

APOLLO

Cell respiration

SL

Biology

First assessment 2025

7 questions | questions

4. Which process is an example of catabolism?
- A. Protein synthesis
 - B. Photosynthesis
 - C. Oxidation of substrates in respiration
 - D. Glycogen formation

6. What are the product(s) and site of anaerobic respiration in human cells?

	Product	Site of anaerobic respiration
A.	lactate	mitochondria
B.	carbon dioxide + water	mitochondria
C.	lactate	cytoplasm
D.	carbon dioxide + water	cytoplasm

Section B

Answer **one** question. One additional mark is available for the construction of your answer. Answers must be written within the answer boxes provided.

7. All living organisms require energy to survive.

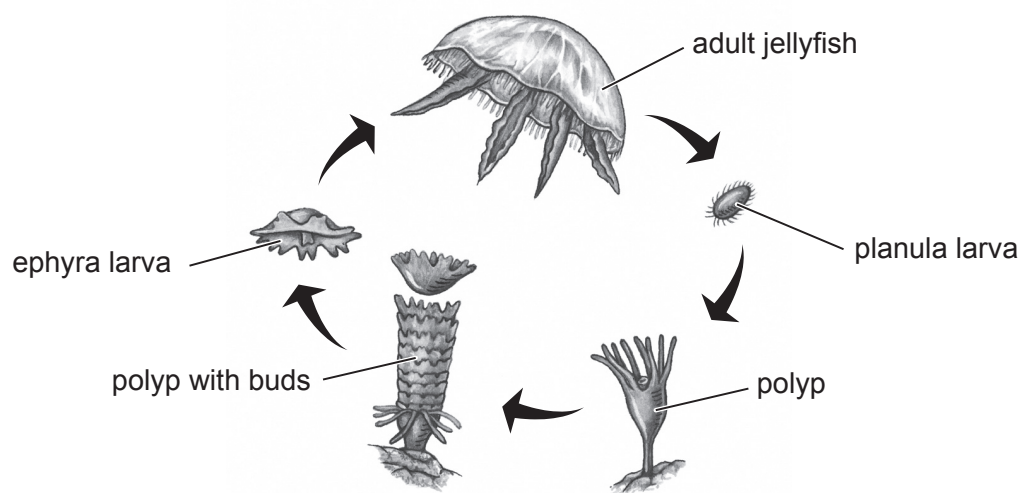
- (a) Outline **three** characteristics of polysaccharides that make them efficient compounds to store energy in organisms. [3]
- (b) Describe how energy passes through a food chain. [4]
- (c) Explain the need for energy in cells and how energy is released through cell respiration. [8]

4. What are the waste products of aerobic and anaerobic respiration in humans?

	Aerobic respiration	Anaerobic respiration
A.	carbon dioxide only	lactate and carbon dioxide
B.	carbon dioxide and water	lactate and carbon dioxide
C.	carbon dioxide and water	lactate only
D.	carbon dioxide only	lactate only

Turn over

3. The diagram shows the life cycle of a jellyfish. At one stage in the cycle, polyps attach to rocks. The photograph shows adult free-swimming *Aurelia* jellyfish.



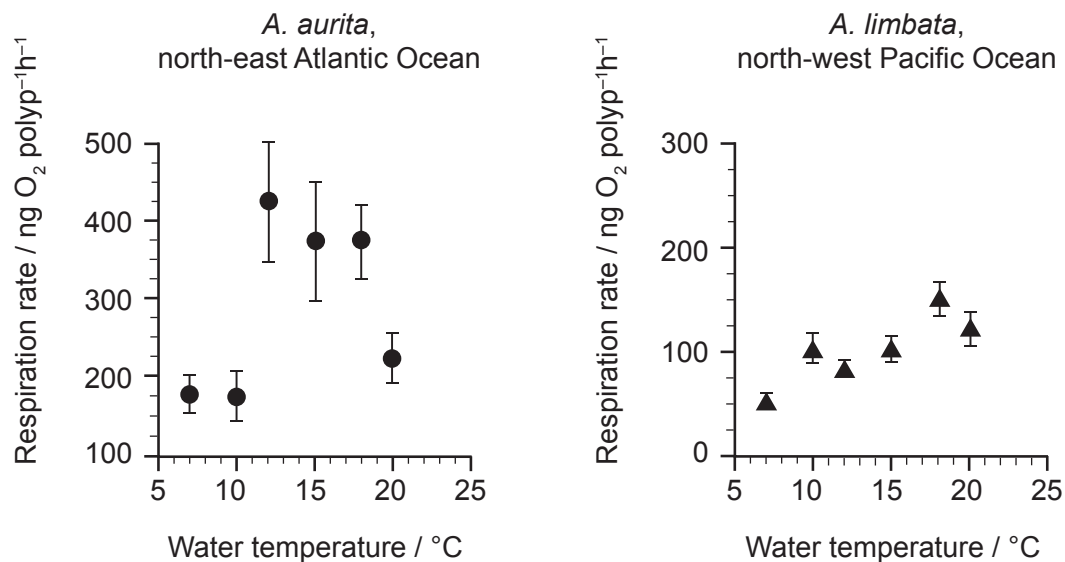
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(Question 3 continued)

Waters in the north-east Atlantic Ocean and north-west Pacific Ocean have a similar annual temperature range of 9–13 °C. The mean respiration rate of polyps from two jellyfish species (*Aurelia aurita* and *Aurelia limbata*), collected from the two regions, were measured at different temperatures in the laboratory.



- (a) State the instrument that was used to enable calculation of respiration rate. [1]

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- (b) Suggest an alternative measurement that could be taken to calculate the respiration rate. [1]

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- (c) Calculate the difference between the temperature at which the maximum respiration rate occurs in the two species. [1]

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(Question 3 continued)

(d) A jellyfish bloom is a rapid increase in jellyfish population size. Discuss, using only the data, which species is more likely to form a bloom if the ocean temperature rises 5 °C above its usual range due to global warming.

[2]

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(e) Jellyfish have a network of neurons that can transmit impulses in the form of action potentials. Outline how adenosine triphosphate (ATP) from respiration is used to generate the resting potential in neurons.

[2]

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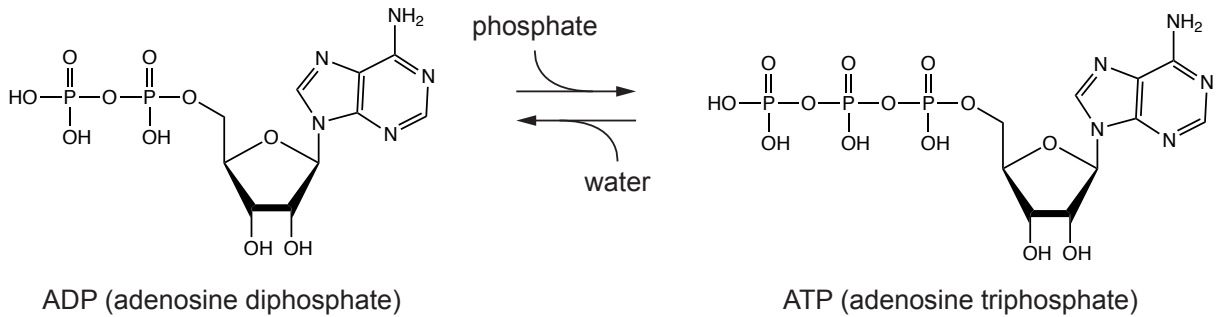


Turn over

Section A

Answer **all** questions. Answers must be written within the answer boxes provided.

4. The equation shows a reversible reaction that happens in all living cells.



- (a) State **two** processes in cells that are supplied with energy by converting ATP to ADP. [2]

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- (b) Outline how ATP is produced in cells. [3]

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6. What distinguishes aerobic respiration from anaerobic respiration in humans?
- A. Mitochondria are only used in anaerobic respiration.
 - B. Aerobic respiration yields lower quantities of ATP.
 - C. Only aerobic respiration can use glucose as a starting substrate.
 - D. Only aerobic respiration produces carbon dioxide.

Turn over