Chapter 13

_____1.A group of gray wolves living in Minnesota is an example of
a. a community.
b. a population.
c. a biome.
d. an ecosystem.

_____ 2. Which of the following can be both primary and secondary consumers?
a. herbivores
b. carnivores
c. omnivores
d. detritivores

_____ 3. Which phrase best describes biodiversity?
a. the number of individuals in a population
b. the amount of biomass in a community
c. the amount of available energy in a food web
d. the number of species in an ecosystem

_____ 4. Bacteria are important in the nitrogen cycle because they
a. help convert nitrogen into a form that organisms can use.
b. respire, returning carbon dioxide into the atmosphere.
c. decay and eventually form fossil fuels.
d. produce sugars that plants can use.

_____ 5. An ecologist surveys weeds to monitor their populations. Which of the following best describes the ecologist's methods?
a. modeling
b. observation
c. experimentation
d.hypothesizing

_____ 6. Which of the following best describes an ecosystem?
a. all of the different species living in a given area
b. all of the members of a single species living in a given area
c. all of the biotic and abiotic factors in a given area
d. all of the non-living factors that characterize a given area

_____ 7. Which of the following parts of Figure 13.2 are biotic factors?

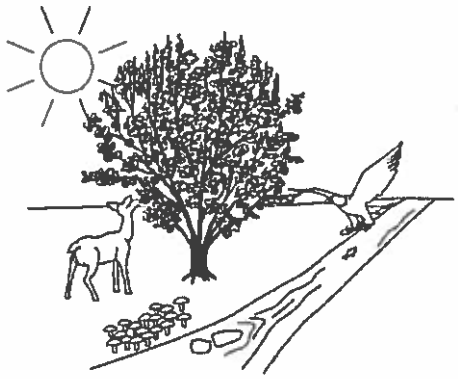

FIG.13.2

a. soil, mushroom, tree
b. soil, sunlight, river
c. deer, mushroom, tree
d. sunlight, river, deer

_____ 8. All of the organisms that inhabit the savanna make up a(n)
a. ecosystem.
b. biome.
c. species.
d. population.

_____ 9. Which statement is true of producers?
a. They consume most of the biomass in ecosystems.
b. They fix most of the nitrogen in ecosystems.
c. They produce most of the carbon dioxide in ecosystems.
d. They provide most of the energy in ecosystems.

_____ 10. What are two processes by which autotrophs make food?
a. chemosynthesis and photosynthesis
b. photosynthesis and respiration
c. chemosynthesis and decomposition
d. decomposition and combustion

_____ 11. The European red squirrel population is declining due to competition with the North American gray squirrel. Most likely, what will eventually happen to the red squirrel?
a. It will win its competition with the gray squirrel.
b. It will be an ecological equivalent of the gray squirrel.
c. It will become extinct.
d. It will move to a different community

_____ 12. What word or phrase would be most appropriate opposite "commensalism" under "organism 2"?

Symbiosis 1	Ogenism 1	Organism 2	Example
Mutualism	Benefits	Benefits	Bee/Flowering Plant
Commensalism	Benefits		Human/ Eyelash Mite
Parasitism	Benefits	Is Harmed	Dog/Flea

FIG. 14.1

a. Neither Harms or Benefits
b. Is Harmed
c. Benefits
d. Benefits over Time

_____ 13. The white-tailed deer and the kangaroo are both large herbivorous mammals that occupy similar niches but live on different continents. They are an example of
a. ecological equivalents.
b. competitors.
c. niche partitioning.
d. competitive exclusion.

_____ 14. A herd of caribou has more births than deaths and more immigration than emigration. What will most likely happen to the size of the herd?
a. It will increase.
b. It will decrease.
c. It will increase, and then decrease.
d. It will stay the same.

_____ 15. In 1988 several large forest fires occurred in Yellowstone National Park. What process occurred after these fires?
a. primary succession
b. secondary succession
c. pioneer succession
d. symbiotic succession

_____ 16. Which statement is most likely true about the Daphnia population shown in the graph?

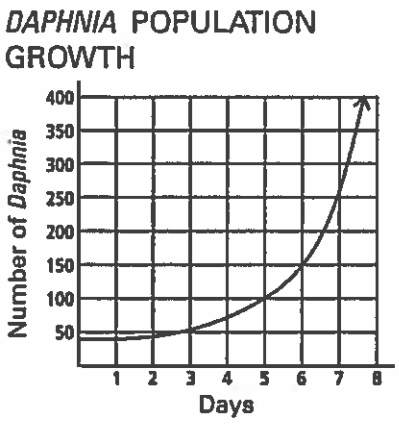

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FIG. 14.2

a. It has reached its carrying capacity.
b. It has a large food supply.
c. It has a small food supply.
d. It will level off during day 8.

_____ 17. Lions eat zebras. Zebras are part of the lion's
a. biotic factors.
b. ecological niche.
c. local habitat.
d. abiotic conditions.

_____ 18. Parasitism is most similar to
a. interspecific competition.
b. mutualism.
c. commensalism.
d. predation.

_____ 19. Fourteen beavers live in a pond with an area of 2 square kilometers. What is the population density of the beavers?
a. 7 beavers per square kilometer
b. 14 beavers per square kilometer
c. 16 beavers per square kilometer
d. 28 beavers per square kilometer

_____ 20. The new island of Surtsey was formed near Iceland by a series of volcanic eruptions. Which of these processes occurred first on Surtsey?
a. A complex ecosystem developed.
b. Volcanic rock broke down into soil.
c. Plants grew on the island.
d. Animals moved onto the island.

_____ 21. Many endoparasites lack complex digestive systems. Which is the most likely reason for this?
a. Endoparasites eat only plants, which are easy to digest.
b. Endoparasites do not usually kill their hosts.
c. Endoparasites feed on food already digested by the host.
d. Endoparasites live only inside their hosts, not outside.

Chapter 16

___22. Which statement best describes Earth's human carrying capacity? It is
a. a fixed number that we will soon exceed.
b. increasing due to improved technology and medicine.
c. decreasing due to increasing population.
d. decreasing due to decreasing death rates.

____ 23. Why is firewood considered to be a renewable resource?
a. It can be replenished over time.
b. It is used up faster than it can form.
c. It is made from coal.
d. It can be made synthetically.

_____ 24. Which of these practices has contributed to the depletion of fish populations worldwide?
a. rotating catches
b. catching reproduction-age fish
c. fishing bans
d. harvest reduction

_____ 25. Increasing the biodiversity of an ecosystem would be likely to
a. cause some species in the ecosystem to become extinct.
b. reduce the number of species in the ecosystem.
c. increase the ecosystem's stability.
d. make it harder for the ecosystem to thrive.

_____ 26. A predator might control an introduced species by
a. keeping the population from increasing.
b. increasing available niches.
c. causing habitat fragmentation.
d. reducing biodiversity in the area.

_____ 27. Canned tuna made from small fish is generally considered to be safer to eat than canned tuna from large fish. Large fish have more pollutants
a. because they drink more water.
b. because they live in more polluted water.
c. due to their larger surface area.
d. due to biomagnification.

Chapter 2

_____ 28. Which phrase best describes an atom?
a. substance made of different elements
b. smallest basic unit of matter
c. substance that includes covalent bonds
d. contains electrons in its nucleus

_____ 29. Which substance would be considered to be the solute in Figure 2.1?

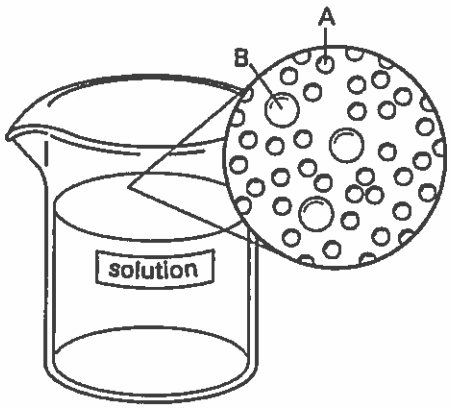

FIG. 2.1

a. Substance A is the solution and substance B is the solvent.
b. Substance A is the solute because it is smaller than substance B.
c. Substance B is the solute because it is present in smaller amounts.
d. Both substances A and B are solutes.

_____ 30. What are the four main groups of carbon-based molecules?
a. starches, cholesterol, fatty acids, and amino acids
b. sugars, cellulose, triglycerides, and monosaccharides
c. polysaccharides, sugars, oils, and polymers
d. carbohydrates, lipids, proteins, and nucleic acids

_____ 31. Chemical reactions change substances into different substances by
a. reaching chemical equilibrium.
b. breaking and forming bonds
c. changing the substance's properties.
d. maintaining constant energy.

_____ 32. What is the term for the substances that are changed during a chemical reaction?
a. products
b. catalysts
c. enzymes
d. reactants

_____ 33. The function of a catalyst in a chemical reaction is to increase the
a. reaction rate.
b. activation energy.
c. pH.
d. number of substrates.

_____ 34. The lock-and-key model of enzyme function shown in Figure 2.2 illustrates which important characteristic of enzymes?

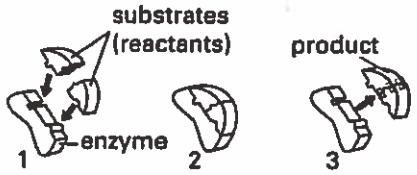

FIG. 2.2

a. ability to bind with many reactants
b. ever-changing structure
c. precise fit with a particular substrate
d. ability to bond with a product

_____ 35. What aspects of a chemical reaction are enzymes known to affect?
a. direction and reactant concentration
b. rate and activation energy
c. temperature and pH
d. conditions needed for equilibrium

Chapter 3

_____ 36. Cell theory establishes which of the following conclusions about cells?
a. All cells have the same size and shape.
b. All cells form by free-cell formation.
c. All cells are produced by other living cells.
d. All cells have a cell wall.

____ 37. How is the cell shown in Figure 3.1 different from a prokaryotic cell?

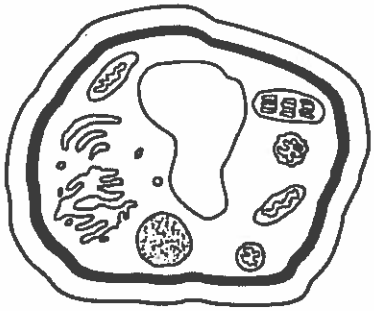

FIG. 3.1

a. It has a nucleus.
b. It has DNA.
c. It has cytoplasm.
d. It has a cell membrane.

_____ 38. Which statement is true about a nucleus?
a. It is the site of enzyme storage.
b. It is the site of energy conversion.
c. It is surrounded by the nucleolus.
d. It is surrounded by a double membrane.

_____ 39. Which organelles are present both inside the nucleolus and on the surface of the ER?
a. ribosomes
b. vacuoles
c. mitochondria
d. vesicles

_____ 40. Which phrase describes the function of the mitochondria?
a. breaks down chemicals
b. packages proteins
c. supplies energy to the cell
d. fluid-filled sac used for storage

_____ 41. Which organelles are involved in defending a cell against viruses?
a. centrosomes
b. lysosomes
c. vacuoles
d. chloroplasts

_____ 42. Which features are found in plant cells but not in animal cells?
a. mitochondria and ribosomes
b. vesicles and vacuoles
c. cell walls and chloroplasts
d. centrioles and centrosomes

_____ 43.Mitochondria and chloroplasts are both sites of
a. energy conversion.
b. energy manufacturing.
c. photosynthesis.
d. protein synthesis.

_____ 44. What phrase best describes the process shown in Figure 3.2?

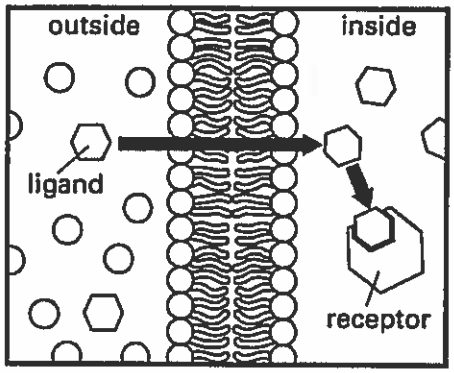

FIG. 3.2

a. osmosis
b. facilitated diffusion
c. the formation of a transport protein
d. the formation of a receptor-ligand complex

_____ 45. Water enters a cell when the solution surrounding the cell is
a. concentrated.
b. hypotonic to the cell.
c. weak.
d. hypertonic to the cell.

_____ 46. Which of the following phrases best describes active transport?
a. moves substance against concentration gradient
b. does not use chemical energy
c. forms a vesicle around a large particle
d. relies on diffusion of materials

_____ 47. Which phrase best describes the process of facilitated diffusion?
a. moves molecules against a concentration gradient
b. requires ATP
c. moves only nonpolar molecules
d. requires no energy from the cell

_____ 48. Which organelles are involved in the process called endocytosis?
a. macrophages and ribosomes
b. lysosomes and vesicles
c. phagocytes and centrioles
d. mitochondria and ribosomes

_____ 49. Which sentence best describes exocytosis?
a. A vesicle fuses to a lysosome and its contents are destroyed
b. A vesicle fuses to the cell membrane and its contents enter the cell
c. A vesicle fuses to the cell membrane and its contents leave the cell.
d. A vesicle fuses to the nuclear envelope and its contents enter the nucleus.

Chapter 4

_____ 50. Which of the following statements is true of ATP?
a. It stores energy as glucose.
b. It transfers energy to cell processes.
c. It releases energy when it gains a phosphate group.
d. It converts sunlight into chemical energy.

_____ 51. The breakdown of which of the following provides the largest number of ATP per molecule?
a. carbohydrates
b. lipids
c. proteins
d. cellulose

_____ 52. Which of the following reactions provides the chemical energy for most cell functions?
a. ATP – P → ADP
b. ATP + P → ADP
c. ADP – P → ATP
d. ADP + P → ATP

_____ 53. Which process would bacteria living near a heat vent on the ocean floor use to build carbon-based molecules, such as sugars?
a. light-independent reactions
b. cellular respiration
c. fermentation
d. chemosynthesis

_____ 54. Which of the following is the site of the photosystems in the light-dependent reactions of photosynthesis?

a. stroma
b. thylakoid membrane
c. ATP synthase
d. mitochondrial matrix

_____ 55. What is the name of the process that breaks glucose down into the pyruvate that is used in cellular respiration?

a. fermentation
b. electron transport
c. glycolysis
d. the Krebs cycle

____ 56. The aerobic stages of cellular respiration take place in the

a. cell membrane.
b. mitochondria.
c. cytoplasm.
d. grana.

_____ 57. Which process is best represented by the chemical equation $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$?
a. cellular respiration
b. photosynthesis
c. glycolysis
d. fermentation

_____ 58. An electron transport chain is part of
a. the Krebs cycle only.
b. cellular respiration only.
c. both photosynthesis and cellular respiration.
d. both glycolysis and the Krebs cycle.

_____ 59. Which process allows glycolysis to continue in the absence of oxygen?
a. chemosynthesis
b. photosystem I
c. cellular respiration
d. fermentation

_____ 60. Which organisms use alcoholic fermentation to allow glycolysis to continue to produce ATP?
a. reptiles c. humans
b. yeasts d. mammals

_____ 61. When pyruvate is a reactant in cellular respiration it means that
a. oxygen is present.
b. all ATP is made in the cytoplasm.
c. only fermentation is taking place.
d. glycolysis has stopped.

_____ 62. Which chemical equation best represents the process of photosynthesis?
a. $6CO_2 + 6O_2 \rightarrow C_6H_{12}O_6 + 6O_2$
b. $C_6H_{12}O_6 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
c. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
d. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$