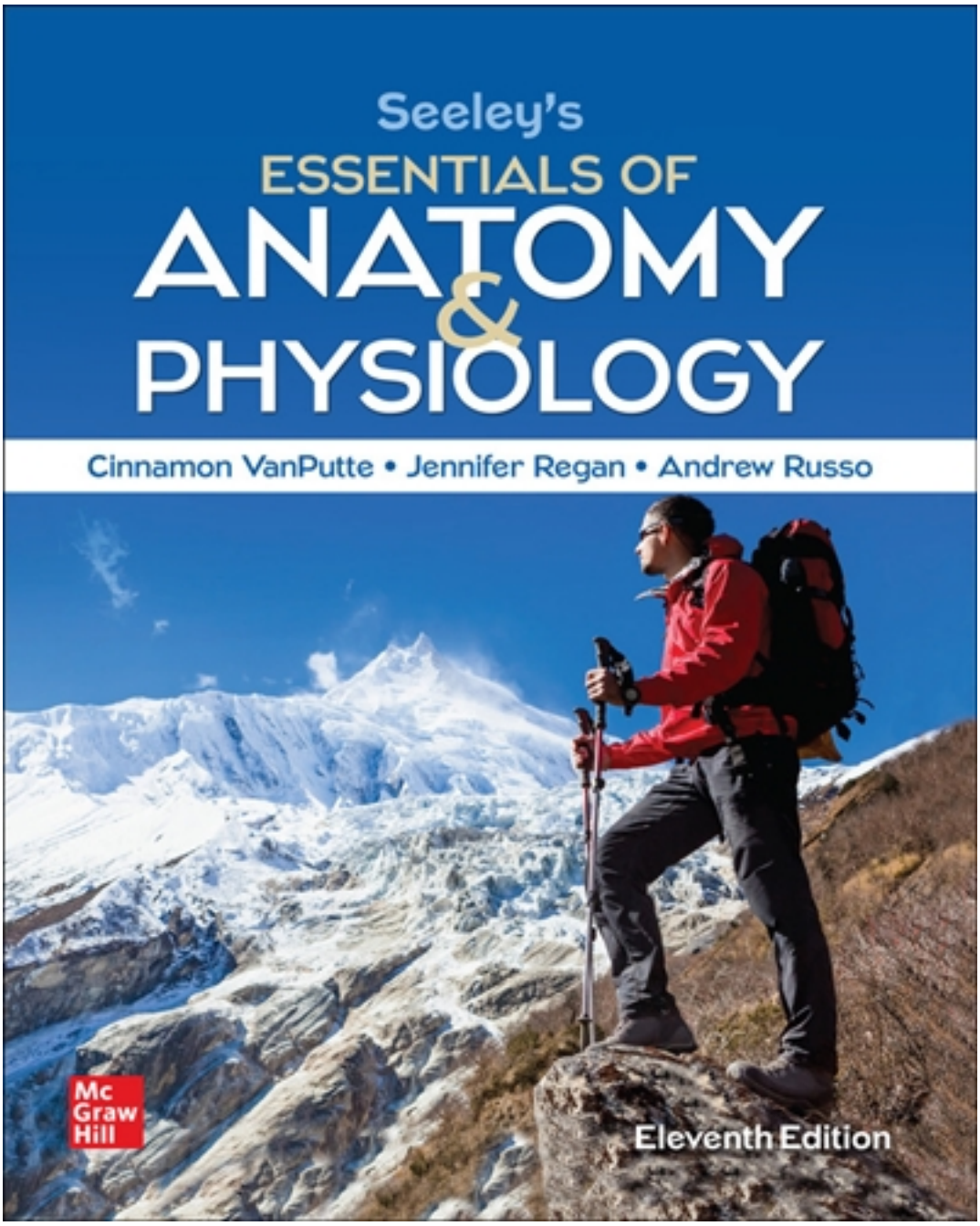
Test Bank for Seeley's Essentials of Anatomy and Physiology 11th Edition by VanPutte



Test Bank

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CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.

1) Chemistry is the scientific discipline that is concerned with cellular composition and the structure of their substances and the reactions they undergo.
   - ◎ true
   - ◎ false

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

2) Which of the following is/are responsible for most of the mass of an atom?
   - A) Neutron
   - B) Proton
   - C) Electron
   - D) Both neutron and proton
   - E) Both electron and neutron

3) The mass number of an element is
   - A) the number of neutrons in the atom.
   - B) the number of protons in the atom.
   - C) the sum of the number of protons plus the number of neutrons.
   - D) the sum of the number of protons plus the number of electrons.
   - E) the sum of the number of neutrons plus the number of electrons.

4) The chemical notation for magnesium ions is Mg^{+2}. The designation +2 indicates that
   - A) two electrons have been lost.
   - B) two protons have been gained.
   - C) the ion is negatively charged.
   - D) the atomic number is two.
   - E) the number of electrons equals the number of protons.

5) The smallest particle of an element that has the chemical characteristics of that element is a(n) _____.
   - A) neutron
   - B) proton
   - C) electron
   - D) atom
   - E) electron cloud

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6) Subatomic particles located in the nucleus of an atom are called _____.
   A) protons
   B) neutrons
   C) electrons
   D) orbitals
   E) Both "protons" and "neutrons" are correct.

7) Subatomic particles that possess a negative charge, and move around the nucleus of an atom, are called _____.
   A) protons
   B) electrons
   C) neutrons
   D) photons
   E) quarks

8) The atomic number of an atom is equal to
   A) the number of neutrons in the atom.
   B) the number of protons in the atom.
   C) the sum of the number of protons plus the number of neutrons.
   D) the sum of the number of protons plus the number of electrons.
   E) the sum of the number of neutrons plus the number of electrons.

9) The amount of matter in an object is its _____.
   A) mass
   B) weight
   C) atomic number
   D) element
   E) ionic charge

10) The chemical behavior of an atom is largely determined by
   A) the number of neutrons it has.
   B) the size of its nucleus.
   C) the electrons closest to the nucleus.
   D) the size of neutrons it has.
   E) its outermost electrons.

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11) Every atom of the element carbon has the same number of
- A) protons.
- B) neutrons.
- C) electrons.
- D) photons.
- E) quarks.

12) Atoms that have gained or lost electrons are called
- A) ions.
- B) covalents.
- C) nonpolars.
- D) molecules.
- E) neutrons.

13) After a neutral atom accepts an additional electron, it becomes
- A) positively charged.
- B) negatively charged.
- C) an ion.
- D) a molecule.
- E) Both "negatively charged" and "an ion" are correct.

14) Two atoms with the same number of protons and electrons, but different numbers of neutrons, are called _____.
- A) isotopes
- B) ions
- C) electrolytes
- D) compounds
- E) Both "ions" and "electrolytes" are correct.

15) The chemical symbol Ca^{2+} indicates that a calcium atom has
- A) two protons in its nucleus.
- B) lost two neutrons.
- C) gained two protons.
- D) lost two electrons.
- E) an atomic number greater than 2.

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16) If an iron atom (Fe) lost three electrons, what would be the charge of the resulting ion?
- A) Fe^{-3}
- B) Fe^{+6}
- C) Fe^{+1}
- D) Fe^{+2}
- E) Fe^{+3}

17) Atom X has an atomic number of 20 and has a mass number of 40. The number of protons in Atom X is equal to
- A) 10.
- B) 20.
- C) 30.
- D) 40.
- E) 60.

18) Atom Y has 11 protons, 11 electrons, and 12 neutrons. What is the atomic number of Atom Y?
- A) 11
- B) 12
- C) 22
- D) 23
- E) 24

19) Atom Y has 11 protons, 11 electrons, and 12 neutrons. What is the mass number of Atom Y?
- A) 11
- B) 12
- C) 22
- D) 23
- E) 24

20) _____ energy is a form of potential energy resulting from positions and interactions among subatomic particles.
- A) Chemical
- B) Mechanical
- C) Radiant
- D) Electric
- E) Heat

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21) Energy
- A) is the capacity to do work.
- B) can neither be created nor destroyed.
- C) is constantly being converted into different forms by the body.
- D) can be stored in the chemical bonds between molecules/subatomic particles.
- E) All of the choices are correct.

22) Which of the following analogies does NOT accurately illustrate the energy type it is paired with?
- A) The cocking back of the trigger on a starter's pistol before a race—Potential energy.
- B) Picking up speed while rolling down a snow-covered hill in winter—Kinetic energy.
- C) The stretching of a bungee cord without releasing it—Mechanical energy.
- D) The spring-up you get when you jump on a pogo stick—Kinetic energy.
- E) Basketball players bending their knees before they do a layup—Mechanical energy.

23) If the products of a chemical reaction contain less potential energy than the reactants,
- A) energy has been stored in the molecular bonds of the product.
- B) energy has been released by the breaking of molecular bonds.
- C) the reaction will be reversible without additional energy input.
- D) a synthesis reaction is likely to have occurred.
- E) All of the choices are correct.

24) The conversion of ATP into ADP
- A) adds a phosphate group.
- B) stores energy in the release of an inorganic phosphate group.
- C) is an example of an exchange reaction.
- D) is reversible.
- E) requires the input of energy.

25) According to the law of conservation of energy, the total energy of the universe is
- A) constant.
- B) increasing exponentially.
- C) decreasing exponentially.
- D) increasing linearly.
- E) decreasing linearly.

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26) The conversion between different states of energy (e.g., potential energy to kinetic energy)
- A) is not 100% efficient.
- B) is 100% efficient.
- C) typically generates heat.
- D) is not possible, because energy can not change its state.
- E) Both "is 100% efficient" and "typically generates heat" are correct.

27) When there is an equal sharing of electrons between atoms, the bond that is formed is called
- A) an ionic bond.
- B) a polar covalent bond.
- C) a nonpolar covalent bond.
- D) a hydrogen bond.
- E) None of the choices are correct.

28) Nonpolar molecules
- A) are created when the bonding atoms share electrons equally between themselves.
- B) have an asymmetrical electrical charge.
- C) are also considered ions.
- D) result from polar covalent bonds.
- E) All of the choices are correct.

29) Which of the following statements is FALSE about molecules?
- A) In order to be considered a molecule, a structure must be an independent unit.
- B) All compounds are automatically considered molecules.
- C) Molecules are formed when two or more atoms chemically combine to form a structure that behaves as an independent unit.
- D) The atoms that make up a molecule can either be the same or different.
- E) The atoms that make up a molecule must be chemically bound to one another.

30) Which of the following is considered a compound but not a molecule?
- A) Water (H_20)
- B) Sodium chloride (NaCl)
- C) Calcium (Ca^{2+})
- D) Glucose ($C_6H_{12}O_6$)
- E) All of the choices are correct.

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31) Which of the following is NOT considered a compound?
- A) Water (H_20)
- B) Sodium chloride (NaCl)
- C) Hydrogen chloride (HCl)
- D) A hydrogen molecule (H_2)
- E) All of the choices are correct.

32) When one atom loses an electron and another atom accepts that electron a(n) _____ bond between the two atoms results.
- A) covalent
- B) hydrogen
- C) ionic
- D) explosive
- E) radioactive

33) Covalent bonds occur when
- A) one atom loses an electron.
- B) two substances dissociate in water.
- C) two atoms share electrons.
- D) ions are formed.
- E) one atom gains an electron.

34) The unequal, asymmetric sharing of electrons that results in one end (pole) of the molecule having a small electrical charge opposite the other end is called _____ bonding.
- A) hydrogen
- B) polar covalent
- C) double covalent
- D) ionic
- E) nonpolar covalent

35) If a molecule consists of two or more different kinds of atoms, it is a(n) _____.
- A) atom
- B) ion
- C) isotope
- D) compound
- E) Both "atom" and "ion" are correct.

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36) Ionic compounds
- A) are held together by the force of attraction between oppositely charged ions.
- B) are not considered to be molecules.
- C) do not have distinct units.
- D) All of the choices are correct.
- E) None of the choices are correct.

37) When the hydrogen bonds that maintain a protein's three-dimensional shape are broken, the protein becomes nonfunctional, and is said to be _____.
- A) essential
- B) denatured
- C) structural
- D) unsaturated
- E) saturated

38) The chemical compound that is represented by the acronym DNA
- A) contains the sugar deoxyribose.
- B) has two chains that form a double helix.
- C) is composed of nucleotides.
- D) is responsible for controlling cell activities.
- E) All the choices are correct.

39) Given that sodium bicarbonate dissociates to form Na^+ and HCO_3^- when mixed with water, which of these would be part of the explanation for taking bicarbonate ($NaHCO_3$) for excess stomach acid?
- A) $NaHCO^3$ will not release hydrogen ions when mixed with water.
- B) HCO^{3-} will be a hydrogen ion acceptor.
- C) Free hydrogen ions increase the acidity of a solution.
- D) When bicarbonate ions combine with hydrogen ions, the pH increases.
- E) All of the choices are correct.

40) A(n) _____ is formed when one atom loses an electron and another atom accepts that electron.
- A) ion
- B) ionic bond
- C) hydrogen bond
- D) covalent bond
- E) atom

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41) A(n) _____ is formed when two atoms share electrons.
- A) ion
- B) ionic bond
- C) hydrogen bond
- D) covalent bond
- E) atom

42) Substances that donate hydrogen ions (protons) to a solution are called _____.
- A) acids
- B) bases
- C) alkaline
- D) salts

43) A solution with a pH of 7 is considered to be _____.
- A) acidic
- B) basic or alkaline
- C) neutral
- D) in equilibrium

44) Chemicals that resist changes in pH when acids or bases are added to a solution are _____.
- A) acids
- B) bases
- C) salts
- D) buffers

45) A solution with a greater concentration of hydroxide ions than hydrogen ions is _____.
- A) a buffer
- B) a salt
- C) basic
- D) acidic
- E) hydrophobic

46) Given that $MgCl_2$ is composed of Mg^{+2} ions and Cl^- ions, $MgCl_2$ would be considered to be a(n) _____.
- A) acid
- B) base
- C) salt
- D) buffer

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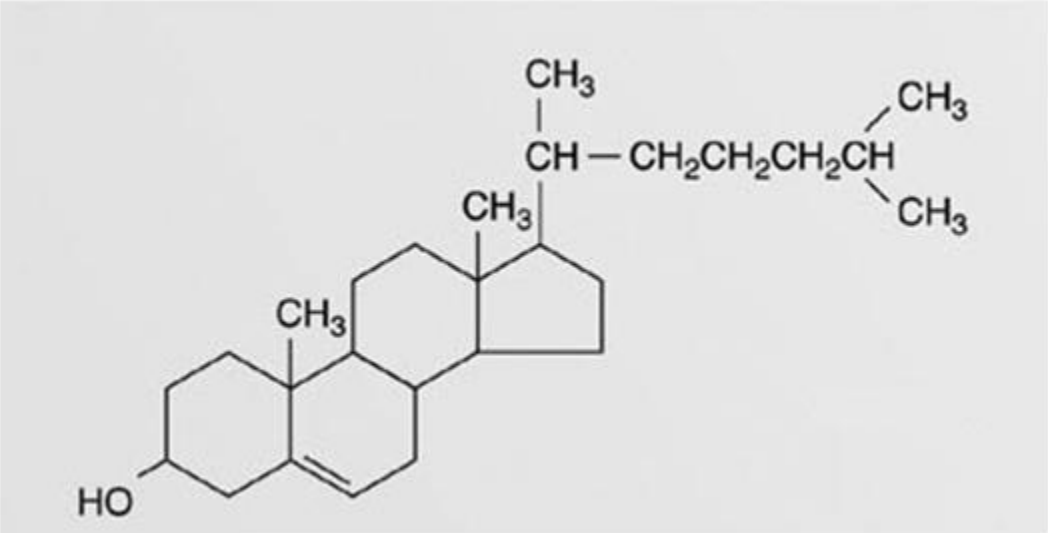
47) A(n) _____ is formed by the reaction of an acid and a base.
- A) acid
- B) base
- C) salt
- D) buffer

48) A solution with a pH of 4 would have _____ hydrogen ions than a solution with a pH of 6.
- A) 2 times more
- B) 2 times fewer
- C) 20 times more
- D) 20 times fewer
- E) 100 times more

49) This figure represents an example of a(n) _____.



- A) steroid
- B) triglyceride
- C) phospholipids
- D) wax
- E) fatty acid

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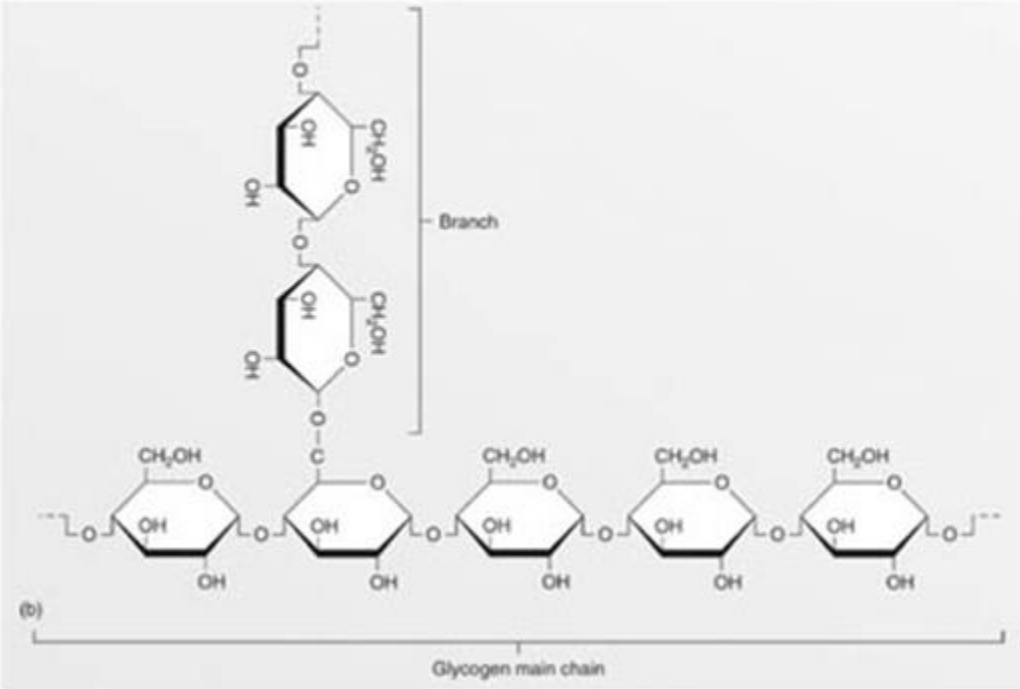
50) This figure represents an example of a(n) _____.



A) protein
B) nucleic acid
C) lipid
D) carbohydrate
E) ATP molecule

51) Monosaccharides are the building blocks for _____.

A) carbohydrates
B) fats (triglycerides)
C) nucleic acids
D) proteins

52) Glycerol and fatty acids are the building blocks for _____.

A) carbohydrates
B) fats (triglycerides)
C) nucleic acids
D) proteins

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53) Nucleotides are the building blocks for _____.
- A) carbohydrates
- B) fats (triglycerides)
- C) nucleic acids
- D) proteins

54) The macromolecules that function as the genetic material and are involved in protein synthesis are _____.
- A) carbohydrates
- B) lipids
- C) proteins
- D) nucleic acids

55) Which group of major organic molecules is a common fuel nutrient and includes glycogen as a storage molecule?
- A) Carbohydrates
- B) Lipids
- C) Proteins
- D) Nucleic acids

56) A large organic molecule was analyzed and found to contain carbon, hydrogen, oxygen, nitrogen, and sulfur. Of the following choices, which would most likely have been the type of molecule analyzed?
- A) Carbohydrate
- B) Lipid
- C) Protein
- D) Nucleic acid
- E) Steroid

57) The building blocks for proteins are _____.
- A) monosaccharides
- B) disaccharides
- C) glycerol and fatty acids
- D) nucleotides
- E) amino acids

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58) Which of these statements is TRUE?
- A) Carbohydrates are organic molecules formed from amino acid building blocks.
- B) Monosaccharides become bound together by hydrolysis reactions to form polysaccharides.
- C) Monosaccharides, disaccharides, and polysaccharides are large inorganic molecules.
- D) The building blocks for lipids are nucleotides.
- E) Nucleic acids are composed of monomers called nucleotides.

59) The chemical compound that is represented by the acronym ATP
- A) is synthesized using energy released during the breakdown of food molecules.
- B) can be broken down to ADP and a fatty acid.
- C) has nothing to do with stored energy.
- D) is a common temporary storage form of immediately usable energy within cells.
- E) Both "is synthesized using energy released during the breakdown of food molecules" and "is a common temporary storage form of immediately usable energy within cells" are correct.

60) Sucrose is an example of a(n) _____.
- A) monosaccharide
- B) lipid
- C) disaccharide
- D) inorganic molecule
- E) polysaccharide

61) Glycogen and starch are examples of _____.
- A) monosaccharides
- B) nucleic acids
- C) proteins
- D) polysaccharides
- E) lipids

62) Which of these statements concerning lipids is NOT true?
- A) The building blocks of fats (triglycerides) are fatty acids and glycerol.
- B) A fatty acid that contains only single covalent bonds between the carbon atoms is called unsaturated.
- C) Fats, phospholipids, and steroids are lipids.
- D) Lipids are substances that dissolve in nonpolar solvents.

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63) When two or more atoms, ions, or molecules combine to form a new and larger molecule, the process is called a _____ reaction.
A) decomposition
B) synthesis
C) reversible
D) buffer
E) equilibrium

64) Which of the following processes is (are) a synthesis reaction?
A) Glycolysis
B) The creation of a protein from amino acids
C) Glycogenolysis
D) All of the choices are correct.

65) Chemical reactions that can proceed from reactants to products and from products to reactants are called _____ reactions.
A) exchange
B) synthesis
C) decomposition
D) reversible
E) net reaction

66) In a reversible reaction, when the rate of product formation is equal to the rate of reactant formation, the reaction is
A) stopped.
B) at equilibrium.
C) in danger of exploding.
D) a net decomposition reaction.
E) a net synthesis reaction.

67) A substance that increases the rate at which a reaction proceeds, without itself being changed or depleted, is a _____.
A) catalyst
B) reactant
C) buffer
D) base
E) product

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68) Enzymes
- A) are globular proteins.
- B) function as biological catalysts.
- C) lower the activation energy of a reaction.
- D) can be used to regulate chemical reactions.
- E) All of the choices are correct.

69) Which of the following will decrease the rate at which a reaction occurs?
- A) Decreasing the concentration of reactants
- B) Increasing the concentration of reactants
- C) Increasing the temperature
- D) Increasing the amount of the required catalyst
- E) All of the choices are correct.

70) In living things, which of these is most important for regulating the rate of chemical reactions?
- A) Changing the concentration of reactants
- B) Changing temperature
- C) Changing the concentration and activity of enzymes that catalyze the reactions
- D) The nature of reacting substances; for example, carbohydrates react faster than lipids.

71) Enzymes function by
- A) increasing the activation energy needed to start a chemical reaction.
- B) having a specific shape that allows them to bind to particular reactants.
- C) each enzyme acting as a catalyst for many different reaction types.
- D) greatly decreasing reaction rates.
- E) doing all of these.

72) Which of these is NOT a property of water that makes it useful for living organisms?
- A) Water allows body temperature to increase or decrease rapidly.
- B) Water causes ionic substances to dissociate.
- C) Water acts as a lubricant.
- D) Water is necessary for the transport of nutrients, gases, and waste products.
- E) Water is necessary for many chemical reactions.

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73) Which of these is an organic molecule?
- A) H_2O
- B) H_2CO_3
- C) CO_2
- D) NaCl
- E) $CaCl_2$

74) Which of the following pairs correctly match(es) the example with its classification?
- A) Compound—two atoms of hydrogen combined
- B) Molecule—sodium chloride
- C) Molecule—two hydrogen atoms and one oxygen atom combined
- D) Compound—two hydrogen atoms and one oxygen atom combined
- E) Both "Molecule—two hydrogen atoms and one oxygen atom combined" and "Compound—two hydrogen atoms and one oxygen atom combined" are correct.

75) Which of the following statements about ionic compounds is TRUE?
- A) Ionic compounds dissociate in water because negative ions are attracted to the negative ends of water molecules and positive ions are attracted to the positive ends of water molecules.
- B) Ionic compounds dissociate in water because positive ions are attracted to the negative ends of water molecules and negative ions are attracted to the positive ends of water molecules.

76) Understanding chemistry is important for the study of anatomy and physiology because
- A) the body is composed of chemicals.
- B) the interactions of the different chemicals of the body are responsible for body function.
- C) many diseases and disorders can be explained at the chemical level.
- D) All of the choices are correct.

77) The weak attraction between the negative end of one polar molecule and the positive end of another polar molecule is called a(n) _____ bond.
- A) polar covalent
- B) ionic
- C) nonpolar covalent
- D) hydrogen

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78) When ionic compounds dissolve in water, they
A) dissociate, meaning they separate from each other.
B) interact with water molecules.
C) separate to form electrolytes.
D) All of the choices are correct.

79) Oxygen is essential for most living organisms because
A) it acts as a buffer, regulating pH.
B) it stabilizes body temperature.
C) it is an important enzyme.
D) it is an important reactant in a complex series of chemical reactions in which energy is extracted from food molecules.

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Answer Key

Test name: Chapter 02

1) FALSE
2) D
3) C
4) A
5) D
6) E
7) B
8) B
9) A
10) E
11) A
12) A
13) E
14) A
15) D
16) E
17) B
18) A
19) D
20) A
21) E
22) C
23) B
24) D
25) A
26) E
27) C
28) A
29) B
30) B
31) D
32) C
33) C
34) B
35) D
36) D

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37) B
38) E
39) E
40) B
41) D
42) A
43) C
44) D
45) C
46) C
47) C
48) E
49) A
50) D
51) A
52) B
53) C
54) D
55) A
56) C
57) E
58) E
59) E
60) C
61) D
62) B
63) B
64) B
65) D
66) B
67) A
68) E
69) A
70) C
71) B
72) A
73) B
74) E
75) B
76) D

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77) D
78) D
79) D