

91156M



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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

2

SUPERVISOR'S USE ONLY

Tohua tēnei pouaka  
mēnā kāore he tuhituhi  
i roto i tēnei pukapuka

## Koiora, Kaupae 2, 2020

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

9.30 i te ata Rāapa 2 Hakihea 2020  
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 koe mō ō tuinga, whakamahia te (ngā) whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i te tau tūmahi.

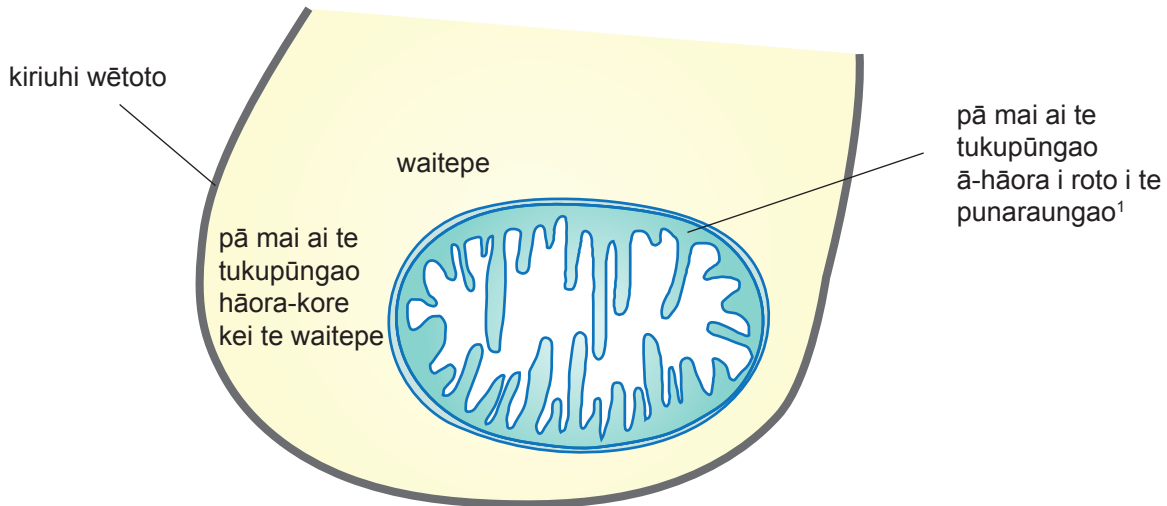
Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–19 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

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

TAPEKE

MĀ TE KAIMĀKA ANAKE

## TŪMAHI TUATAHI: TUKUPŪNGAO Ā-PŪTAU



(a) Tuhia te whārite kupu mō te tukupūngao ā-hāora.

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(b) Pā mai ai te tukupūngao ā-hāora i roto i te punaraungao, otirā pā mai ai te tukupūngao hāora-kore i roto i te waitepe. He kaitāmi te haeanate o te pūmua whākōkī cytochrome c oxidase, he pūmua whākōkī hira tēnei i roto i te tukanga tukupūngao ā-hāora.

Matapakitia he pēhea te pānga o te haeanate ki te tukupūngao hāora-kore, ā-hāora hoki me te whakanaonga o te ATP.

I tō tuhinga:

- whakaahuatia te mahi a te pūmua whākōkī
- whakamāramahia he pēhea te tuku a te hanganga o tētahi pūmua whākōkī ki te mahi i ana mahi
- matapakitia he pēhea te whakaawe a ngā kaitāmi pūmua whākōkī i te mahi a te pūmua whākōkī me ngā tauhohenga koiiora.

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<sup>1</sup> pata pūngao

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







## TŪMAHI TUARUA: TE AHOTAKAKAME ME TE NEKENEKE O NGĀ MATŪ

Ka taea e ngā tipu me ngā ika wai māori te miti wai me ngā haurehu memeha mai i te wai tonu ki roto i ngā pūtau.



Mātāpuna: <https://www.britannica.com/plant/Elodea>

Mātāpuna: <https://microdok.com/what-is-a-cell/>

- (a) Whakamāramahia mai he pēhea te uru o te wai ki ngā pūtau tipu, ngā pūtau kīrehe HOKI.

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- (b) Whakamāramahia mai te take ka pakaru mai pea ngā pūtau kararehe i te rautanga ki te wai māori, engari kua ngā pūtau tipu.

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**QUESTION TWO: PHOTOSYNTHESIS AND MOVEMENT OF MATERIALS**ASSESSOR'S  
USE ONLY

Freshwater aquatic plants and animals are able to absorb water and dissolved gases directly from the water into their cells.



Source: <https://www.britannica.com/plant/Elodea>

Source: <https://microdok.com/what-is-a-cell/>

- (a) Explain how water enters both plant AND animal cells.

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- (b) Explain why animal cells may burst when placed in fresh water, but plant cells will not.

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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









*English translation of the wording on the front cover*

## Level 2 Biology 2020

### 91156 Demonstrate understanding of life processes at the cellular level

9.30 a.m. Wednesday 2 December 2020  
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.**