Principles of Environmental Science 9th edition Cunningham Test Bank

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Principles of Environmental Science, 9e **(Cunningham)**
Chapter 2 Environmental Systems: Matter, Energy, and Life

1) Systems function in cycles and consist of _____ that increase a process or component, and _____ that diminish a process or component.
A) positive feedbacks; negative feedbacks
B) open systems; closed systems
C) throughputs; thresholds
D) positive feedbacks; open systems
E) balances; imbalances

Answer: A
Section: 02.01
Topic: Science
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

2) A/An _____ is all forms of a single element that differs in atomic mass.
A) isotope
B) atom
C) molecule
D) element

Answer: A
Section: 02.02
Topic: Chemistry
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: A
Section: 02.02
Topic: Chemistry
Bloom's: 2. Understand
Chapter: 02
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4) Adding an acid to a solution _____ the pH, while adding a base _____ the pH.
A) decrease; neutralize
B) increases; decreases
C) neutralize; increases
D) decreases; increase
E) decreases; neutralize

Answer: D
Section: 02.02
Topic: Chemistry
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

5) _____ is an example of something that has a basic pH.
A) Tomato juice
B) Ammonia
C) Milk
D) Saliva
E) Coffee

Answer: B
Section: 02.02
Topic: Chemistry
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: D
Section: 02.02
Topic: Science
Bloom's: 1. Remember
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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

Answer: E
Section: 02.02
Topic: Chemistry
Bloom's: 3. Apply
Chapter: 02
Accessibility: Keyboard Navigation

8) Which of the following is not a molecule?
A) O_3
B) O_2
C) C
D) DNA
E) H_2O

Answer: C
Section: 02.02
Topic: Chemistry
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: A
Section: 02.02
Topic: Chemistry
Bloom's: 2. Understand
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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.

Answer: E
Section: 02.03
Topic: Energy
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

11) Potential energy is _____ energy.
A) electrical
B) motion
C) stored
D) heat
E) latent

Answer: C
Section: 02.03
Topic: Energy
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

12) The motion of a rock rolling downhill is known as _____ energy.
A) kinetic
B) latent
C) potential
D) electrical
E) mechanical

Answer: A
Section: 02.03
Topic: Energy
Bloom's: 1. Remember
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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.

Answer: B
Section: 02.03
Topic: Energy
Bloom's: 3. Apply
Chapter: 02
Accessibility: Keyboard Navigation

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.

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

Answer: D
Section: 02.02
Topic: Chemistry
Bloom's: 2. Understand
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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.

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

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

Answer: B
Section: 02.04
Topic: Photosynthesis
Bloom's: 1. Remember
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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.

Answer: A
Section: 02.04
Topic: Photosynthesis
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: C
Section: 02.04
Topic: Photosynthesis
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: B
Section: 02.04
Topic: Cellular Respiration
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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.

Answer: D
Section: 02.05
Topic: Populations
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: A
Section: 02.05
Topic: Communities
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: C
Section: 02.05
Topic: Ecosystems
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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

Answer: A
Section: 02.05
Topic: Trophic Levels
Bloom's: 3. Apply
Chapter: 02
Accessibility: Keyboard Navigation

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

Answer: B
Section: 02.05
Topic: Trophic Levels
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

27) Primary consumers are also known as
A) carnivores.
B) scavengers.
C) decomposers.
D) herbivores.
E) top carnivores

Answer: D
Section: 02.05
Topic: Trophic Levels
Bloom's: 1. Remember
Chapter: 02
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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

Answer: D
Section: 02.05
Topic: Trophic Levels
Bloom's: 3. Apply
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: D
Section: 02.06
Topic: Biogeochemical Cycles
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

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

Answer: D
Section: 02.01
Topic: Ecosystems
Bloom's: 1. Remember
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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

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

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

Answer: E
Section: 02.02
Topic: Chemistry
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

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

Answer: D
Section: 02.04
Topic: Energy
Bloom's: 1. Remember
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34) Nitrogen is an essential component of amino acids and proteins.

Answer: TRUE
Section: 02.02
Topic: Chemistry
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

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

Answer: FALSE
Section: 02.04
Topic: Photosynthesis
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

36) Water expands when it crystallizes and freezes.

Answer: TRUE
Section: 02.02
Topic: Properties of Water
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: A
Section: 02.04
Topic: Photosynthesis
Bloom's: 2. Understand
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38) If you were to remove the top predator (a tertiary or secondary consumer) 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.

Answer: B
Section: 02.05
Topic: Trophic Levels
Bloom's: 3. Apply
Chapter: 02
Accessibility: Keyboard Navigation

39) Which biogeochemical cycle lacks an atmospheric component?
A) the hydrologic cycle
B) the carbon cycle
C) the nitrogen cycle
D) the phosphorous cycle

Answer: D
Section: 02.06
Topic: Biogeochemical Cycles
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: C
Section: 02.06
Topic: Biogeochemical Cycles
Bloom's: 3. Apply
Chapter: 02
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41) The amount of biomass that is produced in an area during a given time would be referred to as
A) productivity.
B) chemosynthesis.
C) nutrient load.
D) production.

Answer: A
Section: 02.05
Topic: Trophic Levels
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

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) chemosynthesis
B) photosynthesis
C) biosynthesis
D) accumulation

Answer: A
Section: 02.04
Topic: Photosynthesis
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

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.

Answer: A
Section: 02.06
Topic: Biogeochemical Cycles
Bloom's: 2. Understand
Chapter: 02
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44) How is cellular respiration related to photosynthesis?
A) both break down glucose for energy
B) both build glucose to store energy from the sun
C) both reactions release carbon dioxide
D) Photosynthesis produces glucose using energy from the sun while cell respiration produces oxygen from glucose.
E) Photosynthesis produces glucose using energy from the sun while cell respiration breaks down glucose to release energy.

Answer: E
Section: 02.03
Topic: Photosynthesis; Cellular Respiration
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

45) The burning of fossil fuels is a chemical reaction called combustion. When a fossil fuel is combusted, carbon dioxide and water are released. This is most similar to which reaction?
A) cellular respiration
B) photosynthesis
C) transpiration
D) fixation
E) leaching

Answer: A
Section: 02.05
Topic: Carbon Cycle
Bloom's: 2. Understand
Chapter: 02
Accessibility: Keyboard Navigation

46) Which biogeochemical cycle does NOT have an atmospheric component?
A) the phosphorus cycle
B) the hydrologic cycle
C) the nitrogen cycle
D) the carbon cycle
E) the sulfur cycle

Answer: A
Section: 02.05
Topic: Biogeochemical Cycles
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47) Which biogeochemical cycle is dependent upon the work of bacteria?
A) the nitrogen cycle
B) the carbon cycle
C) the hydrologic cycle
D) the phosphorus cycle
E) the sulfur cycle

Answer: A
Section: 02.05
Topic: Biogeochemical Cycles
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

48) Which of the following pairs is an incorrect pairing of monomer to organic compound?
A) amino acid: carbohydrate
B) glucose: carbohydrate
C) nucleotide: DNA
D) amino acid: protein
E) hydrocarbon chain: lipid

Answer: A
Section: 02.02
Topic: Chemistry
Bloom's: 1. Remember
Chapter: 02
Accessibility: Keyboard Navigation

49) In the process of photosynthesis, which component is an organic molecule?
A) glucose
B) oxygen
C) carbon dioxide
D) water
E) sunlight

Answer: A
Section: 02.03
Topic: Photosynthesis
Bloom's: 2. Understand
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