

Ch02
Chemical Basis of Life

Multiple Choice Questions

1. Chemistry deals with
- A.** the composition and changes of substances that make up living as well as non-living matter.
 - B. the composition and changes of substances found in organisms only.
 - C. the composition of and changes of substances that make up non-living matter only.
 - D. the location of organs in body cavities.

Bloom's Level: 2. Understand

Learning Outcome: 02.01

Topic: Chemistry

2. Chemistry is important to the study of physiology because
- A. the foods that we eat are chemicals.
 - B. body functions depend on cellular functions that reflect chemical changes.
 - C. chemical reactions enable our bodies to extract energy from nutrients.
 - D.** all of the above.

Bloom's Level: 2. Understand

Learning Outcome: 02.01

Topic: Chemistry

3. Which of the following substances is an element?

- A. Iron
- B. Water
- C. Sodium chloride
- D. Glucose

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

4. Which of the following groups of elements account for more than 95% of the human body by weight?

- A. Carbon, hydrogen, oxygen, nitrogen
- B. Calcium, hydrogen, oxygen, nitrogen
- C. Carbon, phosphorus, oxygen, hydrogen
- D. Calcium, phosphorus, hydrogen, nitrogen

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

5. The atoms of different elements have

- A. the same atomic number and same atomic weight.
- B. the same atomic number but different atomic weights.
- C. different atomic numbers.
- D. different atomic numbers but the same number of electrons.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

6. Isotopes of an element have
- A. the same atomic number and same atomic weight.
 - B.** the same atomic number but different atomic weights.
 - C. different atomic numbers but the same atomic weight.
 - D. different atomic numbers and different atomic weights.

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

7. Which of the following is(are) ionizing radiation?
- A. Cosmic radiation only
 - B. Gamma radiation only
 - C.** Both cosmic radiation and gamma radiation
 - D. Neither cosmic nor gamma radiation

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

8. The atomic weight of an element whose atoms contain 8 protons, 8 electrons, and 8 neutrons is
- A. 8.
 - B.** 16.
 - C. 24.
 - D. 32.

Bloom's Level: 3. Apply

Learning Outcome: 02.02

Topic: Chemistry

9. The atoms of the isotopes of a particular element vary in the number of
- A. electrons.
 - B. protons.
 - C.** neutrons.
 - D. nuclei.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

10. The first electron shell of an atom can hold a maximum of
- A. 1 electron.
 - B.** 2 electrons.
 - C. 4 electrons.
 - D. 8 electrons.

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

11. When forming a bond, an atom that has 3 electrons in its second shell and a filled first shell will
- A.** lose 3 electrons from its second shell.
 - B. lose all of the electrons from its first shell.
 - C. lose all of the electrons from both its first and second shells.
 - D. gain 5 electrons in its second shell.

Bloom's Level: 3. Apply

Learning Outcome: 02.02

Topic: Chemistry

12. The formula H₂O refers to

- A. Two hydrogen molecules and one oxygen molecule.
- B. One hydrogen molecule and two oxygen molecules.
- C.** A molecule that contains two hydrogen atoms and one oxygen atom.
- D. A molecule that contains one hydrogen atom and two oxygen atoms.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

13. A decomposition reaction can be symbolized by

- A. $A + B \rightarrow C + D$.
- B. $A + B \rightarrow AB$.
- C.** $AB \rightarrow A + B$.
- D. $C + D \rightarrow AB$.

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

14. A water solution that contains equal numbers of hydrogen ions and hydroxide ions is

- A. acidic.
- B. basic.
- C. alkaline.
- D.** neutral.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

15. Electrolytes that release hydrogen ions in water are

- A. bases.
- B. nucleotides.
- C.** acids.
- D. electrons.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

16. The difference in hydrogen ion concentration between solutions with pH 4 and pH 5 is

- A. twofold.
- B. fivefold.
- C.** tenfold.
- D. twentyfold.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

17. A chemical reaction in which parts of different molecules trade positions is a(n)

- A. decomposition reaction.
- B.** exchange reaction.
- C. reversible reaction.
- D. synthesis reaction.

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

18. Consider the following list of commonly found items and their pH values:

Battery acid	1.0
Vinegar	2.2
Grapes	3.5-4.5
Tomato	4.0-4.5
Beer	4.2
Coffee	5.0
White bread	5.0-6.0
Butter	6.1-6.4
Egg whites	7.6-8.0
Baking soda	8.3
Milk of magnesia	10.6
Bleach	12.8

Which of the choices includes all acids?

- A. Egg whites, baking soda, milk of magnesia, and bleach
- B. Tomatoes, egg whites, and baking soda
- C.** Vinegar, grapes, tomatoes, and coffee
- D. Beer, butter, and baking soda

Bloom's Level: 3. Apply

Learning Outcome: 02.02

Topic: Chemistry

19. Electrolytes are substances that

- A. form covalent bonds with water.
- B.** ionize in water.
- C. cannot conduct electricity in solution.
- D. form bonds that are stable in water.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

20. The pH scale measures the
- A.** concentration of hydrogen ions in solution.
 - B. number of molecules of salts dissolved in water.
 - C. number of hydroxide ions in water.
 - D. strength of an electrical current that a solution carries.

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

21. Which of the following is the most abundant inorganic substance in the body?
- A. Carbohydrate
 - B.** Water
 - C. Lipid
 - D. Protein

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

22. A person has alkalosis if the blood pH
- A. is above 7.0.
 - B. is below 7.0.
 - C.** rises above 7.5.
 - D. drops below 7.3.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

23. Matter is composed of elements, which are composed of _____.

- A.** atoms
- B. inorganic molecules
- C. organic molecules
- D. chemicals

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

24. A complete atom is electrically neutral because the number of

- A. protons and neutrons are equal.
- B. electrons and neutrons are equal.
- C.** electrons and protons are equal.
- D. electrons is greater than the number of protons.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

25. The atomic number of an atom equals the number of _____ and the atomic weight equals the _____.

- A. neutrons; number of protons
- B. protons; weight of all the electrons
- C. neutrons; number of protons plus electrons
- D.** protons; number of protons plus neutrons

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

26. Synthesis reactions are particularly important in the body for
- A. release of energy.
 - B. digestion of food products.
 - C.** growth of body parts.
 - D. neutralization of acids by buffers.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

27. In a covalent bond
- A. one atom loses and another atom gains electrons.
 - B.** atoms share a pair or more of electrons.
 - C. oppositely charged atoms attract.
 - D. like-charged atoms repel.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

28. In an ionic bond
- A. each atom gains electrons.
 - B. atoms share a pair or more of electrons.
 - C.** oppositely charged atoms attract.
 - D. like-charged atoms repel.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

29. On the pH scale

- A. a tenfold difference in hydrogen ion concentration separates each whole number.
- B. the lower the whole number on the scale, the greater the H^+ concentration.
- C. pH values above 7 are basic (alkaline).
- D.** all of the above.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

30. Sodium ions and calcium ions are examples of

- A.** cations.
- B. uncharged particles.
- C. anions.
- D. salts.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

31. When cations and anions meet they

- A. repel.
- B.** form ionic bonds.
- C. form covalent bonds.
- D. form individual molecules.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

32. An acid reacting with a base is
- A. a synthesis reaction.
 - B. hydrolysis.
 - C. a decomposition reaction.
 - D.** an exchange reaction.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

33. Water causes ionically-bonded atoms to
- A. bond more strongly.
 - B.** dissociate.
 - C. bond covalently.
 - D. decompose.

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

34. Bases reacting with acids form _____ and water.
- A. buffers
 - B.** salts
 - C. new elements
 - D. proteins

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

35. The secondary structure of a protein molecule is the result of
- A. oxygen double bonds.
 - B. covalent bonds.
 - C. ionic bonds.
 - D.** hydrogen bonds.

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

36. In the body, oxygen
- A. reacts with water to form carbonic acid.
 - B.** is used during cellular respiration.
 - C. is a major electrolyte.
 - D. is produced by cells.

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

37. Which of the following is characteristic of carbohydrates?
- A. They contain C, H, O, with twice as many hydrogen as oxygen atoms.
 - B. They provide much of the energy that the cell requires.
 - C. They include sugars and starches.
 - D.** all of the above.

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

38. A simple carbohydrate

- A.** has a molecular formula of $C_6H_{12}O_6$.
- B. is a building block of protein.
- C. consists of several joined chains.
- D. has only one nucleotide.

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

39. Lipids

- A. are insoluble in water.
- B. include phospholipids, cholesterol, and fats.
- C. contain C, H, and O, but with proportionately less oxygen than in carbohydrates.
- D.** all of the above.

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

40. Proteins denature when

- A. bonds between carbon and oxygen break.
- B.** hydrogen bonds break.
- C. peptide bonds break.
- D. peptide bonds form.

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

41. Which of the following is not organic?

- A.** Sodium chloride
- B. Lipids
- C. Nucleic acids
- D. Enzymes

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

42. Saturated fats _____ than unsaturated fats.

- A. contain more water
- B. have more glycerol
- C.** have more single carbon-carbon bonds
- D. have fewer hydrogen atoms bonded to carbon atoms

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

43. Proteins

- A. are structural materials.
- B. can function as enzymes.
- C. contain C, H, O, and N, and sometimes S.
- D.** all of the above.

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

44. An enzyme is a _____.

- A.** protein that speeds up chemical reactions without being changed or depleted
- B. protein that functions as a hormone
- C. protein that inhibits chemical reactions by being changed or depleted
- D. fibrous protein that is part of certain tissues in the body

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

45. The parts of a protein that change when it denatures are

- A. the primary and secondary structures.
- B.** the secondary and tertiary structures.
- C. the amino acid sequence and the secondary structure.
- D. the tertiary and quaternary structures.

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

46. DNA

- A. is a protein.
- B. plays no role in the synthesis of fats.
- C.** stores genetic information, including instructions for enzymes that synthesize fats and carbohydrates.
- D. is routinely broken down to provide cellular energy.

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

47. Nucleic acids are

- A. very small, simple molecules.
- B. structural molecules that have no function other than support.
- C.** composed of building blocks called nucleotides.
- D. primary sources of cellular energy.

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

48. The informational content of DNA and RNA is in the nitrogenous bases because

- A.** the bases are of several types and therefore can form a code sequence.
- B. they all contain nitrogen.
- C. the sugars and phosphates vary.
- D. the bases are also parts of amino acids.

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

49. In phenylketonuria, an individual cannot break down the amino acid phenylalanine. Molecules that include phenylalanine build up in the blood, which causes intellectual disability and other symptoms. This inherited disease can be controlled by following a diet that is very low in

- A. carbohydrates.
- B. cholesterol.
- C.** protein.
- D. nucleic acids.

Bloom's Level: 3. Apply

Learning Outcome: 02.03

Topic: Chemistry

50. Table sugar breaking down into glucose and fructose is a(n) _____ reaction.
- A. synthesis
 - B.** hydrolysis
 - C. acid-base
 - D. exchange reaction

Bloom's Level: 3. Apply
Learning Outcome: 02.02
Topic: Chemistry

51. Nucleic acids include
- A. proteins and DNA.
 - B.** RNA and DNA.
 - C. enzymes and RNA.
 - D. steroids and triglycerides.

Bloom's Level: 1. Remember
Learning Outcome: 02.03
Topic: Chemistry

52. DNA and RNA differ in that
- A. RNA has deoxyribose and DNA has ribose.
 - B. RNA is double-stranded and DNA is single-stranded.
 - C.** DNA holds genetic information and RNA uses that information to synthesize protein.
 - D. RNA is found only in the nucleus and DNA is found only in the cytoplasm.

Bloom's Level: 2. Understand
Learning Outcome: 02.03
Topic: Chemistry

53. The type of organic molecule that can replicate is a
- A. protein.
 - B. lipid.
 - C. carbohydrate.
 - D. nucleic acid.**

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

54. Conformation is
- A. the three dimensional shape of a molecule, such as a protein.**
 - B. the energy held in the bonds of an organic molecule, such as a protein.
 - C. the ability of DNA to copy itself.
 - D. the amino acid sequence (primary structure) of a protein.

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

55. An organic compound always contains
- A. carbon and hydrogen.**
 - B. oxygen and nitrogen.
 - C. carbon and oxygen.
 - D. nitrogen and hydrogen.

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

56. Carbon can form ____ covalent bonds.

- A. 1
- B. 2
- C. 4**
- D. 8

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

57. Which of these is not a monosaccharide?

- A. Glucose
- B. Ribose
- C. 6-carbon sugar
- D. Sucrose**

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

58. Glycogen is stored in the liver and _____.

- A. spleen
- B. skeletal muscles**
- C. pancreas
- D. heart

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

59. A triglyceride consists of
- A. 3 glycerols and 1 fatty acid.
 - B. 3 glucose molecules.
 - C. 3 fatty acids and 3 phosphate groups.
 - D.** 3 fatty acids and 1 glycerol.

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

60. Which of the following groups of compounds is hydrophobic?
- A. Carbohydrates
 - B.** Lipids
 - C. Proteins
 - D. Nucleic Acids

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

61. Which of the following molecules does not have a polar region?
- A. Water
 - B.** Triglyceride
 - C. Water soluble amino acid
 - D. Glucose

Bloom's Level: 3. Apply

Learning Outcome: 02.03

Topic: Chemistry

62. A biomarker is
- A. a gene that encodes a particular protein.
 - B. always a protein.
 - C.** a body chemical associated with a particular disease or exposure to a toxin.
 - D. any chemical in the body.

Bloom's Level: 2. Understand

Boxed Reading: Vignette

Topic: Chemistry

63. An example of a biomarker is
- A.** cholesterol.
 - B. any DNA sequence.
 - C. sodium chloride.
 - D. hydrogen.

Bloom's Level: 1. Remember

Boxed Reading: Vignette

Topic: Chemistry

64. A biomarker test for cancer should ideally be
- A. inexpensive.
 - B. easy to perform.
 - C. specific.
 - D.** all of the above.

Bloom's Level: 1. Remember

Boxed Reading: Vignette

Topic: Chemistry

65. Which of the following isotopes has the longest half-life?

- A. Iodine-131
- B. Iron-59
- C. Phosphorus-32
- D. Cobalt-60**

Bloom's Level: 2. Understand

Boxed Reading: From Science to Technology 2.1

Topic: Chemistry

66. The _____ uses iodine in a synthesis reaction.

- A. spleen
- B. liver
- C. thymus
- D. thyroid gland**

Bloom's Level: 1. Remember

Boxed Reading: From Science to Technology 2.1

Topic: Chemistry

67. The isotope most likely to be used to study the thyroid gland is

- A. Iodine-131**
- B. Iron-59
- C. Thallium-201
- D. Cobalt-60

Bloom's Level: 2. Understand

Boxed Reading: From Science to Technology 2.1

Topic: Chemistry

68. Atomic radiation is useful for treating cancer because
- A. radiation affects cancer cells but not normal cells.
 - B. radiation protects normal cells against the effects of cancer.
 - C.** radiation harms cancer cells more readily than it does most non-cancer cells.
 - D. normal cells are not affected by radiation.

Bloom's Level: 2. Understand

Boxed Reading: From Science to Technology 2.2

Topic: Chemistry

69. Exposure to ionizing radiation may
- A. cloud the lens of the eye.
 - B. cause cancer.
 - C. interfere with normal growth.
 - D.** all of the above.

Bloom's Level: 1. Remember

Boxed Reading: From Science to Technology 2.2

Topic: Chemistry

70. Which of the following is not a source of ionizing radiation?
- A. Cosmic rays from outer space
 - B.** Cholesterol and triglycerides
 - C. Atomic and nuclear weapons
 - D. Smoke detectors

Bloom's Level: 1. Remember

Boxed Reading: From Science to Technology 2.2

Topic: Chemistry

71. A CT scan differs from a conventional X-ray image because it is
- A. two dimensional.
 - B.** three dimensional.
 - C. four dimensional.
 - D. safer.

Bloom's Level: 2. Understand

Boxed Reading: From Science to Technology 2.3

Topic: Chemistry

72. PET imaging follows the emission of
- A.** positrons.
 - B. electrons.
 - C. neutrons.
 - D. protons.

Bloom's Level: 1. Remember

Boxed Reading: From Science to Technology 2.3

Topic: Chemistry

True / False Questions

73. Chemistry is the study of the composition of matter and how matter changes.
TRUE

Bloom's Level: 1. Remember

Learning Outcome: 02.01

Topic: Chemistry

74. The number of protons in an atom of an element always equals its atomic weight.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

75. Radioactive isotopes have stable nuclei.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

76. Sodium and chloride atoms combine readily because they both lose electrons.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

77. The symbol Na^+ represents a sodium atom that has lost an electron.

TRUE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

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

TRUE

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

79. Water is an example of a compound.

TRUE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

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

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

81. A strong acid reacting with a strong base produces a salt.

TRUE

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

82. An atom with 10 protons and which has lost 2 electrons is electrically neutral.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

83. Chemically inert atoms always have their outermost electron shell full.

TRUE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

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

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

85. A base is an electrolyte that releases ions that combine with hydrogen ions.

TRUE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

86. An electrolyte ionizes in water.

TRUE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

87. A person with alkalosis has a blood pH less than 7.3.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

88. A complex carbohydrate consists of a phosphate group attached to a sugar molecule.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

89. Cholesterol, a type of lipid, is composed of 3 fatty acid chains attached to glycerol.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

90. Glycogen is a complex carbohydrate that we get directly by eating plants.

FALSE

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

91. A phospholipid differs structurally from a triglyceride in that it has three phosphate groups attached to the glycerol molecule rather than three fatty acid chains.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

92. Nucleic acids are composed of building blocks called amino acids.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

93. A protein is formed from a sequence of amino acids.

TRUE

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

94. Proteins encode nucleic acids.

FALSE

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

95. DNA and RNA are nucleic acids.

TRUE

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

Fill in the Blank Questions

96. The parts of an atom that carry single negative electrical charges are called _____.

electrons

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

97. When atoms form chemical bonds, the subatomic particles that directly interact are the _____.
electrons

Bloom's Level: 2. Understand
Learning Outcome: 02.02
Topic: Chemistry

98. The type of subatomic particle that does not have an electrical charge is a(n) _____.
neutron

Bloom's Level: 1. Remember
Learning Outcome: 02.02
Topic: Chemistry

99. The type of chemical bond formed when ions with opposite electrical charges attract is a(n) _____ bond.
ionic

Bloom's Level: 2. Understand
Learning Outcome: 02.02
Topic: Chemistry

100. Two or more atoms bonding form a _____.
molecule

Bloom's Level: 2. Understand
Learning Outcome: 02.02
Topic: Chemistry

101. The opposite of a decomposition reaction is a _____ reaction.

synthesis

Bloom's Level: 2. Understand

Learning Outcome: 02.02

Topic: Chemistry

102. The midpoint of the pH scale is pH ____.

7

Bloom's Level: 1. Remember

Learning Outcome: 02.02

Topic: Chemistry

103. Apricots have a pH of 3.8. Therefore, they are _____.

acidic or

acid

Bloom's Level: 3. Apply

Learning Outcome: 02.02

Topic: Chemistry

104. Organic substances always contain the elements _____ and _____.

carbon, hydrogen

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry

105. Amino acids are building blocks of _____.
protein

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

106. The amino acid sequence of a protein is its _____ structure.
primary

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

107. _____ are building blocks of nucleic acids.
nucleotides

Bloom's Level: 1. Remember

Learning Outcome: 02.03

Topic: Chemistry

108. _____ has the unique ability among types of organic molecules to replicate.
DNA or
Deoxyribonucleic acid

Bloom's Level: 2. Understand

Learning Outcome: 02.03

Topic: Chemistry