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SUPERVISOR'S USE ONLY

Level 2 Biology, 2017

91156 Demonstrate understanding of life processes at the cellular level

2.00 p.m. Wednesday 22 November 2017
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 2–11 in the correct order and that none of these pages is blank.

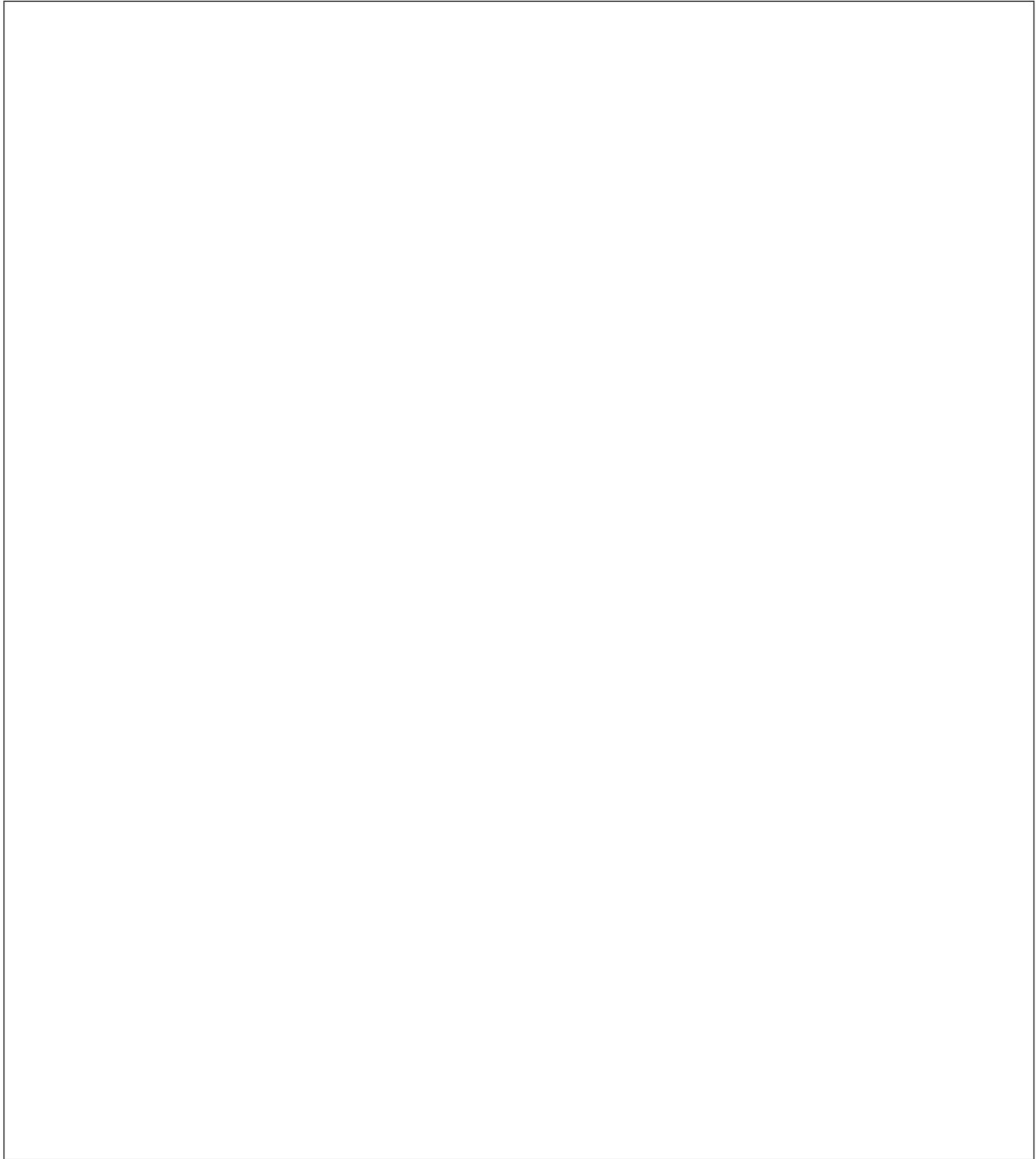
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL

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(a) Describe osmosis AND explain how it occurs in root cells of a plant.

- (b) Write the word equation for photosynthesis AND draw a labelled diagram of a chloroplast showing the inner membrane, outer membrane, stroma, and thylakoid stacks.
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- explain light-independent AND light-dependent reactions
- indicate on your chloroplast drawing (previous page) where these reactions occur
- discuss how water AND one other factor can affect the rate of photosynthesis.

Biology 91156, 2017

QUESTION TWO: CELL RESPIRATIONASSESSOR'S
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<http://taputeranga.org.nz/the-marine-life/molluscs/why-are-mussels-absent-from-the-wellington-south-coast/>

<http://naturewatch.org.nz/taxa/117650-Mytilus-edulis>

Intertidal animals such as the blue mussel, *Mytilus edulis*, rely on seawater to get dissolved oxygen for aerobic respiration. At low tide the mussels are exposed to the air and tightly close their shells to prevent desiccation (drying out). During low tide they rely on anaerobic respiration to maintain essential life processes.

Compare and contrast anaerobic and aerobic respiration in intertidal blue mussels.

In your answer include:

- an explanation of anaerobic respiration that includes where it takes place in the cell, and the products formed
- an explanation of aerobic respiration that includes where it takes place in the cell, and the products formed
- a discussion of one advantage and one disadvantage for BOTH anaerobic AND aerobic respiration in blue mussels.

The table below shows how mitosis occurs at different rates in different types of human cells.

Cell Type	Mitosis Rate (How often cells are replaced)
Skin cell	2 weeks
Liver cell	300 – 500 days
Intestinal – internal lining	4 – 5 days
Intestinal – muscle and other tissues	16 years

In your answer:

- explain the purpose of mitosis AND how it occurs
- provide reasons why the rate of mitosis varies in different types of human cells
- compare and contrast ALL the different types of cells in the table AND justify the mitosis rate in terms of cell function.

You may use diagrams in your answer.

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

QUESTION
NUMBER

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QUESTION
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