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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, 2003

90464 Describe cell structure and function

Credits: Three
2.00 pm Monday 17 November 2003

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 provided at the back of this booklet and clearly number the question.

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

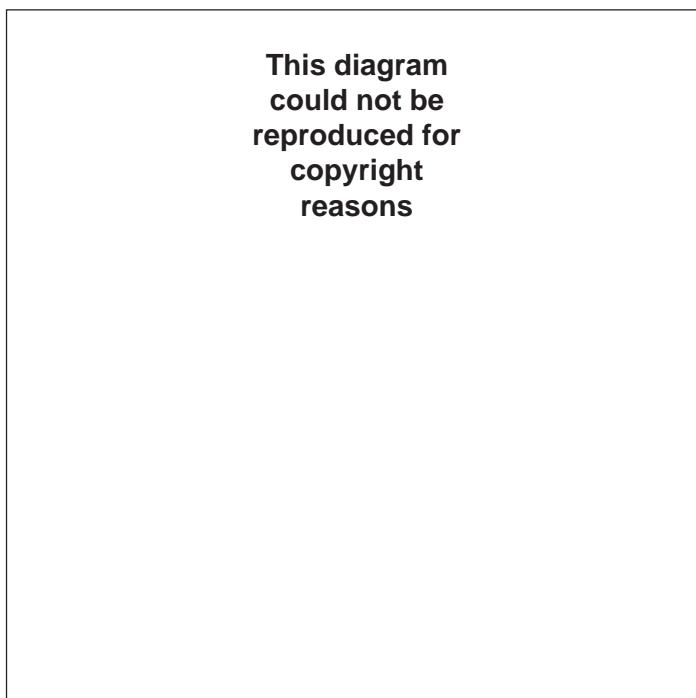
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

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

You are advised to spend 40 minutes answering the questions in this booklet.

QUESTION ONE: Organelles and Processes

Below is a diagram of a typical cell from the lining of the human small intestine.



[Source: Units of Life, Martin Hanson, Longman Paul 1993, p 9]

(a) Describe where **ribosomes** are located in the cell above.

(b) Some cells in the human small intestine contain a relatively large number of ribosomes and Golgi bodies.

Explain what 'a relatively large number of ribosomes and Golgi bodies' says about the function of these cells.

(c) Describe the structure of enzymes.

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(d) Discuss why the following statement is incorrect:

All plant cells carry out photosynthesis but only animal cells carry out respiration.

QUESTION TWO: Is It Plant or Animal?

The diagram below shows a single-celled organism called *Euglena*.

**This diagram could not be reproduced
for copyright reasons**

[Source: Schaum's Outline of Theory and Problems of Biology, 2nd ed, George H Fried and George J Hademenos, McGraw Hill 1990, p 381]

(a) Describe how a **flagellum** is used to move an organism.

(b) Ben looked up a website that had information on *Euglena*. He found the following information about the eye spot.

The cell of *Euglena* is transparent so a black, pigmented area covers the outside of the eye spot. The *Euglena* cell moves in response to the amount of shadow on the eye spot.

[Source: Adapted from <http://old.jccc.net/~pdecell/protista/euglena.html>]

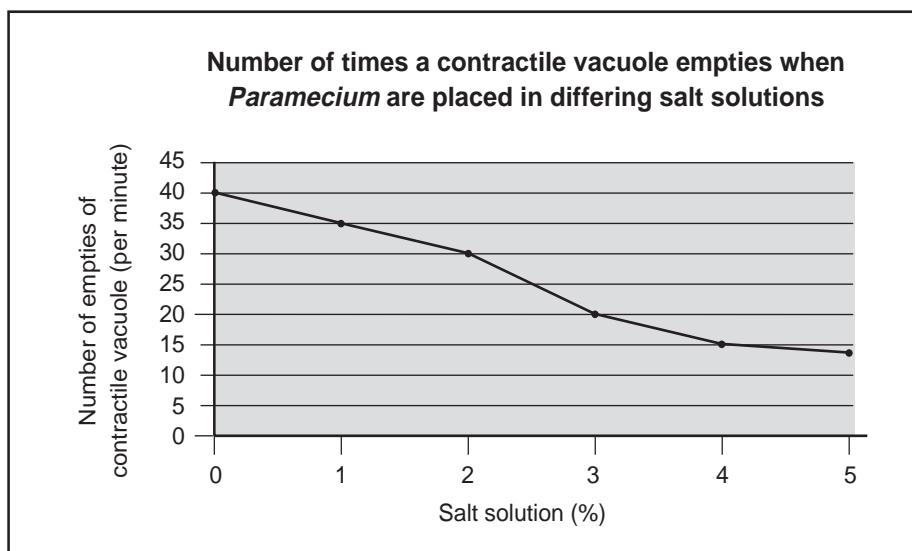
Explain how the eye spot helps *Euglena*.

(c) *Euglena* has features of both plant and animal cells. This caused difficulties when early biologists tried to classify it as a plant (kingdom Plantae) or an animal (kingdom Animalia). Now *Euglena* is classified in the kingdom Protista.

Discuss why the features of *Euglena* (labelled on the diagram on page 4) made it difficult to classify *Euglena* as a plant or an animal.

QUESTION THREE: Cell Processes

A biology class collected a number of single-celled organisms called *Paramecium*. They placed them in beakers containing different salt solutions and recorded the number of times the contractile vacuole emptied its contents. The results are shown below.



(a) Describe the role of the contractile vacuole.

(b) Explain why the contractile vacuole emptied more often when the organisms were placed in the 1% salt solution than when placed in the 4% salt solution.

(c) A student investigated the rate of contractile vacuole emptying in *Paramecium* placed in water samples containing different levels of dissolved oxygen – high levels and low levels. The contractile vacuole in the *Paramecium* in water with low levels of dissolved oxygen emptied fewer times per minute.

Explain **why** the rate of contractile vacuole emptying was lower when dissolved oxygen was low.

(d) The processes of osmosis and diffusion are involved in moving water and other small materials in and out of cells.

Explain the difference between **osmosis** and **diffusion**.
You may use diagrams in your explanation.

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

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