Test Bank for Hole's Essentials of Human Anatomy & Physiology 13th Shier

Chapter 02 Chemical Basis of Life Answer Key

Multiple Choice Questions

1. All of the food that we eat, liquids that we drink and medications that we take are

A. chemicals.
B. vitamins.
C. proteins.
D. nucleic acids.
E. carbohydrates.

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.01
Topic: Atoms and molecules

Fill in the Blank Questions

2. Understanding _____ is essential for understanding anatomy and physiology because body structures and functions result from chemical changes.

chemistry

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.01
Topic: Atoms and molecules

True / False Questions

3. Chemistry is the branch of science that deals with the composition of matter.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

4. Which of the following substances is NOT an element?

A. iron
B. oxygen
C. water
D. carbon
E. hydrogen

Accessibility: Keyboard Navigation
Bloom's Level: 4. Analyze
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Atoms and molecules
Topic: Inorganic compounds and solutions

True / False Questions

5. Matter is anything that has weight and takes up space.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

6. _____ is defined as anything that has weight and takes up space.

Matter

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

7. All matter is composed of atoms of fundamental substances called _____.

elements

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.

HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

8. Which elements make up 95% (by weight) of the human body?

A. carbon, hydrogen, oxygen, nitrogen
B. carbon, hydrogen, oxygen, calcium
C. carbon, hydrogen, calcium, nitrogen
D. carbon, hydrogen, selenium, sodium
E. sodium, calcium, nitrogen, selenium

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

9. An element with an atomic number of 6 contains 12 protons.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 4. Analyze
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

10. At present, there are 90 known naturally occurring _____.

elements

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

11. Which of the following is the number of elements living organisms require?

A. 10
B. 15
C. 20
D. 90
E. 144

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

12. The atomic weight of an atom of an element equals the number of neutrons in its nucleus.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

13. The atomic _____ of an atom of an element equals the number of protons and neutrons in its nucleus.

weight

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
Section: 02.02
Topic: Atoms and molecules

14. The number of protons in the atoms of a particular element is called the element's atomic _____.

number

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

15. Each element is composed of characteristic tiny particles called _____.

atoms

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

16. The parts of an atom that lack an electrical charge are called _____.

neutrons

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

17. When atoms combine with other atoms, interactions occur between their _____ shells.

electron

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Atoms and molecules
Topic: Chemical bonding

Multiple Choice Questions

18. The electrons of an atom occupy one or more areas of space called

A. bonds.
B. shells.
C. regions.
D. ions.
E. nuclei.

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

19. The electrons in the outermost shell of an atom determine its

A. shape.
B. weight.
C. chemical behavior.
D. mass.
E. atomic number.

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Atoms and molecules
Topic: Chemical bonding

20. The atoms of the isotopes of a particular element vary in the number of

A. electrons.
B. protons.
C. neutrons.
D. nuclei.
E. electron shells.

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Objective: C01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

21. Sodium and chloride ions readily combine because they have opposite charges.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

22. An atom that has gained or lost electrons is called an ion.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

23. Atoms that gain or lose electrons become electrically charged and are called _____.

ions

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

24. The type of chemical bond formed when atoms share electrons is called _____.

covalent

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

Multiple Choice Questions

25. The first electron shell of an atom can hold a maximum of

A. 1 electron.
B. 2 electrons.
C. 4 electrons.
D. 8 electrons.
E. 16 electrons.

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

26. A covalent bond is formed by two atoms that share electrons.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

27. The molecular formula for compounds like sodium chloride (NaCl) give the relative amounts of each element present.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

28. The formula H_2O means

A. an atom contains 2 hydrogen molecules and 1 oxygen molecule.
B. an atom contains 1 hydrogen atom and 2 oxygen molecules.
C. a molecule contains 2 hydrogen atoms and 1 oxygen atom.
D. a molecule contains 1 hydrogen atom and 2 oxygen atoms.
E. a molecule contains 2 hydrogen atoms and no oxygen atoms.

Accessibility: Keyboard Navigation
Bloom's Level: 4. Analyze
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

29. If two pairs of electrons are shared, the resulting bond is called a double covalent bond.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

Fill in the Blank Questions

30. The type of chemical bond formed when ions with opposite electrical charges are attracted to one another is called _____.

ionic

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

Multiple Choice Questions

31. The attraction of the positive hydrogen end of a polar molecule to the negative nitrogen or oxygen end of another polar molecule is called a(an)

A. ionic bond.
B. double bond.
C. triple bond.
D. hydrogen bond.
E. covalent bond.

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

True / False Questions

32. When two or more atoms bond, they form a new kind of particle called a molecule.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

33. When atoms of different elements bond, they form molecules called _____.

compounds

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

34. A molecule of a compound always contains definite kinds and numbers of atoms.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

35. Water is an example of a compound.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Atoms and molecules

36. A molecular formula represents the numbers and types of atoms in a molecule.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

37. A _____ formula shows how atoms are joined and arranged in various molecules.

structural

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

38. If the bonds of a reactant molecule break so that simpler molecules, atoms or ions form, the reaction is an exchange reaction.

FALSE

Accessibility: Keyboard Navigation

Bloom's Level: 2. Understand
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

Fill in the Blank Questions

39. A _____ reaction is symbolized as A+B→AB.

synthesis

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Atoms and molecules
Topic: Chemical bonding

40. A _____ reaction is symbolized as AB→A+B.

decomposition

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Atoms and molecules
Topic: Chemical bonding

Multiple Choice Questions

41. A chemical reaction in which pairs of two different molecules trade positions is called a(an) _____ reaction.

A. decomposition
B. exchange
C. reversible
D. synthesis
E. irreversible

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Atoms and molecules
Topic: Chemical bonding

True / False Questions

42. When two or more atoms (reactants) bond to form a more complex structure (product) the reaction is called synthesis.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Atoms and molecules
Topic: Chemical bonding

Fill in the Blank Questions

43. The opposite of a decomposition reaction is called a _____ reaction.

synthesis

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Atoms and molecules
Topic: Chemical bonding

Multiple Choice Questions

44. A decomposition reaction can be symbolized as _____.

A. A+B→C+D
B. A+B→AB
C. AB→A+B
D. C+D→AB
E. AB + CD → AC + BD

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Topic: Module C01 Atoms and molecules.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02

Topic: Atoms and molecules
Topic: Chemical bonding

True / False Questions

45. A pH value indicates the hydrogen ion concentration in solutions, including body fluids.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

46. pH is a measure of _____ ion concentration.

hydrogen

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

True / False Questions

47. The pH scale ranges from 0 to 14.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

48. A pH of _____ is the midpoint of the pH scale and signifies equal numbers of hydrogen and hydroxide ions.

7 *or*
7

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Objective: C03.05 State acidic, neutral, and alkaline pH values.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

49. A solution that contains more hydrogen ions than hydroxide ions is _____.

acidic

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Multiple Choice Questions

50. Which term describes a solution that contains more hydroxide ions than hydrogen ions?

A. basic
B. neutral
C. low pH
D. acidic
E. None of the above

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

51. Each whole number on the pH scale represents a _____ - fold difference in hydrogen ion concentration.

A. 15
B. 100
C. 20
D. 10
E. 2

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.

HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

52. As hydrogen ion concentration increases, the pH number

A. gets.
B. gets smaller.
C. stays the same.
D. becomes negative.
E. approaches 14.

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Objective: C03.05 State acidic, neutral, and alkaline pH values.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

53. A solution that has a pH of 6 has ten times the hydrogen ion concentration of a solution with a pH of

A. 7.
B. 5.
C. 8.
D. 2.
E. 0.6.

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

True / False Questions

54. A substance that releases hydrogen ions in water is a base.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

55. An _____ is defined as a substance that ionizes in water.

electrolyte

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

True / False Questions

56. An acid is defined as an electrolyte that releases hydroxide ions (OH^-) in water.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Multiple Choice Questions

57. A person has alkalosis if the blood pH

A. rises above 7.0.
B. drops below 7.0.
C. rises above 7.4.
D. drops below 7.4.
E. steadily decreases.

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Objective: C03.05 State acidic, neutral, and alkaline pH values.
Section: 02.02
Topic: Inorganic compounds and solutions

58. As a group, compounds that release ions when they dissolve in water are called

A. acids.
B. bases.
C. salts.
D. electrolytes.
E. solvents.

Accessibility: Keyboard Navigation

Bloom's Level: 1. Remember
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

59. Chemicals that resist changes in pH are called

A. buffers.
B. electrolytes.
C. acids.
D. bases.
E. none of the above.

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

True / False Questions

60. Buffers combine with hydrogen ions when H^+ is in excess or they donate hydroxide ions when H^+ is depleted.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

61. _____ are chemicals that resist changes in pH.

Buffers

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

True / False Questions

62. A salt is a compound composed of oppositely charged ions.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.03 Define the term salt and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Multiple Choice Questions

63. At the cellular level of organization, biology becomes the study of

A. organs.
B. chemistry.
C. tissues.
D. organ systems.
E. human populations.

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.03
Topic: Atoms and molecules

64. Which of the following chemicals is NOT an inorganic substance?

A. water
B. protein
C. sodium chloride
D. carbon dioxide
E. oxygen

Accessibility: Keyboard Navigation
Bloom's Level: 4. Analyze
HAPS Objective: C04.01 Define the term organic molecule.
HAPS Topic: Module C03 Inorganic compounds and solutions.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Inorganic compounds and solutions
Topic: Organic compounds

True / False Questions

65. Many inorganic substances dissociate in water to release ions.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.03
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

66. Organic substances always contain the elements hydrogen and _____.

carbon

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.01 Define the term organic molecule.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

Multiple Choice Questions

67. Inorganic substances that usually dissociate in water are called

A. organic compounds.
B. non-electrolytes.
C. electrolytes.
D. lipids.
E. carbohydrates.

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.03
Topic: Inorganic compounds and solutions

True / False Questions

68. Water accounts for 2/3 of the weight of an adult human.

TRUE

Accessibility: Keyboard Navigation

Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
Section: 02.03

Fill in the Blank Questions

69. _____ is the most abundant compound in living material.

Water

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
Section: 02.03

Multiple Choice Questions

70. Carbon dioxide is

A. inhaled in large quantities from the environment.
B. a waste product of metabolic processes.
C. an element.
D. a salt.
E. an electrolyte.

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C11.01 Define the term cellular respiration.
HAPS Topic: Module C11 Cellular respiration.
Section: 02.03
Topic: Cellular respiration

True / False Questions

71. Certain cellular organelles use oxygen to release energy from glucose.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C11.01 Define the term cellular respiration.
HAPS Topic: Module C11 Cellular respiration.
Section: 02.03
Topic: Cellular respiration

Multiple Choice Questions

72. Which of the following is NOT organic?

A. A carbohydrate
B. A protein
C. A lipid
D. Carbon dioxide
E. A nucleic acid

Accessibility: Keyboard Navigation
Bloom's Level: 4. Analyze
HAPS Objective: C04.01 Define the term organic molecule.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

73. The different types of carbohydrates do NOT include

A. monosaccharides.
B. disaccharides.
C. proteins.
D. polysaccharides.
E. glucose.

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

True / False Questions

74. The building blocks of fat molecules are amino acids.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

Fill in the Blank Questions

75. _____ are lipids used primarily to store energy for cellular activities.

Fats

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

True / False Questions

76. Cholesterol is a protein.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

77. Steroid molecules have four connected rings of carbon atoms.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

78. The building blocks of proteins are amino acids.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

Fill in the Blank Questions

79. _____ are the building blocks of nucleic acids.

Nucleotides

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C04.04a Identify the monomers and polymers of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

True / False Questions

80. Proteins include DNA and RNA.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C04.04c Provide specific examples of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Organic compounds

Multiple Choice Questions

81. Neutrons are located in the _____ of an atom and they have a "charge" that is _____.

A. nucleus, negative
B. nucleus, neutral
C. shells, negative
D. nucleus, positive

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

82. Electrons are located in the _____ of an atom and they have a "charge" that is _____.

A. nucleus, negative
B. nucleus, neutral
C. shells, negative
D. nucleus, positive

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember

HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

83. Protons are located in the _____ of an atom and they have a "charge" that is _____.

A. nucleus, negative
B. nucleus, neutral
C. shells, negative
D. nucleus, positive

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

84. The branch of science that deals with the composition of matter is _____.

A. histology
B. chemistry
C. physiology
D. biology
E. cytology

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.01
Topic: Atoms and molecules

True / False Questions

85. Carbon, oxygen, sodium and hydrogen compose over 95% (by weight) of the human body.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C04.01 Define the term organic molecule.
HAPS Objective: C04.04b Compare and contrast general molecular structure of carbohydrates, proteins, lipids and nucleic acids.
HAPS Topic: Module C04 Organic compounds.
Section: 02.02
Topic: Organic compounds

86. Atoms of different elements vary in size, weight and ways they interact with atoms or different elements.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

87. Protons are the subatomic particles that determine an atom's bonding behavior.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

88. Protons and electrons are similar in size.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

89. The number of protons plus the number of _____ is approximately equal to the atomic weight.

neutrons

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

True / False Questions

90. All isotopes of an element have the same number of electrons.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Fill in the Blank Questions

91. Of the three common forms of radiation, _____ radiation is most penetrating and similar to X-rays.

gamma

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

92. In an atom, the first shell contains a maximum of _____ electrons.

2 *or*
two

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

93. In an atom, the second shell contains a maximum of _____ electrons.

8 *or*
eight

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

94. The chemical behavior of atoms results from interactions among their _____.

electrons

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01b Relate the number of electrons in an electron shell to an atom's chemical stability and its ability to form chemical bonds with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.

Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

95. Atoms that lose or gain electrons become electrically charged particles called _____.

A. ions
B. molecules
C. protons
D. isotopes
E. radioisotopes

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

96. When atoms form bonds by sharing electrons, the bond formed is a type of _____ bond.

A. ionic
B. covalent
C. van der Waals
D. hydrogen

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

97. In a water molecule, shared electrons spend more time at the oxygen pole than the hydrogen pole, an example of _____ bonds.

A. polar covalent
B. non-polar covalent
C. ionic
D. hydrogen

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Objective: C02.01b Explain the mechanism of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Topic: Module C02 Chemical bonding.
Section: 02.02
Topic: Chemical bonding

Fill in the Blank Questions

98. The smallest subatomic particle is the _____.

electron

Accessibility: Keyboard Navigation
Bloom's Level: 1. Remember
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom.
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

99. FX --> F + X is an example of a _____ reaction.

decomposition

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

100. X + Y --> XY is an example of a _____ reaction.

synthesis

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

101. In _____ reactions, parts of one molecule can be removed and added to a different molecule.

exchange

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Topic: Module C01 Atoms and molecules.
Section: 02.02
Topic: Atoms and molecules

Multiple Choice Questions

102. Collectively, these bonds are responsible for the surface tension of water, but individually they are weak bonds.

A. ionic
B. covalent
C. hydrogen
D. peptide
E. disulfide

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C02.01a List each type of bond in order by relative strength with respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C02.01c Provide biologically significant examples of each type of non-polar covalent, polar covalent, ionic, and hydrogen bonds.
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Topic: Module C02 Chemical bonding.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Topic: Chemical bonding
Topic: Inorganic compounds and solutions

103. If solution A has a pH of 6 and solution B has a pH of 3, then _____.

A. solution B has 3 times more H^+ than A
B. solution B has 3 times less H^+ than A
C. solution B has 30 times more H^+ than A
D. solution B has 1000 times more H^+ than A
E. solution B has 1000 times less H^+ than A

Accessibility: Keyboard Navigation
Bloom's Level: 4. Analyze
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

Fill in the Blank Questions

104. _____ are chemicals that resist pH changes.

buffers

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

105. Normal blood pH range is _____.

7.35 - 7.45

Accessibility: Keyboard Navigation
Bloom's Level: 2. Understand
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

True / False Questions

106. As the concentration of hydrogen ions increases, a solution's pH decreases.

TRUE

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
HAPS Objective: C03.05 State acidic, neutral, and alkaline pH values.
HAPS Topic: Module C03 Inorganic compounds and solutions.
Section: 02.02
Topic: Inorganic compounds and solutions

107. Water, salts, oxygen and proteins are all examples of inorganic substances.

FALSE

Accessibility: Keyboard Navigation
Bloom's Level: 3. Apply
HAPS Objective: C03.01 Discuss the physiologically important properties of water.
HAPS Objective: C04.01 Define the term organic molecule.
HAPS Topic: Module C03 Inorganic compounds and solutions.
HAPS Topic: Module C04 Organic compounds.
Section: 02.03
Topic: Inorganic compounds and solutions
Topic: Organic compounds