Chapter 02 Chemistry of Life

Student: _____

1. The smallest unit of matter is the
A. molecule.
B. atom.
C. compound.
D. isotope.

2. An element is any substance that contains one type of
A. molecule.
B. isotope.
C. atom.
D. proton.

3. The positively charged particles in the nucleus of an atom are
A. neutrons.
B. electrons.
C. protons.
D. isotopes.

4. The atomic mass of a proton is
A. 0 atomic mass units.
B. 2 atomic mass units.
C. 1 atomic mass units.
D. -1 atomic mass units.

5. Which of the following subatomic particles are found in the nucleus of an atom?
A. Protons and electrons
B. Electrons and neutrons
C. Protons and shells
D. Neutrons and protons

6. The number of protons in an atom is called the
A. atomic number.
B. atomic weight.
C. mass number.
D. combining weight.

7. Which subatomic particle determines the identity of an atom?
A. Neutron
B. Proton
C. Electron
D. Prion

8. Which subatomic particle determines the chemical activity of an atom?
A. Neutron
B. Proton
C. Electron
D. Prion

9. Atoms with more than one shell are most stable when the outermost shell contains _____ electrons.
A. 10
B. 1
C. 8
D. 6

10. Different forms of the same element with different numbers of neutrons are called
A. molecules.
B. compounds.
C. isotopes.
D. lattices.

11. Exactly 6.02×10^{23} atoms of any element is called 1 ____ of that element.
A. atomic mass unit
B. isotope
C. mole
D. mouse

12. Over 90% of the body is composed of four elements: carbon, nitrogen, chlorine, and hydrogen.
True False

13. The number of electrons in the outermost shell of an atom will determine the chemical activity of the atom.
True False

14. Phosphorus has an atomic number of 15 and a mass number of 31. How many protons, neutrons, and electrons does an atom of the element phosphorus have?

15. Describe each of the three subatomic particles with regard to charge, weight, and location in an atom.

16. If the atomic number of an element is 9 and the mass number is 19, how many neutrons does the atom have?
A. 10
B. 9
C. 19
D. 28

17. If the atomic number of an element is 27 and the mass number is 60, how many neutrons does the atom have?
A. 27
B. 33
C. 87
D. 60

18. Low levels of radiation are commonly used to
A. sterilize dental products.
B. destroy cancer cells.
C. produce images of body parts.
D. All apply.

19. What makes an isotope radioactive?
A. It has more protons than electrons.
B. It releases energy to become stable.
C. It releases hydrogen ions into solution.
D. It breaks down into hydrogen and electrons.

20. All radioactive isotopes are very dangerous and have no practical, safe uses.
True False

21. High levels of radiation are NOT used
A. to sterilize medical equipment.
B. to kill cancer cells.
C. as tracers to detect molecular changes.
D. to sterilize from anthrax.

22. Atoms bonded together to form a chemical unit are called
A. molecules.
B. ions.
C. radioisotopes.
D. buffers.

23. A molecule made of two or more different atoms bonded together is called a(n)
A. ion.
B. isotope.
C. atom.
D. compound.

24. An atom or group of atoms with a charge is called a(n)
A. molecule.
B. isotope.
C. compound.
D. ion.

25. An ion is an atom or molecule that
A. is in a gaseous state.
B. carries an electrical charge.
C. is attracted to a north-seeking pole.
D. forms a visible glow.

26. A bond created from the attraction between positively and negatively charged ions is a(n) _____ bond.
A. covalent
B. hydrogen
C. ionic
D. metallic

27. A bond created from the sharing of electrons between two atoms is a(n) _____ bond.
A. covalent
B. hydrogen
C. ionic
D. metallic

28. Molecules form from
A. the shape of the individual atoms.
B. the attraction between electrons.
C. the sharing of electrons.
D. a drive toward solubility.

29. When two pairs of electrons are shared between two atoms a _____ bond is formed.
A. single covalent
B. double covalent
C. triple covalent
D. double ionic

30. When one atom has a stronger attraction for shared electrons in a bond than the other atom, a(n) _____ covalent bond is formed.
A. polar
B. nonpolar
C. ionic
D. metallic

31. Explain the difference between an ionic bond and a covalent bond.

32. The attraction between a slightly positive hydrogen to a slightly negative oxygen of another molecule describes a(n) _____ bond.
A. hydrogen
B. oxygen
C. nitrogen
D. ionic

33. The most abundant molecule in living organisms is
A. water.
B. glucose.
C. oxygen.
D. ammonia.

34. Which of the following is NOT a property of water?
A. High heat capacity
B. Low heat of vaporization
C. Solvent for polar and ionic compounds
D. Cohesiveness

35. Which of the following is NOT a property of water?
A. The ability to cling to other water molecules, yet flow.
B. The ability to facilitate chemical reactions.
C. The ability to insulate the body from temperature extremes.
D. The ability to dissolve nonpolar, hydrophobic molecules.

36. Substances that are water-loving are called
A. hydrophilic.
B. hydrophobic.
C. hydrophoric.
D. hydrochromic.

37. The ability of water molecules to cling to each other is _____, while the ability to cling to other surfaces is _____.
A. cohesion; adhesion
B. dissolving; vaporization
C. adhesion; cohesion
D. cohesion; dissolving

38. The ability of water to absorb large amounts of heat energy without changing its temperature is a
A. low specific heat capacity.
B. low heat of vaporization.
C. high specific heat capacity.
D. high heat of vaporization.

39. Compounds that form ions when put into water are called
A. mixtures.
B. solvents.
C. electrolytes.
D. suspensions.

40. Explain how hydrogen bonding contributes to the characteristics of the water molecule.

41. A substance that dissociates in water, releasing hydrogen ions is a(n)
A. salt.
B. base.
C. protein.
D. acid.

42. A substance that can take up hydrogen ions or release hydroxide ions in water is a(n)
A. salt.
B. base.
C. protein.
D. acid.

43. Hydrochloric acid is considered a strong acid because it
A. produces very few hydrogen ions in water.
B. produces many hydroxide ions in water.
C. produces many hydrogen ions in water.
D. dissociates very little in water.

44. A weak base will accept many hydrogen ions.
True False

45. The lower the pH,
A. the lesser the hydrogen ion concentration.
B. the more acidic the solution.
C. the lesser the hydrogen ion concentration and the more acidic the solution.
D. the greater the hydroxide ion concentration.
E. the more basic the solution and the greater the hydroxide ion concentration.

46. The pH of the blood is slightly basic. Which of the following describes this pH?
A. 6.4
B. 12.6
C. 4.7
D. 7.4

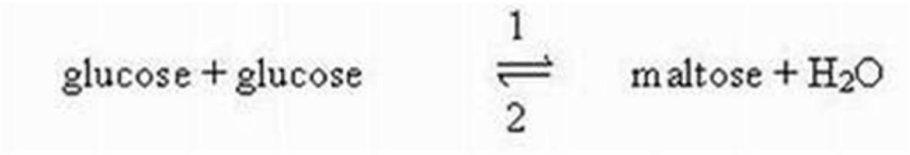
47. A pH of 5.5 would be considered
A. acidic.
B. basic.
C. neutral.

48. A pH of 7.0 would be considered
A. acidic.
B. basic.
C. neutral.

49. Chemicals that help keep body fluids within a normal pH range are called
A. acids.
B. bases.
C. buffers.
D. salts.

50. Organic compounds always contain _____ atoms.
A. water
B. carbon
C. nitrogen
D. oxygen

51. Which arrow in the following equation represents dehydration?



A. Arrow 1
B. Arrow 2

52. List the four macromolecules found in cells.

53. Which of the following is NOT a macromolecule group found in cells?
A. Proteins
B. Organic acids
C. Carbohydrates
D. Nucleic acids

54. The addition of water in an enzyme catalyzed reaction is a _____ reaction.
A. dehydration
B. hydrolysis
C. exchange
D. neutralization

55. The removal of a water molecule during a reaction results in
A. breaking a bond.
B. forming an acid.
C. hydrolysis.
D. forming a bond.

56. What monomer is NOT correctly matched with its macromolecule?
A. carbohydrates - glucose
B. lipids - glycerol and citric acids
C. proteins - amino acids
D. nucleic acids - nucleotides

57. The main monomer for carbohydrates is
A. sucrose.
B. nucleic acids.
C. glucose.
D. amino acids.

58. The subunit molecules for proteins are
A. atoms.
B. amino acids.
C. enzymes.
D. polymers.

59. The subunit building block of nucleic acids is the
A. monosaccharide.
B. nucleotide.
C. amino acid.
D. fatty acid.

60. The main function of carbohydrates is to provide
A. cellular energy.
B. insulation.
C. transport molecules.
D. hereditary information.

61. A monosaccharide of five carbons is a
A. hexose sugar.
B. glycerol.
C. fatty acid.
D. pentose sugar.

62. Which of the following is NOT a monosaccharide?
A. Glucose
B. Fructose
C. Sucrose
D. Galactose

63. Which of the following is NOT a disaccharide?
A. Maltose
B. Galactose
C. Lactose
D. Sucrose

64. Glycogen is
A. a monosaccharide used for quick energy.
B. a protein found in cell membranes.
C. a polysaccharide used as stored energy in animals.
D. a fat found in margarine.

65. Which of the following is the main component of fiber in our diet?
A. Glycogen
B. Protein
C. Cellulose
D. Starch

66. Which of the following contains glucose?
A. Protein
B. Fat
C. Nucleic acid
D. Starch

67. If you need quick energy, would you eat foods high in carbohydrates, fats, or proteins? Why?

68. Organic compounds that are always insoluble in water are called
A. sugars.
B. lipids.
C. nucleotides.
D. proteins.

69. Which of the following is NOT a function of lipids?
A. Long-term energy storage
B. Formation of antibodies
C. Formation of cell membranes
D. Formation of sex hormones

70. The process that allows fats to mix with water, particularly so digestion can occur is called
A. hydrolysis.
B. degradation.
C. dehydration.
D. emulsification.

71. Triglycerides are composed of glycerol and three fatty acids. When the fatty acids contain one or more double bonds, the fat is considered
A. saturated.
B. unsaturated.
C. emulsified.
D. synthesized.

72. The lipid molecules that are the main component of cell membranes are
A. steroids.
B. triglycerides.
C. phospholipids.
D. prostaglandins.

73. Steroids differ in structure from other lipids in that they have a backbone of
A. four fused carbon rings.
B. branched chains of carbons.
C. saturated carbon chains.
D. unsaturated carbon chains.

74. Fats are usually liquid at room temperature and oils are solids.
True False

75. What makes a phospholipid different from a fat?
A. Fats are neutral while phospholipids are ionized.
B. Fats are solid while phospholiopids are liquid.
C. Fats are ionized while phospholipids are neutral.
D. Fats are basic while phospholipids are acidic.

76. Which of the following is NOT a function of proteins?
A. They form structural components such as collagen.
B. They form many hormones.
C. They form actin and myosin needed for muscular movement.
D. They form important energy molecules.

77. Which of the following is NOT a function of proteins?
A. They form enzymes to speed up reactions.
B. They form the backbone of cell membranes.
C. They form hemoglobin to transport oxygen in the blood.
D. They form antibodies to protect the body from disease.

78. How many different amino acids compose all human polypeptides (proteins)?
A. 10
B. 15
C. 20
D. 25

79. The sequence of amino acids makes up the _____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

80. The coiling or folding of a polypeptide chain is the _____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

81. The coiling and folding of a polypeptide chain into a more circular molecule is the ____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

82. If a protein has more than one polypeptide arranged together, this is the ____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

83. The differences between one polypeptide and another lies in
A. the type of peptide bond they contain.
B. the type of sugar they contain.
C. whether they are saturated or not.
D. the sequence of amino acids.

84. Any process that causes an irreversible change in the shape of a protein is called
A. denaturation.
B. emulsification.
C. hydrolysis.
D. degradation.

85. What is the role of an enzyme in a chemical reaction?
A. Raises the energy of activation
B. Raises the temperature of the reaction
C. Lowers the energy of activation
D. Lowers the temperature of the reaction

86. Enzymes are destroyed after being used in a reaction.
True False

87. The area of an enzyme that interacts with the substrate is the catalyst site.
True False

88. What role can inorganic metals such as iron or zinc have in a reaction?
A. A catalyst
B. A coenzyme
C. A substrate
D. A cofactor

89. Very small protein molecules that seem to be disease causing agents are called
A. viruses.
B. bacteria.
C. flukes.
D. prions.

90. The sum of all the chemical reactions that occur in a cell is
A. emulsification.
B. metabolism.
C. denaturation.
D. synthesis.

91. In the reactions that occur in metabolism, enzymes function as
A. amino acids.
B. lipids.
C. catalysts.
D. compounds.

92. What role do some vitamins play in chemical reactions?
A. As a coenzyme
B. As a substrate
C. As an enzyme
D. As energy

93. Which of the following types of reactions involves the production of a larger product by combining smaller reactants?
A. Degradation
B. Replacement
C. Synthesis
D. Decomposition

94. Explain how enzymes are essential to the body's homeostasis.

95. A hydrolysis reaction is an example of which reaction type?
A. Decomposition
B. Synthesis
C. Replacement
D. Neutralization

96. Enzyme action is very specific due to the shapes of the enzyme and substrate.
True False

97. The most important thing about protein function is the three-dimensional shape of the protein.
True False

98. Which of the following is a nucleic acid?
A. DNA
B. RNA
C. Both DNA and RNA
D. None apply.

99. Which of the following is NOT an instruction found in genes?
A. How to join amino acids to make proteins.
B. How to replicate DNA.
C. How to break down complex carbohydrates.
D. How to make RNA.

100. Which of the following is NOT a component of a nucleotide?
A. Pentose sugar
B. Phosphate group
C. Glucose
D. Nitrogen-containing base

101. Which of the following is NOT a nitrogen base found in DNA?
A. Uracil
B. Adenine
C. Guanine
D. Cytosine

102. The backbone or sides of a DNA helix consists of
A. nitrogen base pairs.
B. sugar-phosphate chain.
C. adenine-ribose chain.
D. glucose-phosphate chain.

103. The shape of the DNA molecule is a(n)
A. single strand.
B. globule.
C. double helix.
D. inverted T.

104. The rungs of the DNA ladder are composed of
A. nitrogen base pairs.
B. sugar-phosphate chain.
C. adenine-ribose chain.
D. glucose-phosphate chain.

105. In the DNA molecule, the complementary base pair of adenine is always
A. uracil.
B. cytosine.
C. thymine.
D. guanine.

106. In the DNA molecule, the complementary base pair of cytosine is always
A. uracil.
B. guanine.
C. adenine.
D. thymine.

107. A three base sequence on DNA and therefore RNA codes for a(n)
A. glucose.
B. fatty acid.
C. amino acid.
D. steroid.

108. Which of the following is NOT true of RNA?
A. It is single-stranded
B. It has uracil instead of thymine
C. It has ribose sugar
D. It contains the blueprint for assembling a protein

109. Which of the following contains high-energy phosphate bonds?
A. DNA
B. Glycogen
C. RNA
D. ATP

110. Which of the following molecules is the primary energy carrier in cells?
A. DNA
B. ATP
C. RNA
D. GNA

111. What is the main molecule that provides the energy to produce ATP?
A. Phosphate
B. Glucose
C. RNA
D. Uracil

112. Explain the structure and function of ATP.

Chapter 02 Chemistry of Life Key

1. The smallest unit of matter is the
A. molecule.
B. atom.
C. compound.
D. isotope.

Bloom's Level: 1. Remember
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.
HAPS Objective: C.01.01c 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 Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.01
Section: 02.01
Topic: Chemistry

2. An element is any substance that contains one type of
A. molecule.
B. isotope.
C. atom.
D. proton.

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3. The positively charged particles in the nucleus of an atom are
A. neutrons.
B. electrons.
C. protons.
D. isotopes.

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4. The atomic mass of a proton is
A. 0 atomic mass units.
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5. Which of the following subatomic particles are found in the nucleus of an atom?
A. Protons and electrons
B. Electrons and neutrons
C. Protons and shells
D. Neutrons and protons

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6. The number of protons in an atom is called the
A. atomic number.
B. atomic weight.
C. mass number.
D. combining weight.

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9. Atoms with more than one shell are most stable when the outermost shell contains _____ electrons.
A. 10
B. 1
C. 8
D. 6

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10. Different forms of the same element with different numbers of neutrons are called
A. molecules.
B. compounds.
C. isotopes.
D. lattices.

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11. Exactly 6.02×10^{23} atoms of any element is called 1 ____ of that element.
A. atomic mass unit
B. isotope
C. mole
D. mouse

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12. Over 90% of the body is composed of four elements: carbon, nitrogen, chlorine, and hydrogen.
FALSE

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13. The number of electrons in the outermost shell of an atom will determine the chemical activity of the atom.
TRUE

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14. Phosphorus has an atomic number of 15 and a mass number of 31. How many protons, neutrons, and electrons does an atom of the element phosphorus have?

Phosphorus has 15 protons, 16 neutrons, and 15 electrons.

Bloom's Level: 3. Apply
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.
HAPS Objective: C.01.01c 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 Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.01
Section: 02.01
Topic: Chemistry

15. Describe each of the three subatomic particles with regard to charge, weight, and location in an atom.

Protons are positively charged particles with a weight of one atomic mass unit that are located in the nucleus of an atom. Neutrons are uncharged particles with a weight of one atomic mass unit that are also found in the nucleus of an atom. Electrons are negatively charged particles with no appreciable weight that are located in the electron shells that surround the nucleus of an atom.

Bloom's Level: 2. Understand
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.
HAPS Objective: C.01.01c 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 Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.01
Section: 02.01
Topic: Chemistry

16. If the atomic number of an element is 9 and the mass number is 19, how many neutrons does the atom have?

A. 10
B. 9
C. 19
D. 28

Bloom's Level: 3. Apply
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.
HAPS Objective: C.01.01c 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 Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.01
Section: 02.01
Topic: Chemistry

17. If the atomic number of an element is 27 and the mass number is 60, how many neutrons does the atom have?

A. 27
B. 33
C. 87
D. 60

Bloom's Level: 3. Apply
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.
HAPS Objective: C.01.01c 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 Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
Learning Outcome: 02.01
Section: 02.01
Topic: Chemistry

18. Low levels of radiation are commonly used to
A. sterilize dental products.
B. destroy cancer cells.
C. produce images of body parts.
D. All apply.

Bloom's Level: 1. Remember
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.02
Section: 02.01
Topic: Chemistry

19. What makes an isotope radioactive?
A. It has more protons than electrons.
B. It releases energy to become stable.
C. It releases hydrogen ions into solution.
D. It breaks down into hydrogen and electrons.

Bloom's Level: 2. Understand
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.02
Section: 02.01
Topic: Chemistry

20. All radioactive isotopes are very dangerous and have no practical, safe uses.
FALSE

Some radioactive isotopes are very dangerous and have no practical, safe uses.

Bloom's Level: 2. Understand
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.02
Section: 02.01
Topic: Chemistry

21. High levels of radiation are NOT used
A. to sterilize medical equipment.
B. to kill cancer cells.
C. as tracers to detect molecular changes.
D. to sterilize from anthrax.

Bloom's Level: 1. Remember
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.
Learning Outcome: 02.02
Section: 02.01
Topic: Chemistry

22. Atoms bonded together to form a chemical unit are called
A. molecules.
B. ions.
C. radioisotopes.
D. buffers.

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

23. A molecule made of two or more different atoms bonded together is called a(n)
A. ion.
B. isotope.
C. atom.
D. compound.

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

24. An atom or group of atoms with a charge is called a(n)
A. molecule.
B. isotope.
C. compound.
D. ion.

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

25. An ion is an atom or molecule that
A. is in a gaseous state.
B. carries an electrical charge.
C. is attracted to a north-seeking pole.
D. forms a visible glow.

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

26. A bond created from the attraction between positively and negatively charged ions is a(n) _____ bond.
A. covalent
B. hydrogen
C. ionic
D. metallic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

27. A bond created from the sharing of electrons between two atoms is a(n) _____ bond.
A. covalent
B. hydrogen
C. ionic
D. metallic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

28. Molecules form from
A. the shape of the individual atoms.
B. the attraction between electrons.
C. the sharing of electrons.
D. a drive toward solubility.

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

29. When two pairs of electrons are shared between two atoms a _____ bond is formed.
A. single covalent
B. double covalent
C. triple covalent
D. double ionic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

30. When one atom has a stronger attraction for shared electrons in a bond than the other atom, a(n) _____ covalent bond is formed.
A. polar
B. nonpolar
C. ionic
D. metallic

Bloom's Level: 1. Remember
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

31. Explain the difference between an ionic bond and a covalent bond.

An ionic bond is formed when oppositely charged ions are attracted to one another; a covalent bond is formed when atoms share electrons.

Bloom's Level: 2. Understand
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds
Learning Outcome: 02.03
Section: 02.01
Topic: Chemistry

32. The attraction between a slightly positive hydrogen to a slightly negative oxygen of another molecule describes a(n) _____ bond.

A. hydrogen
B. oxygen
C. nitrogen
D. ionic

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

33. The most abundant molecule in living organisms is

A. water.
B. glucose.
C. oxygen.
D. ammonia.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

34. Which of the following is NOT a property of water?
A. High heat capacity
B. Low heat of vaporization
C. Solvent for polar and ionic compounds
D. Cohesiveness

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

35. Which of the following is NOT a property of water?
A. The ability to cling to other water molecules, yet flow.
B. The ability to facilitate chemical reactions.
C. The ability to insulate the body from temperature extremes.
D. The ability to dissolve nonpolar, hydrophobic molecules.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

36. Substances that are water-loving are called
A. hydrophilic.
B. hydrophobic.
C. hydrophoric.
D. hydrochromic.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

37. The ability of water molecules to cling to each other is _____, while the ability to cling to other surfaces is _____.

A. cohesion; adhesion
B. dissolving; vaporization
C. adhesion; cohesion
D. cohesion; dissolving

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

38. The ability of water to absorb large amounts of heat energy without changing its temperature is a

A. low specific heat capacity.
B. low heat of vaporization.
C. high specific heat capacity.
D. high heat of vaporization.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

39. Compounds that form ions when put into water are called

A. mixtures.
B. solvents.
C. electrolytes.
D. suspensions.

Bloom's Level: 1. Remember
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

40. Explain how hydrogen bonding contributes to the characteristics of the water molecule.

Hydrogen bonding occurs between the negative (oxygen) and positive (hydrogen) sides of adjacent water molecules. Hydrogen bonding makes water molecules cohesive so water does not boil or freeze easily. Hydrogen bonding between water molecules and ions also makes water a powerful solvent.

Bloom's Level: 2. Understand
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.
Learning Outcome: 02.04
Section: 02.02
Topic: Chemistry

41. A substance that dissociates in water, releasing hydrogen ions is a(n)
A. salt.
B. base.
C. protein.
D. acid.

Bloom's Level: 1. Remember
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Chemistry

42. A substance that can take up hydrogen ions or release hydroxide ions in water is a(n)
A. salt.
B. base.
C. protein.
D. acid.

Bloom's Level: 1. Remember
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Chemistry

43. Hydrochloric acid is considered a strong acid because it
A. produces very few hydrogen ions in water.
B. produces many hydroxide ions in water.
C. produces many hydrogen ions in water.
D. dissociates very little in water.

Bloom's Level: 2. Understand
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Chemistry

44. A weak base will accept many hydrogen ions.
FALSE

A strong base will accept many hydrogen ions.

Bloom's Level: 2. Understand
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.
Learning Outcome: 02.05
Section: 02.02
Topic: Chemistry

45. The lower the pH,
A. the lesser the hydrogen ion concentration.
B. the more acidic the solution.
C. the lesser the hydrogen ion concentration and the more acidic the solution.
D. the greater the hydroxide ion concentration.
E. the more basic the solution and the greater the hydroxide ion concentration.

Bloom's Level: 2. Understand
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Chemistry

46. The pH of the blood is slightly basic. Which of the following describes this pH?
A. 6.4
B. 12.6
C. 4.7
D. 7.4

Bloom's Level: 2. Understand
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Chemistry

47. A pH of 5.5 would be considered
A. acidic.
B. basic.
C. neutral.

Bloom's Level: 2. Understand
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Chemistry

48. A pH of 7.0 would be considered
A. acidic.
B. basic.
C. neutral.

Bloom's Level: 1. Remember
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Chemistry

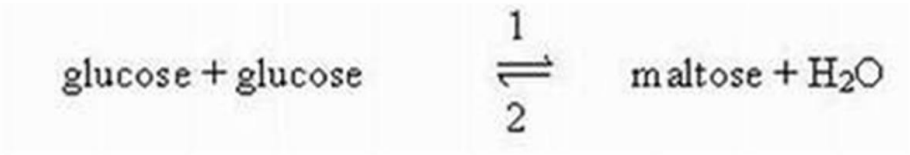
49. Chemicals that help keep body fluids within a normal pH range are called
A. acids.
B. bases.
C. buffers.
D. salts.

Bloom's Level: 1. Remember
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.
Learning Outcome: 02.06
Section: 02.02
Topic: Chemistry

50. Organic compounds always contain _____ atoms.
A. water
B. carbon
C. nitrogen
D. oxygen

Bloom's Level: 1. Remember
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
HAPS Objective: C.04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Chemistry

51. Which arrow in the following equation represents dehydration?



A. Arrow 1
B. Arrow 2

Bloom's Level: 2. Understand
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
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HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Chemistry

52. List the four macromolecules found in cells.

Carbohydrates, lipids, proteins, and nucleic acids

Bloom's Level: 1. Remember
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
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HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Chemistry

53. Which of the following is NOT a macromolecule group found in cells?
A. Proteins
B. Organic acids
C. Carbohydrates
D. Nucleic acids

Bloom's Level: 1. Remember
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
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HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
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HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Chemistry

54. The addition of water in an enzyme catalyzed reaction is a _____ reaction.
A. dehydration
B. hydrolysis
C. exchange
D. neutralization

Bloom's Level: 2. Understand
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
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HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Chemistry

55. The removal of a water molecule during a reaction results in
A. breaking a bond.
B. forming an acid.
C. hydrolysis.
D. forming a bond.

Bloom's Level: 2. Understand
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
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HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
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HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.
Learning Outcome: 02.07
Section: 02.03
Topic: Chemistry

56. What monomer is NOT correctly matched with its macromolecule?
A. carbohydrates - glucose
B. lipids - glycerol and citric acids
C. proteins - amino acids
D. nucleic acids - nucleotides

Bloom's Level: 1. Remember
HAPS Objective: C.04.01 Define the term organic molecule.
Learning Outcome: 02.08
Section: 02.03
Topic: Chemistry

57. The main monomer for carbohydrates is
A. sucrose.
B. nucleic acids.
C. glucose.
D. amino acids.

Bloom's Level: 1. Remember
HAPS Objective: C.04.01 Define the term organic molecule.
Learning Outcome: 02.08
Section: 02.03
Topic: Chemistry

58. The subunit molecules for proteins are
A. atoms.
B. amino acids.
C. enzymes.
D. polymers.

Bloom's Level: 1. Remember
HAPS Objective: C.04.01 Define the term organic molecule.
Learning Outcome: 02.08
Section: 02.03
Topic: Chemistry

59. The subunit building block of nucleic acids is the
A. monosaccharide.
B. nucleotide.
C. amino acid.
D. fatty acid.

Bloom's Level: 1. Remember
HAPS Objective: C.04.01 Define the term organic molecule.
Learning Outcome: 02.08
Section: 02.03
Topic: Chemistry

60. The main function of carbohydrates is to provide
A. cellular energy.
B. insulation.
C. transport molecules.
D. hereditary information.

Bloom's Level: 1. Remember
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HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

61. A monosaccharide of five carbons is a
A. hexose sugar.
B. glycerol.
C. fatty acid.
D. pentose sugar.

Bloom's Level: 1. Remember
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

62. Which of the following is NOT a monosaccharide?
A. Glucose
B. Fructose
C. Sucrose
D. Galactose

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

63. Which of the following is NOT a disaccharide?
A. Maltose
B. Galactose
C. Lactose
D. Sucrose

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

64. Glycogen is
A. a monosaccharide used for quick energy.
B. a protein found in cell membranes.
C. a polysaccharide used as stored energy in animals.
D. a fat found in margarine.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

65. Which of the following is the main component of fiber in our diet?
A. Glycogen
B. Protein
C. Cellulose
D. Starch

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

66. Which of the following contains glucose?
A. Protein
B. Fat
C. Nucleic acid
D. Starch

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

67. If you need quick energy, would you eat foods high in carbohydrates, fats, or proteins? Why?

Carbohydrates. They are the quickest and most readily available energy source for the body.

Bloom's Level: 2. Understand
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.09
Section: 02.04
Topic: Chemistry

68. Organic compounds that are always insoluble in water are called
A. sugars.
B. lipids.
C. nucleotides.
D. proteins.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

69. Which of the following is NOT a function of lipids?
A. Long-term energy storage
B. Formation of antibodies
C. Formation of cell membranes
D. Formation of sex hormones

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

70. The process that allows fats to mix with water, particularly so digestion can occur is called
A. hydrolysis.
B. degradation.
C. dehydration.
D. emulsification.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

71. Triglycerides are composed of glycerol and three fatty acids. When the fatty acids contain one or more double bonds, the fat is considered
A. saturated.
B. unsaturated.
C. emulsified.
D. synthesized.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

72. The lipid molecules that are the main component of cell membranes are
A. steroids.
B. triglycerides.
C. phospholipids.
D. prostaglandins.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

73. Steroids differ in structure from other lipids in that they have a backbone of
A. four fused carbon rings.
B. branched chains of carbons.
C. saturated carbon chains.
D. unsaturated carbon chains.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

74. Fats are usually liquid at room temperature and oils are solids.
FALSE

Fats are usually solid at room temperature and oils are liquid.

Bloom's Level: 1. Remember
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

75. What makes a phospholipid different from a fat?
A. Fats are neutral while phospholipids are ionized.
B. Fats are solid while phospholiopids are liquid.
C. Fats are ionized while phospholipids are neutral.
D. Fats are basic while phospholipids are acidic.

Bloom's Level: 2. Understand
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.10
Section: 02.05
Topic: Chemistry

76. Which of the following is NOT a function of proteins?
A. They form structural components such as collagen.
B. They form many hormones.
C. They form actin and myosin needed for muscular movement.
D. They form important energy molecules.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

77. Which of the following is NOT a function of proteins?
A. They form enzymes to speed up reactions.
B. They form the backbone of cell membranes.
C. They form hemoglobin to transport oxygen in the blood.
D. They form antibodies to protect the body from disease.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

78. How many different amino acids compose all human polypeptides (proteins)?
A. 10
B. 15
C. 20
D. 25

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

79. The sequence of amino acids makes up the _____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

80. The coiling or folding of a polypeptide chain is the _____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

81. The coiling and folding of a polypeptide chain into a more circular molecule is the ____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

82. If a protein has more than one polypeptide arranged together, this is the ____ structure of a protein.
A. primary
B. secondary
C. tertiary
D. quaternary

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

83. The differences between one polypeptide and another lies in
A. the type of peptide bond they contain.
B. the type of sugar they contain.
C. whether they are saturated or not.
D. the sequence of amino acids.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

84. Any process that causes an irreversible change in the shape of a protein is called
A. denaturation.
B. emulsification.
C. hydrolysis.
D. degradation.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

85. What is the role of an enzyme in a chemical reaction?
A. Raises the energy of activation
B. Raises the temperature of the reaction
C. Lowers the energy of activation
D. Lowers the temperature of the reaction

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

86. Enzymes are destroyed after being used in a reaction.
FALSE

Enzymes are recovered from a reaction to be used again.

Bloom's Level: 2. Understand
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

87. The area of an enzyme that interacts with the substrate is the catalyst site.
FALSE

The area of an enzyme that interacts with the substrate is the active site.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

88. What role can inorganic metals such as iron or zinc have in a reaction?
A. A catalyst
B. A coenzyme
C. A substrate
D. A cofactor

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

89. Very small protein molecules that seem to be disease causing agents are called
A. viruses.
B. bacteria.
C. flukes.
D. prions.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

90. The sum of all the chemical reactions that occur in a cell is
A. emulsification.
B. metabolism.
C. denaturation.
D. synthesis.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

91. In the reactions that occur in metabolism, enzymes function as
A. amino acids.
B. lipids.
C. catalysts.
D. compounds.

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

92. What role do some vitamins play in chemical reactions?
A. As a coenzyme
B. As a substrate
C. As an enzyme
D. As energy

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

93. Which of the following types of reactions involves the production of a larger product by combining smaller reactants?
A. Degradation
B. Replacement
C. Synthesis
D. Decomposition

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

94. Explain how enzymes are essential to the body's homeostasis.

Enzymes are proteins that function as organic catalysts that speed up chemical reactions. They are necessary for the chemical working of the cells and the body.

Bloom's Level: 2. Understand
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

95. A hydrolysis reaction is an example of which reaction type?
A. Decomposition
B. Synthesis
C. Replacement
D. Neutralization

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

96. Enzyme action is very specific due to the shapes of the enzyme and substrate.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

97. The most important thing about protein function is the three-dimensional shape of the protein.
TRUE

Bloom's Level: 1. Remember
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.
Learning Outcome: 02.11
Section: 02.06
Topic: Chemistry

98. Which of the following is a nucleic acid?
A. DNA
B. RNA
C. Both DNA and RNA
D. None apply.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

99. Which of the following is NOT an instruction found in genes?
A. How to join amino acids to make proteins.
B. How to replicate DNA.
C. How to break down complex carbohydrates.
D. How to make RNA.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

100. Which of the following is NOT a component of a nucleotide?
A. Pentose sugar
B. Phosphate group
C. Glucose
D. Nitrogen-containing base

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

101. Which of the following is NOT a nitrogen base found in DNA?
A. Uracil
B. Adenine
C. Guanine
D. Cytosine

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

102. The backbone or sides of a DNA helix consists of
A. nitrogen base pairs.
B. sugar-phosphate chain.
C. adenine-ribose chain.
D. glucose-phosphate chain.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

103. The shape of the DNA molecule is a(n)
A. single strand.
B. globule.
C. double helix.
D. inverted T.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

104. The rungs of the DNA ladder are composed of
A. nitrogen base pairs.
B. sugar-phosphate chain.
C. adenine-ribose chain.
D. glucose-phosphate chain.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

105. In the DNA molecule, the complementary base pair of adenine is always
A. uracil.
B. cytosine.
C. thymine.
D. guanine.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

106. In the DNA molecule, the complementary base pair of cytosine is always
A. uracil.
B. guanine.
C. adenine.
D. thymine.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

107. A three base sequence on DNA and therefore RNA codes for a(n)
A. glucose.
B. fatty acid.
C. amino acid.
D. steroid.

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
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Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

108. Which of the following is NOT true of RNA?
A. It is single-stranded
B. It has uracil instead of thymine
C. It has ribose sugar
D. It contains the blueprint for assembling a protein

Bloom's Level: 1. Remember
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.
Learning Outcome: 02.12
Section: 02.07
Topic: Chemistry

109. Which of the following contains high-energy phosphate bonds?
A. DNA
B. Glycogen
C. RNA
D. ATP

Bloom's Level: 1. Remember
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
Learning Outcome: 02.13
Section: 02.07
Topic: Chemistry

110. Which of the following molecules is the primary energy carrier in cells?
A. DNA
B. ATP
C. RNA
D. GNA

Bloom's Level: 1. Remember
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
Learning Outcome: 02.13
Section: 02.07
Topic: Chemistry

111. What is the main molecule that provides the energy to produce ATP?
A. Phosphate
B. Glucose
C. RNA
D. Uracil

Bloom's Level: 1. Remember
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
Learning Outcome: 02.13
Section: 02.07
Topic: Chemistry

112. Explain the structure and function of ATP.

ATP is composed of the base adenine, the sugar ribose, and three phosphate groups and is used in body cells to fuel reactions, active transport, nerve impulse conduction, and muscle contraction.

Bloom's Level: 2. Understand
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.
Learning Outcome: 02.13
Section: 02.07
Topic: Chemistry

Chapter 02 Chemistry of Life Summary

Category	*# of Questions*
Bloom's Level: 1. Remember	91
Bloom's Level: 2. Understand	18
Bloom's Level: 3. Apply	3
HAPS Objective: C.01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons with respect to the structure of an atom	17
HAPS Objective: C.01.01b Relate the number of electrons in an electron shell to an atoms chemical stability and its ability to form chemical bonds.	17
HAPS Objective: C.01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles with respect to the structure of an atom	17
HAPS Objective: C.01.01d Distinguish among the terms atomic number, mass number and atomic weight with respect to the structure of an atom	17
HAPS Objective: C.01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes	17
HAPS Objective: C.01.03 Compare and contrast the terms atoms, molecules, elements, and compounds.	4
HAPS Objective: C.02.01a List each type of bond in order by relative strength With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds:	10
HAPS Objective: C.02.01b Explain the mechanism of each type of bond With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds	10
HAPS Objective: C.02.01c Provide biologically significant examples of each With respect to non-polar covalent, polar covalent, ionic, and hydrogen bonds	10
HAPS Objective: C.03.01 Discuss the physiologically important properties of water.	9
HAPS Objective: C.03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion.	9
HAPS Objective: C.03.03 Define the term salt and give examples of physiological significance.	9
HAPS Objective: C.03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance.	4
HAPS Objective: C.03.05 State acidic, neutral, and alkaline pH values.	5
HAPS Objective: C.04.01 Define the term organic molecule.	5
HAPS Objective: C.04.02 Explain the relationship between monomers and polymers.	7
HAPS Objective: C.04.03 Define and give examples of dehydration synthesis and hydrolysis reactions.	6
HAPS Objective: C.04.04a Identify the monomers and polymers With respect to carbohydrates, proteins, lipids and, nucleic acids	22
HAPS Objective: C.04.04b Compare and contrast general molecular structure With respect to carbohydrates, proteins, lipids and, nucleic acids	22
HAPS Objective: C.04.04c Provide specific examples With respect to carbohydrates, proteins, lipids and, nucleic acids	22
HAPS Objective: C.04.04d Identify dietary sources With respect to carbohydrates, proteins, lipids and, nucleic acids	22
HAPS Objective: C.04.04e Discuss physiological and structural roles in the human body With respect to carbohydrates, proteins, lipids and, nucleic acids	22
HAPS Objective: C.04.05 Describe the four levels of protein structure and discuss the importance of protein shape for protein function.	22
HAPS Objective: C.04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme-catalyzed reactions.	6
HAPS Objective: C.05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell.	4
HAPS Objective: C.07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.	8
HAPS Objective: C.07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.	8
HAPS Objective: C.07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.	22
HAPS Objective: C.10.01 Define the terms genetic code, transcription and translation.	11
HAPS Objective: C.10.02 Explain how and why RNA is synthesized.	11
HAPS Objective: C.10.03 Explain the roles of tRNA, mRNA, and rRNA in protein synthesis.	11

Learning Outcome: 02.01	17
Learning Outcome: 02.02	4
Learning Outcome: 02.03	10
Learning Outcome: 02.04	9
Learning Outcome: 02.05	4
Learning Outcome: 02.06	5
Learning Outcome: 02.07	6
Learning Outcome: 02.08	4
Learning Outcome: 02.09	8
Learning Outcome: 02.10	8
Learning Outcome: 02.11	22
Learning Outcome: 02.12	11
Learning Outcome: 02.13	4
Section: 02.01	31
Section: 02.02	18
Section: 02.03	10
Section: 02.04	8
Section: 02.05	8
Section: 02.06	22
Section: 02.07	15
Topic: Chemistry	112