

90929



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## Level 1 Biology, 2014

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

2.00 pm Monday 17 November 2014

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 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 2–10 in the correct order and that none of these pages is blank.

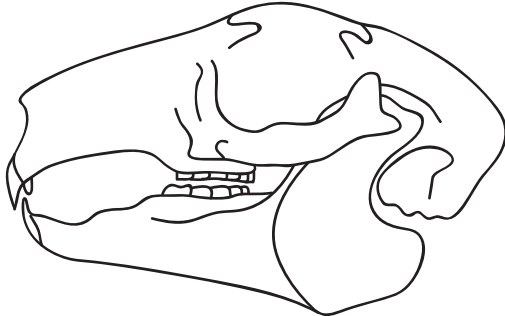
**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

**TOTAL**

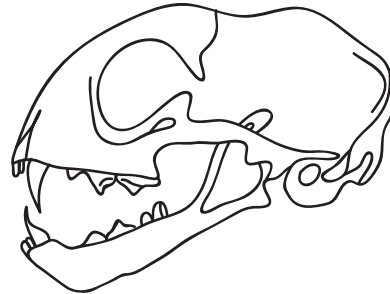
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## QUESTION ONE: PHYSICAL DIGESTION

For food to pass from the mouth to the stomach, several processes need to occur. One of these processes is **physical digestion**, where food particles are mechanically broken down by the teeth. The two diagrams below show skulls of a herbivore and a carnivore. The teeth of **herbivore** and **carnivore** mammals are different because they eat different types of food.



**Skull A**



**Skull B**

Source (adapted): P. Poletti & R. McGowan, *Year 11 Biology, NCEA Level 1: Achievement Standard Biology 1.5 Demonstrating understanding of biological ideas relating to a mammal as a consumer* (Hamilton: ABA Books Ltd, 2011), p 19.

- (a) Identify which skull belongs to a herbivore, and which skull belongs to a carnivore.  
Give reasons for your choices.

Skull A: \_\_\_\_\_

Reason: \_\_\_\_\_

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Skull B: \_\_\_\_\_

Reason: \_\_\_\_\_

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- Your answer should:

- You may use diagrams to support your answer.*

**QUESTION TWO: DIGESTIVE ENZYMES**ASSESSOR'S  
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(a) Describe the role of enzymes in digestion.

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(b) Explain why more than one type of enzyme is required for digestion.

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The diagram illustrates the digestion of three macromolecules into their respective monomers:

- Starch Digestion:** Starch (a chain of five hexagons) is broken down by **salivary amylase** and **pancreatic amylase** into **maltose** (two hexagons), which is then further broken down by **pancreatic maltase** into **glucose** (one hexagon).
- Protein Digestion:** A **protein** (a chain of seven different shapes: circle, triangle, square, circle with dot, square, star, and rounded rectangle) is broken down by **stomach pepsin** into **polypeptides** (three shapes: star, rounded rectangle, and triangle). Polypeptides are then broken down by **pancreatic trypsin** into **amino acids** (individual shapes: square, circle with dot, star, circle, triangle, and rounded rectangle).
- Lipid Digestion:** A **lipid** (consisting of a **glycerol** head and three fatty acid tails labeled 1, 2, and 3) is broken down by **pancreatic lipase** into **glycerol** and **3 fatty acids** (labeled 1, 2, and 3).

Discuss how enzymes carry out their function in the digestive tract, and use the examples in the diagram above to support your answer.

- explain how pH can influence enzyme activity
- compare the optimum pH for amylase, pepsin, and lipase reactions AND relate this to different parts of the digestive tract.

Biology 90929, 2014



Every mammal requires energy to survive and carry out life processes such as movement, reproduction, and excretion.

(a) Compare and contrast the two types of respiration.

- describe anaerobic and aerobic respiration
- explain the similarities AND differences between the two types of respiration.

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- describe the type of respiration the cheetah is most likely using while accelerating (or speeding up)
- provide reasons to justify your answer, AND link the named respiration to the type and amount of energy released.





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

QUESTION  
NUMBER

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