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90464



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA



National Certificate of Educational Achievement  
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

## Level 2 Biology, 2006

### 90464 Describe cell structure and function

Credits: Three

2.00 pm Thursday 30 November 2006

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 answer 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.**

For Assessor's use only		Achievement Criteria	
Achievement		Achievement with Merit	Achievement with Excellence
Describe cell structure and function.	<input type="checkbox"/>	Explain cell structure and function.	<input type="checkbox"/>
Overall Level of Performance		<input type="checkbox"/>	

You are advised to spend 35 minutes answering the questions in this booklet.

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## QUESTION ONE

The following are components and organelles that may be found in cells. Identify and name each component or organelle **and** describe its function.

(a)

Name: \_\_\_\_\_

*For copyright reasons, this resource cannot be reproduced here.*

Function: \_\_\_\_\_

Adams P, J Baker and G Allen, 1970, *The study of botany*, Addison Wesley, Reading, USA, p 101.

(b)

Name: \_\_\_\_\_

*For copyright reasons, this resource cannot be reproduced here.*

Function: \_\_\_\_\_

Solomon E, L Berg, D Martin, C Villee, *Biology*, Saunders College Publishing, Fort Worth, USA, p 99.

In (c) you must name and give the function of the organelle represented by the small dots:

(c)

Name: \_\_\_\_\_

*For copyright reasons, this resource cannot be reproduced here.*

Function: \_\_\_\_\_

Adams P, J Baker and G Allen, 1970, *The study of botany*, Addison Wesley, Reading, USA, p 100.

**QUESTION TWO**Assessor's  
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Bread can be made by mixing flour, water, salt, sugar and a small amount of yeast. Carbon dioxide is produced from the fermentation of simple sugars. Fermentation is controlled by enzymes from the yeast.

- (a) Explain why the shape of an enzyme is important for the way it functions. (You may use a diagram to help with your explanation.)

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- (b) In relation to **enzyme structure**, describe why the enzyme will not function at 45°C.

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Temperature	Cell division
Less than 20°C Greater than 40°C	Cell division significantly reduced
20°C–27°C	Most favourable range for yeast to multiply
26°C	Optimum temperature for multiplication of yeast
Greater than 60°C	Nil

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This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

If the concentration of simple sugars is greater than 6% of the flour, the rate of fermentation is slowed because there is less water inside the yeast cell.

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- (d) Explain how the increase in concentration of sugar will slow the rate of fermentation in the yeast cell. (You may use a diagram to help with your explanation.)

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Heavy metals, such as mercury and lead, are enzyme inhibitors.

- (e) Explain how an enzyme inhibitor affects enzyme activity. (You may use a diagram to help with your explanation.)

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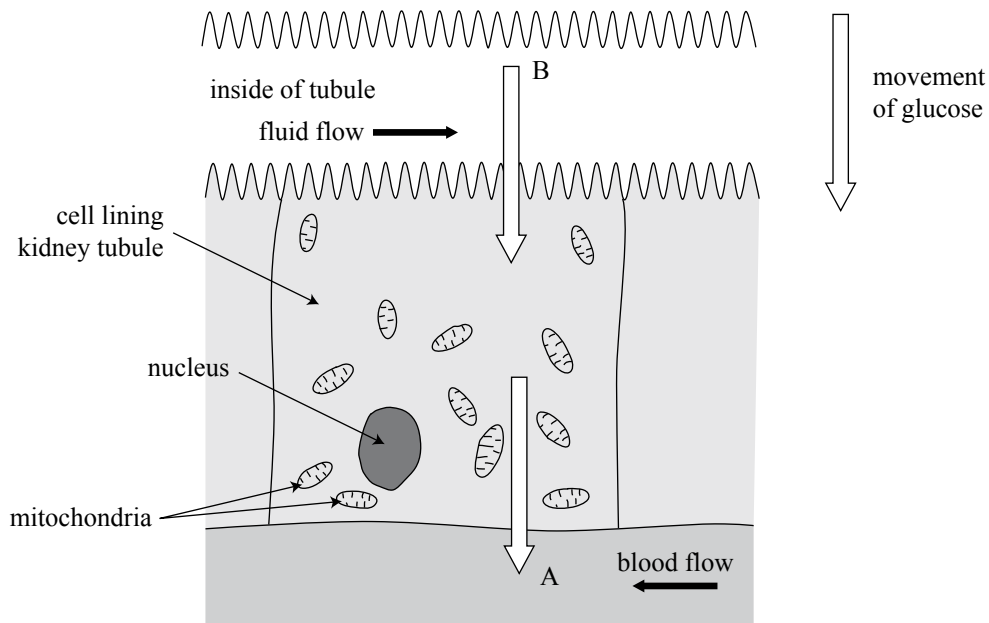
*Paramecium* is a common freshwater Protista, found in ponds or slow-moving streams.

Adapted from Knox, G A (ed), *Biological Science*, 1969, Government Printer, Wellington, p 319.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## QUESTION FOUR

The diagram below represents a cell from the lining of a human kidney tubule. A major role of the lining of the tubule is to absorb **all** the glucose from the fluid flowing along the tubule and pass it into the blood, as shown by the arrows on the diagram.



The tubule cell contains a large number of mitochondria.

- (a) Explain the importance of mitochondria in the movement of **all** the glucose from the tubule to the blood.

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The surface membrane of the cell inside the tubule at 'B' is greatly folded.

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(b) Explain how this adaptation helps the cell to carry out its function.

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This diagram shows a cell from the palisade layer of a leaf.

Greenwood T, R Allan and L Shepherd, 2004, *Year 12 Biology*, Biozone International, Hamilton, p 259.

[illegible]

**Extra paper for continuation of answers if required.  
Clearly number the question.**

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Question  
number



