

***Principles of Environmental Science 8th edition
Cunningham Test Bank***

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Chapter 02 Test Bank KEY

1. Systems function in cycles and consist of _____ that increase a process or component, and _____ that diminish a process or component.

- A. positive feedback; negative feedback
- B. open system; closed system
- C. throughput; threshold
- D. positive feedback; open system**
- E. balance; imbalance

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Bloom's Level: 2. Understand
Chapter: 02
Section: 02.01
Topic: Science

2. A/An _____ is all forms of a single element that differs in atomic mass.

- A. Isotope**
- B. Atom
- C. Molecule
- D. Element

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Bloom's Level: 2. Understand
Chapter: 02
Section: 02.02
Topic: Chemistry

3. As the hydrogen ion $[H^+]$ concentration in a solution decreases, the hydroxide ion $[OH^-]$ concentration

- A. increases and the pH increases.**
- B. increases and the pH decreases.
- C. decreases and the pH increases.
- D. decreases and the pH decreases.
- E. decreases and the pH stays the same.

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Bloom's Level: 2. Understand
Chapter: 02
Section: 02.02
Topic: Chemistry

4. Adding an acid to a solution _____ the pH, while adding a base _____ the pH.

- A. decrease and neutralize.
- B. increases and decreases.
- C. neutralize and increases.
- D. decreases and increase.**
- E. decreases and neutralize.

5. _____ is an example of something that has a basic pH.

- A. Tomato Juice
- B. Ammonia**
- C. Milk
- D. Saliva
- E. Coffee

6. The damage to an ecosystem caused by a hurricane or flood can be referred to as

- A. An open system
- B. An emergent property
- C. Equilibrium in nature
- D. A disturbance**
- E. Negative feedback loop

7. The relationship among atoms, elements, and compounds is most like the relationship among which of the following groupings

- A. bricks, brick houses, and large brick buildings.
- B. grains of sand, rocks, and continents.
- C. bricks, sidewalks, and paved roads.
- D. ponds, lakes, and oceans.
- E. grains of sugar, sugar, and sweetened iced tea.**

8. Which of the following is not a molecule?

- A. O₃
- B. O₂
- C. C**
- D. DNA
- E. H₂O

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Bloom's Level: 2. Understand
Chapter: 02
Section: 02.02
Topic: Chemistry

9. Which of the following statements would change this into a true statement: "Most, but not all, living organisms are made up of organic compounds"?

- A. All living organisms are made up of organic compounds.**
- B. All living organisms are made up of inorganic compounds.
- C. Most, but not all, living organisms are made up of inorganic compounds.
- D. Most, but not all, living organisms are made up of organic elements.
- E. Most, but not all, living organisms are made up of inorganic elements.

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Bloom's Level: 2. Understand
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Section: 02.02
Topic: Chemistry

10. Energy is the ability to

- A. move objects.
- B. become heated.
- C. transfer heat from one object to another.
- D. All of these are true.
- E. Both move objects and transfer heat from one object to another are true.**

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Bloom's Level: 1. Remember
Chapter: 02
Section: 02.03
Topic: Energy

11. Potential energy is _____ energy.

- A. electrical
- B. motion
- C. stored**
- D. heat
- E. latent

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Bloom's Level: 1. Remember
Chapter: 02
Section: 02.03
Topic: Energy

12. The motion of a rock rolling downhill is known as _____ energy.

- A. kinetic
- B. latent
- C. potential
- D. electrical
- E. mechanical

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Bloom's Level: 1. Remember
Chapter: 02
Section: 02.03
Topic: Energy

13. Metabolism can be seen as the process of converting

- A. energy into matter.
- B. potential energy into kinetic energy.
- C. kinetic energy into potential energy.
- D. atoms into compounds.
- E. matter into potential energy.

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Bloom's Level: 3. Apply
Chapter: 02
Section: 02.03
Topic: Energy

14. The law of conservation of matter tells us that matter

- A. can never be reused.
- B. needs to be conserved or it will not be available for future generations.
- C. can be destroyed.
- D. can be conserved by some adaptive strategies.
- E. is used repeatedly.

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Bloom's Level: 2. Understand
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Topic: Chemistry

15. What implication(s) does the law of conservation of matter have for humans?

- A. We cannot create energy because it is neither created nor destroyed.
- B. As matter is recycled it loses some of its integrity so we need to be careful when we dispose of goods.
- C. Natural resources are unlimited because they are used and reused by living organisms.
- D. Disposable goods are not going "away" when we throw them out.
- E. All of these are implications of the law of conservation of matter.

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Bloom's Level: 2. Understand
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Topic: Chemistry

16. The first law of thermodynamics and the law of conservation of matter are similar in that

- A.** under normal circumstances neither energy nor matter is created nor destroyed.
- B. both energy and matter are recycled through biological systems.
- C. both energy and matter flow in a one-way path through biological systems.
- D. under normal circumstances energy and matter are destroyed as they pass through biological systems.
- E. The first law of thermodynamics and the law of conservation of matter are not similar.

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Section: 02.03

Topic: Energy

17. What implication(s) does the second law of thermodynamics have for biological systems?

- A. Systems cannot create energy because energy is neither created nor destroyed.
- B. With each transformation, less available energy is available to do work so older systems have less energy.
- C.** A constant supply of energy is necessary for maintenance of biological systems.
- D. Energy is unlimited because it is used and reused by living organisms.
- E. None of these is an implication of the second law of thermodynamics.

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.03

Topic: Energy

18. Photosynthesis is the process of converting _____ into _____ energy.

- A. chemical bond energy; kinetic
- B.** solar energy; chemical bond
- C. solar energy; kinetic
- D. solar electrical energy; heat
- E. chemical bond energy; potential

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.04

Topic: Photosynthesis

19. Photosynthesis produces sugars from

- A.** water, carbon dioxide, and energy.
- B. water, other sugars, and oxygen.
- C. oxygen, carbon dioxide, and water.
- D. carbon dioxide, enzymes, and energy.
- E. oxygen, water, and energy.

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.04

Topic: Photosynthesis

20. The process of photosynthesis and cellular respiration are similar in that they both

- A. capture energy in the form of sugar.
- B. occur in all living organisms.
- C. temporarily store energy in chemical bonds.**
- D. capture energy from the sun.
- E. none of these are correct.

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Bloom's Level: 2. Understand

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Topic: Photosynthesis

21. The process of cellular respiration

- A. helps primary producers store energy accumulated by chloroplasts.
- B. releases energy from chemical bonds of molecules such as glucose.**
- C. eliminates the need for enzymes in metabolism.
- D. does not occur in primary producers.
- E. does not occur in detritivores.

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Bloom's Level: 1. Remember

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Topic: Cellular Respiration

22. All members of a species that live in the same area at the same time make up a(an)

- A. species.
- B. ecosystem.
- C. community.
- D. population.**
- E. biome.

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.05

Topic: Populations

23. A biological community consists of all

- A. populations living and interacting in an area.**
- B. members of a species living in the same area.
- C. living things on Earth.
- D. populations of a given species.
- E. members of a species living in the same biome.

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.05

Topic: Communities

24. An ecosystem consists of

- A. a physical environment within which a biological community lives.
- B. the species with which a biological community interacts.
- C.** a biological community and its physical environment.
- D. the primary producers within a biological community.
- E. all the species in a biological community.

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.05

Topic: Ecosystems

25. The length and complexity of a food web in the Arctic would be _____ when compared to one in the tropical rainforest.

- A.** short and less complex
- B. short and more complex
- C. long and less complex
- D. long and more complex
- E. about the same

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Bloom's Level: 3. Apply

Chapter: 02

Section: 02.05

Topic: Trophic Levels

26. Producers rely on the process of _____ to release chemical energy and consumers rely on the process of _____ to release chemical energy.

- A. cellular respiration; photosynthesis
- B.** cellular respiration; cellular respiration
- C. photosynthesis; cellular respiration
- D. photosynthesis; photosynthesis
- E. the sun; the sun

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Bloom's Level: 2. Understand

Chapter: 02

Section: 02.05

Topic: Trophic Levels

27. Primary consumers are also known as

- A. carnivores.
- B. scavengers.
- C. decomposers.
- D.** herbivores.
- E. top carnivores

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.05

Topic: Trophic Levels

28. Energy enters a system as sunlight and a producer is able to produce 10 kilograms of tissue. If eaten, the producer would produce about _____ kilograms of consumer tissue that would provide about _____ kilograms of tissue for a secondary consumer.

- A. 100; 10
- B. 10; 1
- C. 100; 1
- D. 1; 0.1**
- E. 10; 0.1

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Bloom's Level: 3. Apply
Chapter: 02
Section: 02.05
Topic: Trophic Levels

29. Living plants and the ocean are known as "carbon sinks" because

- A. they are made of carbon.
- B. they create carbon.
- C. they destroy carbon.
- D. they store carbon.**
- E. due to gravity, carbon is found closer to the ground.

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Bloom's Level: 2. Understand
Chapter: 02
Section: 02.06
Topic: Biogeochemical Cycles

30. _____ are characteristics of an entire system that are greater than the sum of its parts.

- A. Open systems
- B. Closed systems
- C. Disturbances
- D. Emergent properties**
- E. Feedback loops

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Bloom's Level: 1. Remember
Chapter: 02
Section: 02.01
Topic: Ecosystems

31. Which is the best example of a closed system?

- A. a space station**
- B. a forest
- C. a hotel
- D. a lake
- E. a river

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
Chapter: 02
Section: 02.01
Topic: Ecosystems

32. Which is not a characteristic of acids?

- A. they readily give up hydrogen ions
- B. they have a pH of less than 7
- C. they react easily with living tissue
- D. they react easily with nonliving minerals
- E. all of these are characteristic of acids**

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.02

Topic: Chemistry

33. How do the organisms living around Yellowstone's hot springs get energy?

- A. by eating alga
- B. from the heat in the hot spring
- C. from photosynthesis
- D. from chemosynthesis**
- E. no organisms can live at the depths of black smokers

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.04

Topic: Energy

34. Nitrogen is an essential component of amino acids and proteins.

TRUE

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Bloom's Level: 1. Remember

Chapter: 02

Section: 02.02

Topic: Chemistry

35. Photosynthesis is a step in the global nitrogen cycle.

FALSE

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Bloom's Level: 2. Understand

Chapter: 02

Section: 02.04

Topic: Photosynthesis

36. Water expands when it crystallizes and freezes.

TRUE

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Bloom's Level: 1. Remember

Chapter: 02

Section: A Water Planet

Topic: Properties of Water

37. Based on what you know of photosynthesis, what effect would clearcutting of large forests have on the amount of carbon dioxide in the atmosphere?

- A. It would increase the level of carbon dioxide since less photosynthesis would be taking place.
- B. The amount of carbon dioxide would be decreased since the trees would no longer be living.
- C. There would be no change in carbon dioxide levels since humans put carbon dioxide into the atmosphere by burning fossil fuels.
- D. The amount of carbon dioxide would be the same since the reaction rates of photosynthesis and respiration are equal.

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Bloom's Level: 5. Evaluate

Chapter: 02

Section: 02.04

Topic: Photosynthesis

38. If you were to remove the top predator in a food web or food chain

- A. there would be an increase in the number of producers.
- B. the producer population will be depleted because there are more primary consumers or herbivores.
- C. another predator would move in and take its place as top predator.
- D. there would be no change in the exchange of energy since predators get very little (only 10%) of the energy from their food source.

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Bloom's Level: 3. Apply

Chapter: 02

Section: 02.05

Topic: Trophic Levels

39. Which biogeochemical cycle lacks an atmospheric component?

- A. The hydrologic cycle.
- B. The carbon cycle.
- C. The nitrogen cycle.
- D. The phosphorous cycle.

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Bloom's Level: 2. Understand

Chapter: 02

Section: 02.06

Topic: Biogeochemical Cycles

40. Water supplies contaminated with algae that produce toxins making the water unfit to drink is a result of the human impact to the

- A. hydrologic cycle.
- B. carbon cycle.
- C. nitrogen cycle.
- D. sulfur cycle.

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Bloom's Level: 3. Apply

Chapter: 02

Section: 02.06

Topic: Biogeochemical Cycles

41. The amount of biomass that is produced in an area during a given time would be referred to as

- A. production.
- B. nutrient load.
- C. chemosynthesis.
- D.** productivity.

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Bloom's Level: 1. Remember

Section: 02.05

Topic: Trophic Levels

42. Organisms that live in deep sea ocean vents use chemicals rather than sunlight to drive the energy producing reactions. These organisms undergo what process?

- A. Photosynthesis
- B. Biosynthesis
- C. Accumulation
- D.** Chemosynthesis

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Bloom's Level: 2. Understand

Section: 02.04

Topic: Photosynthesis

43. Humans alter the sulfur cycle by

- A.** burning fossil fuels.
- B. mining rock.
- C. applying too much fertilizer to crop fields.
- D. clear cutting tropical forests.

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Bloom's Level: 2. Understand

Section: 02.06

Topic: Biogeochemical Cycles

Chapter 02 Test Bank Summary

Category

Accessibility: Keyboard Navigation

Bloom's Level: 1. Remember

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Bloom's Level: 5. Evaluate

Chapter: 02

Section: A Water Planet

Section: 02.01

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Topic: Biogeochemical Cycles

Topic: Cellular Respiration

Topic: Chemistry

Topic: Communities

Topic: Ecosystems

Topic: Energy

Topic: Photosynthesis

Topic: Populations

Topic: Properties of Water

Topic: Trophic Levels

Topic: Science