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90929M



909295



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

SUPERVISOR'S USE ONLY

Koiora, Kaupae 1, 2013

90929M Te whakaatu māramatanga ki ngā ariā koiora e pā ana ki te whāngote hei kaikame

9.30 i te ata Rāpare 14 Whiringa-ā-rangi 2013
Whiwhinga: Toru

Paetae	Paetae Kaiaka	Paetae Kairangi
Te whakaatu māramatanga ki ngā ariā koiora e pā ana ki te whāngote hei kaikame.	Te whakaatu māramatanga hōhonu ki ngā ariā koiora e pā ana ki te whāngote hei kaikame.	Te whakaatu māramatanga matawhānui ki ngā ariā koiora e pā ana ki te whāngote hei kaikame.

Tirohia mehemea e ōrite ana te Tau Ākongā ā-Motu (NSN) kei tō pepa whakauru ki te tau kei runga ake nei.

Me whakautu e koe te KATOA o ngā pātai kei roto i te pukapuka nei.

Ki te hiahia koe ki ētahi atu wāhi hei tuhituhi whakautu, whakamahia te (ngā) whārangi kei muri i te pukapuka nei, ka āta tohu ai i ngā tau pātai.

Tirohia mehemea kei roto nei ngā whārangi 2–15 e raupapa tika ana, ā, kāore hoki he whārangi wātea.

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

TAPEKE



MĀ TE KAIMĀKA ANAKE

Kia 60 meneti hei whakautu i ngā pātai o tēnei pukapuka.

PĀTAI TUATAHI: NGĀ KŌPIRO

Ka noho wehe ngā kōpiro o ngā whāngote ki ngā wāhanga e rua. He tino rerekē te mahi a ēnei wāhanga, te kōpiro iti me te kōpiro nui, i roto i te tukanga nakunaku¹. E whakaatu ana i te hoahoa i raro tētahi wāhanga o te pūnaha nakunaku o tētahi kiore.

*He tapu tēnei rauemi. E
kore taea te tuku atu. Aata
tirohia ki ngā kupu kei raro
iho i te pouaka nei.*

http://www.biologycorner.com/resources/rat_colon

Matapakitia ngā mahi a te kōpiro iti, kōpiro nui hoki i roto i te tukanga nakunaku.

I tō whakautu me:

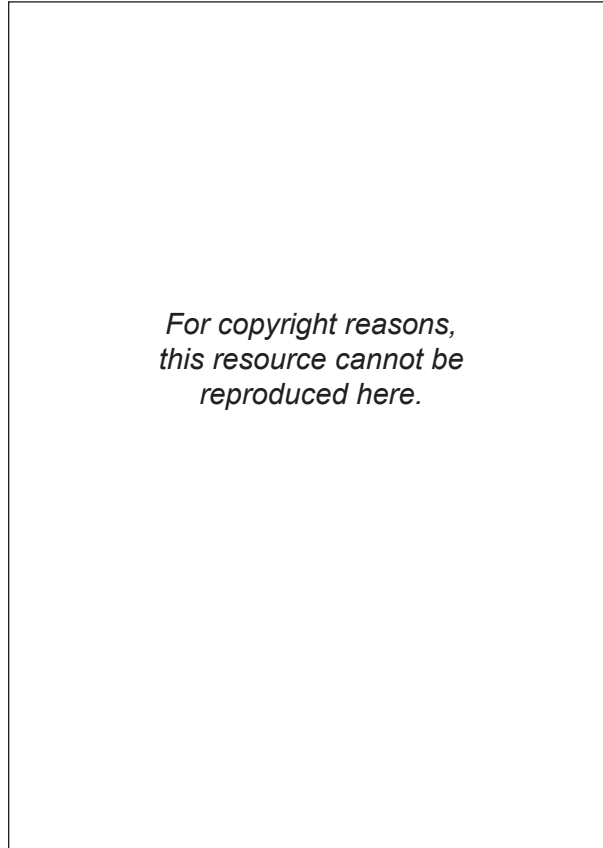
- whakaahua i ngā hanganga o ia kōpiro
- whakamārama i te tukanga nakunaku e mahi ana i ia kōpiro
- whakataurite ia momo kōpiro, me te āta whakaatu i ngā hono i waenga i ngā hanganga me ngā mahi ake, i roto i te tukanga nakunaku.

¹ kūnātu

You are advised to spend 60 minutes answering the questions in this booklet.

QUESTION ONE: INTESTINES

The intestines of mammals are divided into two sections. These sections, the small intestine and the large intestine, have quite different roles in digestion. The diagram below shows part of the digestive system of a rat.



http://www.biologycorner.com/resources/rat_colon

Discuss the roles of the small and large intestines in the digestive process.

In your answer you should:

- describe the structures that make up each intestine
- explain the digestive process occurring within each intestine
- compare and contrast each type of intestine, showing clear links between the structures and their roles, in the process of digestion.

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PĀTAI TUATORU: TE HOHENGĀ PŪMUA WHĀKŌKĪ ME TE PĀNGA O TE PĀMAHANA ME TE pH

- (a) Whakaahuahia mai te wāhi ki te pūmua whākōkī i roto i te tukanga nakunaku kai.

I te tūhura ngā ākongā i te pānga o te pāmahana me te pH ki te hohengā pūmua whākōkī.

Tuatahi, i whakatau rātou ki te torotoro i te whaihua o te whākōkī hūware i ngā pāmahana rerekē e toru. Ka huri te whākōkī hūware i te māngaro hei huka mote² (ngā rāpoi ngota kūhuka e rua kua hono ngātahitia).

E whakaaturia ana i te papatau e whai ake ngā hua o te tūhuratanga.

Te hohengā o te pūmua whākōkī hūware ki te māngaro i ngā pāmahana rerekē e toru

Wā (ā-haora)	Te huka mote i āhuatia mai i te mehanga māngaro (%)		
	Pāmahana 22°C	Pāmahana 37°C	Pāmahana 50°C
0.0	0	0	0
0.5	0	2	0
1.0	8	12	3
1.5	20	34	9
2.0	41	65	16
2.5	62	77	21
3.0	74	92	27

- (b) Whakaahuatia mai te pānga o te huringa pāmahana ki te hohengā whākōkī hūware.

² maltose

QUESTION THREE: ENZYME ACTION AND THE EFFECT OF TEMPERATURE AND pH

(a) Describe the function of enzymes in digestion.

Students were investigating the effect of temperature and pH on enzyme activity.

First, they decided to explore how effective the digestive enzyme salivary amylase was at three different temperatures. Salivary amylase changes starch to maltose sugar (two glucose molecules joined together).

The following table shows the results of the investigation.

The action of the enzyme salivary amylase on starch at three different temperatures

Time (hours)	Maltose sugar formed from starch solution (%)		
	Temperature 22°C	Temperature 37°C	Temperature 50°C
0.0	0	0	0
0.5	0	2	0
1.0	8	12	3
1.5	20	34	9
2.0	41	65	16
2.5	62	77	21
3.0	74	92	27

(b) Describe the effects of temperature change on the action of salivary amylase.

Kātahi ka whakataua ngā ākongā ki te torotoro i te whaihua o te pūmua whākōkī hūware i ngā taupū pH rerekē. Mēnā he māngaro kei reira, ka huri te konutawa mai i te parauri-kōwhai ki te kikorangi-pango. Mēnā he kūhuka kei reira, ka huri te tae o te wairewa Benedict mai i te kikorangi ki te tae whero porouku.

Te hohenga o te pūmua whākōkī hūware i ngā taupū pH rerekē

Taupū pH	Ngā ihirangi	Kitenga whakamātauranga konutawa	Kitenga whakamātauranga Benedict
7	Māngaro + wai	Kikorangi-pango	Kikorangi
7	Māngaro + whākōkī hūware	Parauri-kōwhai	Whero porouku
6	Māngaro + whākōkī hūware + HCl waimeha (waikawa)	Kikorangi-pango	Kikorangi
8	Māngaro + whākōkī hūware + NaOH waimeha (kawakore)	Parauri-kōwhai	Whero porouku

- (c) Whakaahuatia ngā pānga o te huringa taupū pH ki te hohenga o te whākōkī hūware.

- (d) Matapakitia he aha i hua pēnei ai ngā kitenga e whakaaturia ana i ngā papatau i runga nā ngā pāmahana rerekē me ngā taupū pH rerekē te take.

Whakahāngaitia tō whakautu ki tēnā wāhanga, ki tēnā wāhanga o te pūnaha nakunaku o te whāngote.

Then the students decided to explore how effective the digestive enzyme salivary amylase was at different pH levels. If starch is present, iodine changes colour from brown-yellow to blue-black. If glucose is present, Benedict's solution changes colour from blue to brick red.

The action of the enzyme salivary amylase at different pH levels

pH level	Contents	Iodine test result	Benedict's test result
7	Starch + water	Blue-black	Blue
7	Starch + salivary amylase	Brown-yellow	Brick red
6	Starch + salivary amylase + weak HCl (acidic)	Blue-black	Blue
8	Starch + salivary amylase + weak NaOH (basic)	Brown-yellow	Brick red

(c) Describe the effects of pH level change on the action of salivary amylase.

(d) Discuss why the different temperatures and pH levels cause the results shown in the tables above.

Relate your answer to specific parts of the digestive system of mammals.

English translation of the wording on the front cover

Level 1 Biology, 2013

90929 Demonstrate understanding of biological ideas relating to a mammal as a consumer

9.30 am Thursday 14 November 2013

Credits: Three

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of biological ideas relating to a mammal as a consumer.	Demonstrate in-depth understanding of biological ideas relating to a mammal as a consumer.	Demonstrate comprehensive understanding of biological ideas relating to a mammal as a consumer.

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.

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