Chapter 2

Student: _____

1. 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.

2. 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.

3. Which of the following is not a molecule?

   A. O_3
   B. O_2
   C. C
   D. DNA
   E. H_2O

4. 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.

5. 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.

6. Potential energy is _____ energy.

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

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

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

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. 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

21. 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

22. Primary consumers are also known as

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

23. 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

24. 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.

25. _____ 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

26. 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

27. 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.

28. 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.

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

True False

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

True False

31. Water expands when it crystallizes and freezes.

True False

32. 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.

33. 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.

34. Which biogeochemical cycle lacks an atmospheric component?

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

35. 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.

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

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

37. 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. Biosynthesis
C. Accumulation
D. Photosynthesis

38. 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.

Chapter 2 Key

1. 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.

Blooms: 1. Remember
Cunningham - Chapter 02 #1
Section: 02.02
Topic: Science

2. 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.

Blooms Level: 3. Apply
Cunningham - Chapter 02 #2
Section: 2.02
Topic: Chemistry

3. Which of the following is not a molecule?

A. O_3

B. O_2

C. C

D. DNA

E. H_2O

Blooms Level: 2. Understand
Cunningham - Chapter 02 #3
Section: 2.02
Topic: Chemistry

4. 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.

Blooms Level: 2. Understand
Cunningham - Chapter 02 #4
Section: 2.02
Topic: Chemistry

5. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #5
Section: 2.03
Topic: Energy

6. Potential energy is _____ energy.

A. electrical

B. motion

C. stored

D. heat

E. latent

Blooms Level: 1. Remember
Cunningham - Chapter 02 #6
Section: 2.03
Topic: Energy

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

A. kinetic

B. latent

C. potential

D. electrical

E. mechanical

Blooms Level: 1. Remember
Cunningham - Chapter 02 #7
Section: 2.03
Topic: Energy

8. 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.

Blooms Level: 3. Apply
Cunningham - Chapter 02 #8
Section: 2.03
Topic: Energy

9. 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.

Blooms Level: 2. Understand
Cunningham - Chapter 02 #9
Section: 2.02
Topic: Chemistry

10. 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.

Blooms Level: 2. Understand
Cunningham - Chapter 02 #10
Section: 2.02
Topic: Chemistry

11. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #11
Section: 2.03
Topic: Energy

12. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #12
Section: 2.03
Topic: Energy

13. 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

Blooms Level: 1. Remember
Cunningham - Chapter 02 #13
Section: 2.04
Topic: Photosynthesis

14. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #14
Section: 2.04
Topic: Photosynthesis

15. 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.

Blooms Level: 2. Understand
Cunningham - Chapter 02 #15
Section: 2.04
Topic: Photosynthesis

16. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #16
Section: 2.04
Topic: Cellular Respiration

17. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #17
Section: 2.05
Topic: Populations

18. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #18
Section: 2.05
Topic: Communities

19. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #19
Section: 2.05
Topic: Ecosystems

20. 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

Blooms Level: 3. Apply
Cunningham - Chapter 02 #20
Section: 2.05
Topic: Trophic Levels

21. 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

Blooms Level: 2. Understand
Cunningham - Chapter 02 #21
Section: 2.05
Topic: Trophic Levels

22. Primary consumers are also known as

A. carnivores.

B. scavengers.

C. decomposers.

D. herbivores.

E. top carnivores

Blooms Level: 1. Remember
Cunningham - Chapter 02 #22
Section: 2.05
Topic: Trophic Levels

23. 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

Blooms Level: 3. Apply
Cunningham - Chapter 02 #23
Section: 2.05
Topic: Trophic Levels

24. 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.

Blooms Level: 2. Understand
Cunningham - Chapter 02 #24
Section: 2.06
Topic: Biogeochemical Cycles

25. _____ 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

Blooms Level: 1. Remember
Cunningham - Chapter 02 #25
Section: 2.01
Topic: Ecosystems

26. 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

Blooms Level: 3. Apply
Cunningham - Chapter 02 #26
Section: 2.01
Topic: Ecosystems

27. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #27
Section: 2.02
Topic: Chemistry

28. 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.

Blooms Level: 1. Remember
Cunningham - Chapter 02 #28
Section: 2.04
Topic: Energy

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

TRUE

Blooms Level: 1. Remember
Cunningham - Chapter 02 #29
Section: 2.02
Topic: Chemistry

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

FALSE

Blooms Level: 2. Understand
Cunningham - Chapter 02 #30
Section: 2.04
Topic: Photosynthesis

31. Water expands when it crystallizes and freezes.

TRUE

Blooms Level: 1. Remember
Cunningham - Chapter 02 #31
Section: A Water Planet
Topic: Properties of Water

32. 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.

Blooms Level: 5. Evaluate
Cunningham - Chapter 02 #32
Section: 2.04
Topic: Photosynthesis

33. 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.

Blooms Level: 3. Apply
Cunningham - Chapter 02 #33
Section: 2.05
Topic: Trophic Levels

34. Which biogeochemical cycle lacks an atmospheric component?

A. The hydrologic cycle.

B. The carbon cycle.

C. The nitrogen cycle.

D. The phosphorous cycle.

Blooms Level: 2. Understand
Cunningham - Chapter 02 #34
Section: 2.06
Topic: Biogeochemical Cycles

35. 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.

Blooms Level: 3. Apply
Cunningham - Chapter 02 #35
Section: 2.06
Topic: Biogeochemical Cycles

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

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

Blooms Level: 1. Remember
Cunningham - Chapter 02 #36
Section: 2.05
Topic: Trophic Levels

37. 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. Biosynthesis
C. Accumulation
D. Photosynthesis

Blooms Level: 2. Understand
Cunningham - Chapter 02 #37
Section: 2.04
Topic: Photosynthesis

38. 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.

Blooms Level: 2. Understand
Cunningham - Chapter 02 #38
Section: 2.06
Topic: Biogeochemical Cycles

Chapter 2 Summary

Category	*# of Questions*
Blooms Level: 1. Remember	18
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Blooms: 1. Remember	1
Cunningham - Chapter 02	73
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