

Brett Robbins Academic Consulting

Biology 20 Practice Test

Unit 1: Energy and Matter Exchange in the Biosphere

10 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

The biosphere is best described as

- A) the thin layer of Earth in which living organisms exist
- B) all of the water on the surface of Earth
- C) the layer of gases that surrounds Earth
- D) all of the rock and soil that forms the crust of Earth

Question 2

Which process removes carbon dioxide from the atmosphere and stores the carbon in glucose?

- | | |
|-------------------------|-------------------|
| A) Cellular respiration | B) Photosynthesis |
| C) Combustion | D) Decomposition |

Question 3

A deer feeds on grasses and shrubs. In this relationship, the deer is a

- | | |
|---------------------|-----------------------|
| A) producer | B) secondary consumer |
| C) primary consumer | D) decomposer |

Question 4

Decomposers such as bacteria and fungi are essential to an ecosystem because they

- A) capture energy from sunlight for producers
- B) convert nitrogen gas into usable nitrates
- C) transfer energy from consumers back to producers
- D) break down dead matter and release nutrients into the soil

Question 5

The producers in a grassland store 500000 kJ of energy.

Using the 10% rule, the energy transferred to the primary consumers, in kJ, is ____

Question 6

A food chain in a wetland is shown below.

cattails → snails → frogs → herons

In this food chain, the frog is a

- | | |
|----------------------|-----------------------|
| A) producer | B) primary consumer |
| C) tertiary consumer | D) secondary consumer |

Question 7

As energy moves from one trophic level to the next, most of the energy is

- A) lost as heat to the surroundings
- B) stored permanently in body tissues
- C) converted into new producers
- D) recycled back to the Sun

Question 8

Nitrogen gas in the atmosphere is converted into compounds that plants can use by the process of

- | | |
|----------------------|------------------|
| A) denitrification | B) nitrification |
| C) nitrogen fixation | D) decomposition |

Question 9

Phytoplankton in a lake capture 2400000 kJ of energy.

Using the 10% rule, the energy available to the tertiary consumers

(the fourth trophic level), in kJ, is ____

Question 10

The phosphorus cycle differs from the carbon and nitrogen cycles because phosphorus

- A) cycles only through the atmosphere
- B) has no important gas phase and moves mainly through rock, soil, and water
- C) is not required by living organisms
- D) is converted into a gas by bacteria in root nodules

Answer Key

- | | | |
|------|----------|---------|
| 1. A | 5. 50000 | 9. 2400 |
| 2. B | 6. D | 10. B |
| 3. C | 7. A | |
| 4. D | 8. C | |

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.