Q1W5- Bio12-H.W.

True/False
Indicate whether the statement is true or false.

____ 1. In a water molecule, electrons are shared equally between the hydrogen atoms and oxygen atom.

____ 2. The attraction of opposite charges between hydrogen and oxygen forms a weak oxygen bond.

____ 3. Because of its polarity, water can move from the roots of a plant up to its leaves.

____ 4. Water changes temperature easily.

____ 5. Unlike most substances, water expands when it freezes.

____ 6. Carbon atoms can bond together in straight chains, branched chains, or rings.

____ 7. Large molecules containing carbon atoms are called micromolecules.

____ 8. Polymers are formed by hydrolysis.

____ 9. Cells use carbohydrates for energy.

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

____ 10. All objects in motion have
a. potential energy.
b. heat energy.
c. kinetic energy.
d. random energy.

____ 11. The first scientist to observe evidence of the random motion of molecules was
a. Brown.
b. Darwin.
c. Mendel.
d. Hooke.

____ 12. The net movement of particles from an area of higher concentration to an area of lower concentration is called
a. dynamic equilibrium.
b. nonrandom movement.
c. concentration gradient.
d. diffusion.

____ 13. Diffusion occurs because of
a. nonrandom movement of particles.
b. random movement of particles.
c. a chemical reaction between particles.
d. chemical energy.

____ 14. When a few drops of colored corn syrup are added to a beaker of pure corn syrup, the color will
a. move from low concentration to high concentration.
b. form a polar bond.
c. start to diffuse.
d. remain on the bottom of the beaker.

____ 15. Diffusion can be accelerated by
a. decreasing the pressure.
b. increasing the temperature.
c. decreasing the movement of particles.
d. increasing the dynamic equilibrium.

____ 16. 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
a. dynamic equilibrium.
b. metabolism.
c. imbalance.
d. inertia.

____ 17. The difference in concentration of a substance across space is called
a. dynamic equilibrium.
c. diffusion.

b. concentration gradient.
d. Brownian movement.

____ 18. Which of the following compounds may be polymers?
a. carbohydrates
c. proteins
b. nucleic acids
d. all of these

____ 19. Which of the following does NOT describe a polymer?
a. Polymers are made of monomers.
b. Polymers are large molecules.
c. Polymers usually form by covalent bonding.
d. Polymers are broken down by the process of hydrogenation.

____ 20. Carbon compounds that come from living organisms are called _____ compounds.
a. water
c. homogeneous
b. organic
d. biological

____ 21. How many electrons can a carbon atom share?
a. one
c. three
b. two
d. four

____ 22. Which of the following is a chemical reaction?
a. tearing paper into strips
b. burning paper
c. picking up iron filings with a magnet
d. mixing salt and sugar in the same container

____ 23. _____ represents a formula for a chemical compound.
a. H
c. P
b. C
d. H_2O

____ 24. The nucleus of an atom contains _____.
a. protons and neutrons
c. protons and electrons
b. neutrons and electrons
d. protons, neutrons, and electrons

____ 25. Electrons move about the nucleus of an atom in regions called _____.
a. electron clouds
c. air
b. nuclei
d. isotopes

____ 26. What are the basic building blocks of proteins?
a. nucleic acids
c. amino acids
b. peptide bonds
d. glycerol and fatty acids

____ 27. Water dissolves many ionic and molecular compounds because of its _____.
a. ionic bonding
c. covalent bonding
b. polarity
d. hydrogen bonding

____ 28. When molecules of glucose and fructose combine to form sucrose, they do so by _____.
a. hydrolysis
c. condensation
b. electron clouds
d. radiation

____ 29. A chlorine atom becomes a chloride ion when it _____.
a. gains an electron
c. gains a neutron
b. loses an electron
d. loses a proton

____ 30. The various enzymes in our bodies are _____.
a. lipids
c. nucleotides
b. carbohydrates
d. proteins

____ 31. Glucose and fructose, with the formula $C_6H_{12}O_6$, differ in _____.
a. numbers of atoms
c. kinds of atoms
b. arrangement of atoms
d. arrangement of electrons

____ 32. A very strong base might have a pH of _____.
a. 3
c. 9

b. 5
d. 13

____ 33. Carbon-12, carbon-13, and carbon-14 are _____.
a. isotopes
b. polymers
c. radioisotopes
d. macromolecules

____ 34. The total number of atoms in a molecule of sucrose, $C_{12}H_{22}O_{11}$, is _____.
a. 11
b. 12
c. 22
d. 45

____ 35. An atom of fluorine has nine electrons. Its second energy level has _____.
a. two electrons
b. eight electrons
c. seven electrons
d. nine electrons

____ 36. An unsaturated lipid contains _____.
a. more oxygen than hydrogen
b. double bonds
c. ionic bonds
d. only one fatty acid

____ 37. Unlike carbohydrates and fats, proteins contain _____.
a. nitrogen
b. carbon
c. hydrogen
d. oxygen

____ 38. Diffusion continues until there is no _____.
a. dynamic equilibrium
b. turgor pressure
c. concentration gradient
d. homeostasis

____ 39. Brownian motion is evidence of _____.
a. polar ions
b. random motion of molecules
c. chemical energy
d. microorganisms

____ 40. Which of the atoms pictured in Figure 6-3 is most likely to form an ion?

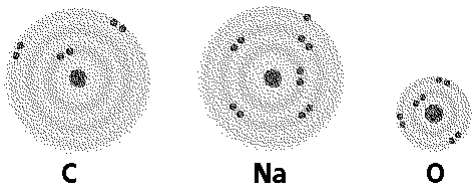

Figure 6-3

a. C
b. Na
c. O
d. they are all equally likely to form an ion

____ 41. Which of the images in Figure 6-4 depicts dynamic equilibrium?

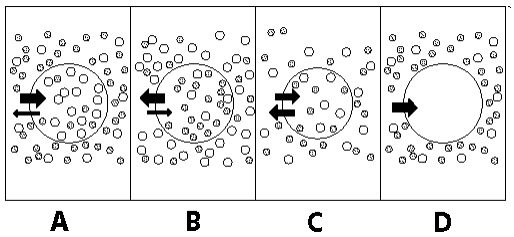

Figure 6-4

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

____ 42. Which element would need to be removed from the molecule in Figure 6-5 to make it unsaturated?

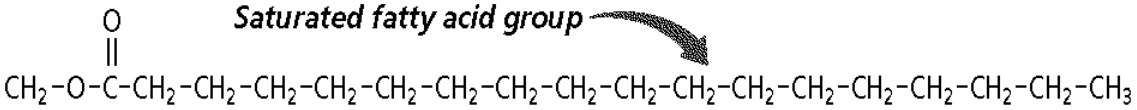

Figure 6-5

a. carbon
b. hydrogen
c. oxygen
d. phosphorus

Completion

Complete each statement using the choices below and choose the type of substance described.

A. element
B. compound
C. covalent
D. isotopes
E. carbohydrate
F. acid
G. nucleotides

43. H_2O, a liquid that no longer resembles either hydrogen or oxygen gas. _____ _____

44. A substance that can be broken down in a chemical reaction. _____ _____

45. Carbon, the substance represented by the symbol C. _____ _____

46. An organic compound with a ratio of about two hydrogen atoms and one oxygen atom for each carbon atom is a(n) _____.

47. The smaller subunits that make up nucleic acids are _____.

48. Any substance that forms hydrogen ions in water is a(n) _____.

49. Two atoms that share electrons are held together by _____ bonds.

50. Atoms of the same element with different numbers of neutrons are _____.

Matching

Match each item with the correct statement below.

a. cellulose
b. polar molecule
c. nucleus
d. peptide bond
e. polymer
f. solution
g. enzyme
h. metabolism

____ 51. glucose polymer that forms the cell walls of plants
____ 52. large molecule formed when many smaller molecules bond together
____ 53. molecule with unequal distribution of charge
____ 54. protein that speeds up a chemical reaction
____ 55. bond formed between amino acids
____ 56. all the chemical changes that occur within an organism
____ 57. mixture in which one substance is distributed evenly in another
____ 58. center of an atom

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