True/False

Indicate whether the statement is true or false.

1. The great northern coniferous forests are part of the tundra biome.
2. A pioneer community is usually the stable result of succession.
3. Optimal factors restrict the numbers of organisms that can exist.
4. Age, physical condition, and stage in its life cycle may all influence an organism's limits of tolerance.
5. The portion of the shoreline that is affected by high and low tides is the aphotic zone.

6. The number of species in an area is a measure of biodiversity.
7. Temperate deciduous forests have more biodiversity than any other terrestrial biome.
8. Habitat fragmentation is the biggest threat to biodiversity.
9. A plot of protected land may have different conditions at the edges than in the middle. This is known as corridor effect.
10. A species that is brought to a place where it never lived is considered a(n) native species.

Multiple Choice

Identify the choice that best completes the statement or answers the question.

11. Water is lost to the abiotic parts of the biosphere from the biotic parts by the process of
    a. precipitation
    b. photosynthesis
    c. transpiration
    d. infiltration

12. Sea stars live in saltwater ecosystems. Some species live in shallow tidal pools, while others live in the deepest parts of the oceans. This is a description of the _____ of sea stars.
    a. habitat
    b. community
    c. niche
    d. none of these

13. Cougars are predators that often eat weakened or diseased animals. This is a description of the __ ___ of cougars.
    a. habitat
    b. community
    c. niche
    d. none of these

14. An ecologist who studies how several species in an area interact among each other and with the abiotic parts of the environment is interested in the biological organization level called a(n) __ ___.
    a. organism
    b. population
    c. community
    d. ecosystem

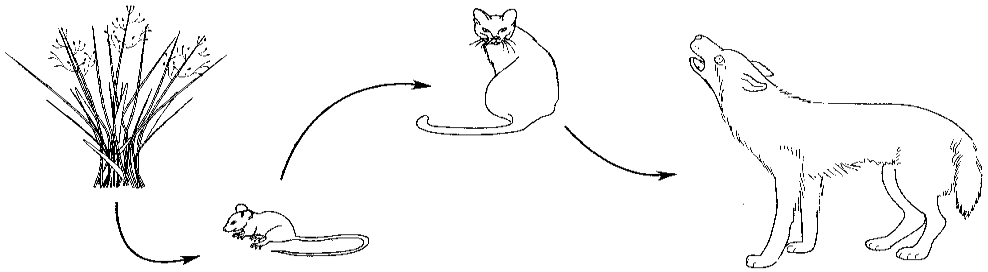


Figure 2-1

15. Referring to Figure 2-1, suppose 10 000 units of energy are available at the level of the grasses. What is the total number of energy units lost by the time energy reaches the coyote?

a. 90 units
b. 990 units
c. 9900 units
d. 9990 units

16. Limiting factors whose effects increase as the size of the population increases are

a. abiotic factors.
b. density-dependent factors.
c. exponential in nature.
d. density-independent factors.

17. The movement of individuals from a population is

a. immigration.
b. a reproductive pattern.
c. a life-history pattern.
d. emigration.

18. Unrestricted populations of organisms experience

a. exponential growth.
b. linear growth.
c. infertility.
d. biotic growth.

19. For a particular species, the carrying capacity is the maximum number of individual organisms that

a. the species could reach in a given time period if all the offspring survive and reproduce.
b. can be supported by a given environment.
c. are in their post-reproductive years.
d. can be supported if there are no limiting factors.

20. Initially, population growth can be illustrated as a J-shaped curve. What is this type of growth called?

a. Sinusoidal
b. Linear
c. Exponential
d. None of the above

21. A new species of mouse is introduced into an environment. These mice reproduce and the population grows. As the population grows, food resources diminish and predation by hawks increases. Eventually, the number of mice in the environment levels off so that the rate of birth equals the rate of death. What is this nearly constant number of organisms called?

a. Carrying capacity
b. Exponential growth
c. Linear growth
d. None of the above

22. You are studying organisms in an artificial environment. The environment is constantly changing and is unpredictable. What life-history pattern would you expect to be most common in this environment?

a. Rapid reproduction and short life span
b.Rapid reproduction and long life span
c. Slow reproduction and short life span
d.Slow reproduction and long life span

23. Which of the following limiting factors is NOT density-dependent?

a. Disease
b. Drought
c. Competition
d. Food supply

24. Which of the following is NOT studied by demographers?

a. Growth rate
b. Age structure
c. Geographic distribution
d. None of the above

25. In analyzing the age structure of a population, you discover that an extraordinarily high percentage of the population is younger than the age of reproductive maturity. What kind of growth will the population probably experience in the future?

a. Growth rate will remain the same.
b. Slow, steady growth increase
c. Rapid growth
d. None of the above

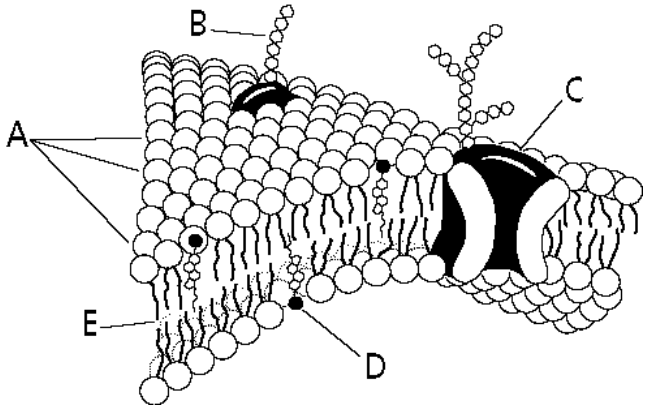


Figure 7-4

26. What would be the best way to estimate the size of C in Figure 7-3?

a. increase magnification
b. decrease magnification
c. estimate by what you can see
d. assume it is 2000 um

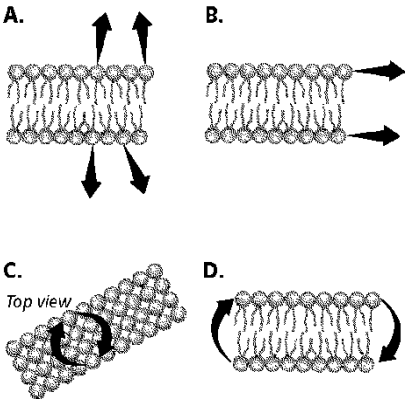
27. What would happen to the structure in Figure 7-4 if part D is completely removed?

a. it would become solid
b. it would disintegrate
c. it would have holes in it
d. it would collapse in on itself

28. Where are you least likely to find water in the structure shown in Figure 7-4

a. A
b. B
c. C
d. E

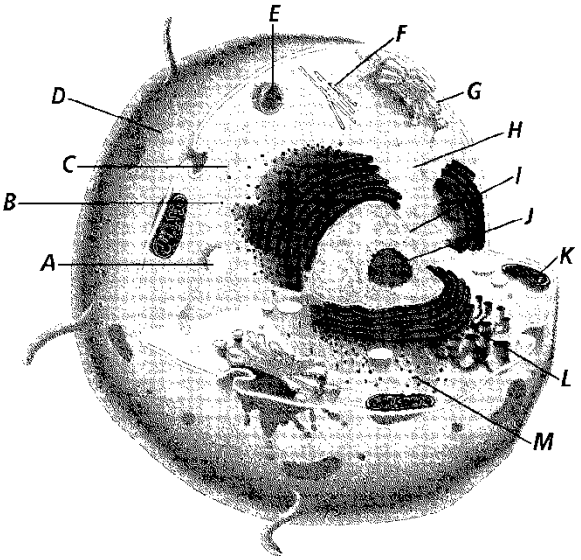
Figure 7-5



29. Which of the following pictures in Figure 7-5 most likely approximate the motion phospholipids make in a plasma membrane?

a. A
b. B
c. C
d. D

Figure 7-6



30. Which structure in Figure 7-6 is the cell control center?

a. A
b. G
c. I
d. M

31. Which structure in Figure 7-6 maintains homeostasis?

a. B
b. D
c. H
d. L

32. Which structure in Figure 7-6 transforms energy?

a. C
b. G
c. J
d. K

33. Which parts of Figure 7-6 are in a prokaryotic cell?

a. D and M
b. A and K
c. C and J
d. G and L

34. Water moves into a cell placed in a(n) _____ solution.

a. osmotic
b. hypertonic
c. hypotonic
d. isotonic

35. If cells are placed in a strong sugar solution, water will _____.
    a. pass from the sugar solution to the cells
    b. pass from the cells to the sugar solution
    c. stay in the cell
    d. pass back and forth

36. When materials pass into and out of a cell at equal rates, there is no net change in concentration inside the cell. The cell is in a state of B
    a. inertia.
    b. dynamic equilibrium.
    c. metabolism.
    d. imbalance.

37. Which of the following compounds may be polymers?
    a. carbohydrates
    b. nucleic acids
    c. proteins
    d. all of these

38. When a few drops of colored corn syrup are added to a beaker of pure corn syrup, the color will
    a. remain on the bottom of the beaker.
    b. start to diffuse.
    c. move from low concentration to high concentration.
    d. form a polar bond.

39. Which of the following does NOT describe a polymer?
    a. Polymers usually form by covalent bonding.
    b. Polymers are broken down by the process of hydrogenation.
    c. Polymers are made of monomers.
    d. Polymers are large molecules.

40. The nucleus of an atom contains _____.
    a. protons, neutrons, and electrons
    b. protons and electrons
    c. neutrons and electrons
    d. protons and neutrons

41. The various enzymes in our bodies are _____.
    a. carbohydrates
    b. lipids
    c. proteins
    d. nucleotides

42. Diffusion can be accelerated by
    a. increasing the dynamic equilibrium.
    b. decreasing the pressure.
    c. increasing the temperature.
    d. decreasing the movement of particles.

43. Diffusion occurs because of
    a. random movement of particles.
    b. chemical energy.
    c. a chemical reaction between particles.
    d. nonrandom movement of particles.

44. ATP stores energy for use in several cellular functions. Which of the following does NOT require the breakdown of ATP?
    a. Enzyme production
    b. Diffusion
    c. Bioluminescence
    d. Flagella movement

45. Chlorophyll is the primary pigment in plant chloroplasts. It absorbs all wavelengths of light, EXCEPT —

a. red.
b. green.
c. yellow.
d. All of the above

46. In respiration, the final electron acceptor in the electron transport chain is __ ___.

a. hydrogen ions
b. oxygen
c. H2O
d. ATP

47. In glycolysis, _____ molecules of ATP are used in the first step, and _____ molecules of ATP are produced in the second step.

a. four, two
b. two, two
c. four, four
d. two, four

48. The Calvin cycle produces a molecule that is able to reenter the cycle as a reactant. Which of the following molecules is used as a reactant in the beginning of the Calvin cycle and is then produced at the end?

a. ATP
b. Phosphoglyceric acid
c. Carbon dioxide
d. Ribulose biphosphate

49. Which sugar is a part of adenosine diphosphate?

a. adenine
b. ribose
c. glucose
d. glycogen

50. Where is the electron transport chain located in the light-dependent reactions?

a. Cytoplasm
b. Nucleus
c. Thylakoid membrane
d. Mitochondria

51. Energy is released from ATP when the bond is broken between ___ __.

a. adenine and ribose
b. ribose and a phosphate group
c. adenine and a phosphate group
d. two phosphate groups

52. Leaves appear green because the green portion of the light that strikes them is __ ___.

a. destroyed
b. changed to heat
c. absorbed
d. reflected

53. Organisms need a way of storing energy because __ __.

a. a cell cannot create energy and must get it from elsewhere in the organism
b. a cell can't always immediately use all the energy it gets
c. an organism often has times when no energy is used
d. a cell can release only stored energy

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