.