NUNAVUT BIOLOGY 20 · UNIT 1 · 10 QUESTIONS

Energy and Matter Exchange in the Biosphere — Practice Test

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1 **In an ocean ecosystem, the biomass of phytoplankton present at one moment can be smaller than the biomass of the zooplankton that feed on them because**

- **A** zooplankton create their own energy from seawater
- **B** phytoplankton do not require sunlight to grow
- **C** phytoplankton reproduce and are eaten so quickly that a small standing biomass supports a larger consumer biomass
- **D** the 10% rule is reversed in ocean ecosystems

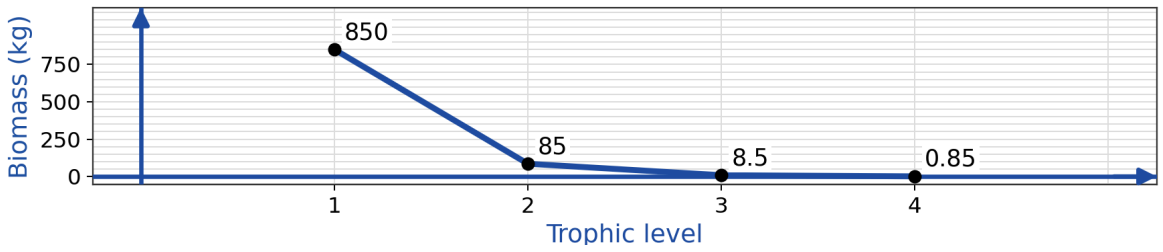
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2 **When decomposers break down the proteins in dead organisms, the nitrogen is first released as ammonia. This process is called**

- **A** nitrification
- **B** ammonification
- **C** denitrification
- **D** nitrogen fixation

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3 **The graph shows the biomass at each trophic level in a pond. The first trophic level is the producers and the third trophic level is the secondary consumers. The biomass at the secondary consumer level, in kg, is _____**



ANSWER _____

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4 **A raven feeds on the remains of a deer that was killed by wolves. The raven is best classified as a**

A scavenger

B herbivore

C producer

D predator

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5 **A pesticide is most likely to biomagnify as it moves up a food chain if it is**

A water-soluble and quickly excreted by animals

B broken down rapidly by sunlight

C converted into glucose during photosynthesis

D fat-soluble and stored in body tissues instead of being excreted

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6 **Phosphate fertilizer washes from farm fields into a lake. The most direct effect of the added phosphate on the lake is that it**

A increases denitrification by bacteria in the lake

B is converted into nitrates by nitrifying bacteria

C causes algal blooms, and decomposition of the algae lowers dissolved oxygen

D escapes from the lake as a gas into the atmosphere

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7 **Algae in a lake contain a pollutant at a concentration of 2 ppm. The concentration increases fivefold at each step of the food chain. Krill eat the algae, small fish eat the krill, and seals eat the small fish. The concentration of the pollutant in the seals, in ppm, is ____**

ANSWER _____

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8 **Marine organisms use dissolved carbon compounds to build shells of calcium carbonate. When the organisms die, the shells collect on the ocean floor and can eventually form limestone. Through this process, the carbon is**

- A stored for a long time in a reservoir in rock
- B released into the atmosphere as methane gas
- C converted into nitrates in the soil
- D returned to the water at once by respiration

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9 **The producers in a forest store 3600000 kJ of energy. Using the 10% rule, the energy available to the secondary consumers, in kJ, is**

- A 360000
- B 3600
- C 360000000
- D 36000

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10 **Most ecosystems support no more than four or five trophic levels. This is mainly because**

A top predators are always hunted by humans

B so little energy remains at the highest levels that another level cannot be supported

C producers are unable to photosynthesize for part of the year

D decomposers consume all of the nutrients in an ecosystem

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ANSWER KEY

1. C
2. B
3. 8.5
4. A
5. D
6. C
7. 250
8. A
9. D
10. B

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