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91156

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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

# Level 2 Biology, 2012

## 91156 Demonstrate understanding of life processes at the cellular level

2.00 pm Thursday 22 November 2012
Credits: Four

| Achievement | Achievement with Merit | Achievement with Excellence |
|---|---|---|
| Demonstrate understanding of life processes at the cellular level. | Demonstrate in-depth understanding of life processes at the cellular level. | Demonstrate comprehensive understanding of life processes at the cellular level. |

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 2–8 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.**

**TOTAL**

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

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## QUESTION ONE: PHOTOSYNTHESIS

The process of photosynthesis is a critical process to the survival of plants and the survival of other organisms that depend on plants for their food. The rate of photosynthesis changes from plant to plant, varies with the time of day and the season, and depends upon the location and distribution of specialised organelles within the plant itself.

Discuss the process of photosynthesis, considering the following points in your answer:

- the purpose of photosynthesis
- what is needed for photosynthesis to occur and what the process produces
- the structure and function of the organelle where photosynthesis takes place
- reasons for changes in the rate of photosynthesis as mentioned above.

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## QUESTION TWO: TRANSPORT IN CELLS



The movement of materials between cells and within cells is crucial to the functioning of all processes at a cellular level.

Discuss the processes of diffusion, osmosis and active transport.

In your answer you should compare and contrast the processes, in terms of their similarities and differences, and provide an example of each process as it occurs in an animal OR plant.

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## QUESTION THREE: CELL DIVISION

DNA replication is the starting point for cell division. In common with other cellular processes, the replication of DNA is reliant on the presence of a number of enzymes and the rate at which they can carry out their function.

The rate of enzyme activity can be affected by factors such as temperature, pH, substrate, concentration, co-enzymes and enzyme poisons.

Discuss how any THREE of these factors can change the rate of enzyme activity, and why this would be important in the case of DNA replication.

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

QUESTION NUMBER

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