

90929



Draw a cross through the box (X) if you have NOT written in this booklet

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Mana Tohu Mātauranga o Aotearoa

New Zealand Qualifications Authority

# Level 1 Biology 2023

## 90929 Demonstrate understanding of biological ideas relating to a mammal(s) as a consumer(s)

Credits: Three

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

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 room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (DO NOT WRITE). This area will be cut off when the booklet is marked.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

Digestion begins in the mouth and continues in the stomach, where both physical and chemical digestion take place.



## Human digestive system

Discuss how digestion in the stomach of a mammal (such as a human) occurs, and discuss why specific conditions in the stomach are needed for the processes to be carried out efficiently.

In your answer, include discussion of:

- physical **and** chemical digestion, providing descriptions
- how both processes occur, and how they contribute to digestion in the stomach
- why the pH in the stomach needs to remain stable for digestion to be carried out efficiently.



Two of the most widely recognised mammals from Africa are the cheetah (*Acinonyx jubatus*) and the zebra (*Equus quagga*). The cheetah is the fastest land animal, with a top speed of approximately 100 kilometres per hour over short distances, for very short periods of time. Zebras have a lower top speed (approximately 60 kilometres per hour) but a higher level of endurance. They can run at their top speed for more than a kilometre, and can run at a lower speed for much longer distances.



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Discuss what types of respiration are used by these two animals and how the types of respiration suit their different lifestyles.

- the processes of aerobic and anaerobic respiration, providing descriptions
- which type of respiration is used by the cheetah when sprinting, and which type is used by the zebra when endurance running
- which of these animals is likely to have the highest number of mitochondria in their cells, and where the highest number of mitochondria will be found in their bodies.



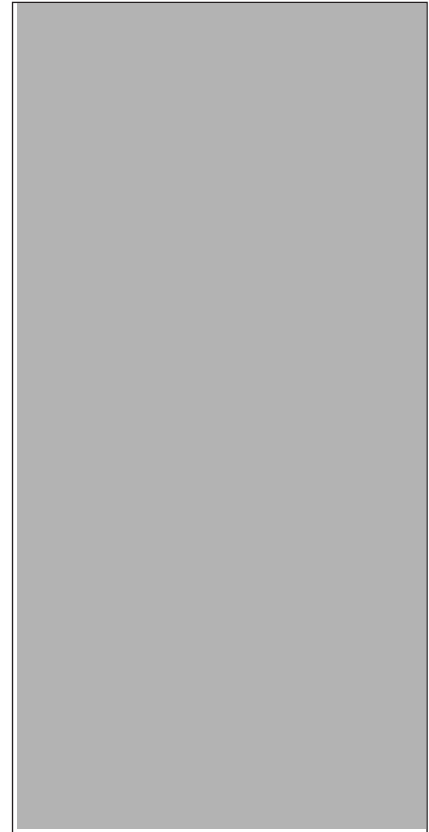
### QUESTION THREE: CIRCULATION

Blood transports various substances from one part of the body to another by flowing continuously through a closed system of blood vessels known as the circulatory system. The blood flow is known as blood circulation. Although there are differences in the circulatory systems of mammals depending on their size, lifestyle, and habitat, they all share the same common components.

Discuss the process of circulation in mammals and why it is essential for their survival.

In your answer, include discussion of:

- the key components of the circulatory system (as shown in the diagram), stating their purpose
- how both oxygen and the products of digestion enter the circulatory system
- why circulation is necessary and why mammals cannot survive if the circulatory system fails.



Human circulatory system



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

QUESTION  
NUMBER

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### Acknowledgements

Material from the following sources has been adapted for use in this assessment:

#### Page 2

Image: <https://www.britannica.com/science/stomach>

#### Page 4

Images: <https://www.britannica.com/animal/cheetah-mammal/Status-and-taxonomy>  
[https://www.planetstillalive.com/africa/tanzania-ndutu/tanzania-ndulu-plains-zebras/#prettyPhoto\[gal\]/5/](https://www.planetstillalive.com/africa/tanzania-ndutu/tanzania-ndulu-plains-zebras/#prettyPhoto[gal]/5/)

#### Page 6

Image: [https://www.researchgate.net/figure/Diagram-for-the-normal-heart-circulatory-system-left-for-a-single-ventricular-heart\\_fig1\\_331582617](https://www.researchgate.net/figure/Diagram-for-the-normal-heart-circulatory-system-left-for-a-single-ventricular-heart_fig1_331582617)