Chapter 02
Life, Matter, and Energy

Multiple Choice Questions

1. *(p. 33)* The most abundant element in the human body, by weight, is
A. hydrogen.
B. oxygen.
C. calcium.
D. nitrogen.
E. carbon.

Blooms Level: 1. Remember
Learning Outcome: 02.1a Recognize elements of the human body from their chemical symbols.
Section: 02.01
Topic: Life, Matter, and Energy

2. *(p. 33)* Sodium has an atomic number of 11 and an atomic mass of 23. Sodium has
A. 12 neutrons and 11 protons.
B. 12 protons and 11 neutrons.
C. 12 electrons and 11 neutrons.
D. 12 protons and 11 electrons.
E. 12 electrons and 11 protons.

Blooms Level: 3. Apply
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons
HAPS Topic: Module C01 Atoms & molecules
Learning Outcome: 02.1a Recognize elements of the human body from their chemical symbols.
Section: 02.01
Topic: Life, Matter, and Energy

3. *(p. 33)* _____ account for 98.5% of the body's weight.
A. Carbon, oxygen, hydrogen, sodium, potassium, and chlorine
B. Carbon, oxygen, iron, sodium, potassium, and chlorine
C. Carbon, nitrogen, hydrogen, sodium, potassium, and chlorine
D. Carbon, oxygen, hydrogen, nitrogen, sodium, and potassium
E. Carbon, oxygen, hydrogen, nitrogen, calcium, and phosphorus

Blooms Level: 1. Remember
Learning Outcome: 02.1a Recognize elements of the human body from their chemical symbols.
Section: 02.01
Topic: Life, Matter, and Energy

True / False Questions

4. *(p. 36)* Molecules composed of two or more atoms are called compounds.
FALSE

Blooms Level: 3. Apply
HAPS Objective: C01.03 Compare and contrast the terms atoms, molecules, elements, and compounds
HAPS Topic: Module C01 Atoms & molecules
Learning Outcome: 02.1b Distinguish between chemical elements and compounds.
Section: 02.01
Topic: Life, Matter, and Energy

5. *(p. 32)* Potassium, sodium, and chlorine are trace elements.
FALSE

Blooms Level: 1. Remember
Learning Outcome: 02.1a Recognize elements of the human body from their chemical symbols.
Section: 02.01
Topic: Life, Matter, and Energy

Multiple Choice Questions

6. *(p. 32)* The chemical bonding properties of an atom are determined by its
A. protons.
B. electrons.
C. neutrons.
D. protons and neutrons.
E. particles.

Blooms Level: 3. Apply
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons
HAPS Topic: Module C01 Atoms & molecules
Learning Outcome: 02.1b Distinguish between chemical elements and compounds.
Section: 02.01
Topic: Life, Matter, and Energy

7. *(p. 36)* Sodium, which has an atomic number of 11, will react with chlorine, which has an atomic number of 17. When these two atoms react, both become stable. To become stable, sodium will _____, while chlorine will _____.
A. accept one electron; give up one electron
B. give up one proton; accept one proton
C. share one electron with chlorine; share one electron with sodium
D. become an anion; become a cation
E. give up one electron; accept one electron

Blooms Level: 3. Apply
HAPS Objective: C02.01b Explain the mechanism of each type of bond
HAPS Topic: Module C02 Chemical bonding
Learning Outcome: 02.1f Define the types of chemical bonds.
Section: 02.01
Topic: Life, Matter, and Energy

8. *(p. 33)* Consider oxygen, which has an atomic number of 8 and an atomic mass of 16. How many valence electrons does it have?
A. 2
B. 4
C. 6
D. 8
E. 16

Blooms Level: 5. Evaluate
HAPS Objective: C01.01a Describe the charge, mass, and relative location of electrons, protons and neutrons
HAPS Topic: Module C01 Atoms & molecules
Learning Outcome: 02.1b Distinguish between chemical elements and compounds.
Section: 02.01
Topic: Life, Matter, and Energy

True / False Questions

9. *(p. 33)* Minerals are organic elements extracted from the soil by plants.
FALSE

Blooms Level: 1. Remember
HAPS Objective: O01.01e List the important dietary minerals and describe the major uses of each mineral in the body
HAPS Topic: Module O01 Nutrition
Learning Outcome: 02.1c State the functions of minerals in the body.
Section: 02.01
Topic: Life, Matter, and Energy

10. *(p. 34)* Hydrogen, deuterium, and tritium are three isotopes of hydrogen.
TRUE

Blooms Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
HAPS Topic: Module C01 Atoms & molecules
Learning Outcome: 02.1d Explain the basis for radioactivity and the types and hazards of ionizing radiation.
Section: 02.01
Topic: Life, Matter, and Energy

Multiple Choice Questions

11. *(p. 34)* Varieties of elements called _____ differ from one another only in number of neutrons, and therefore differ in atomic mass.
A. cations
B. anions
C. isotopes
D. electrolytes
E. free radicals

Blooms Level: 1. Remember
HAPS Objective: C01.02 Compare and contrast the terms ions, electrolytes, free radicals, isotopes and radioisotopes
HAPS Topic: Module C01 Atoms & molecules
Learning Outcome: 02.1d Explain the basis for radioactivity and the types and hazards of ionizing radiation.
Section: 02.01
Topic: Life, Matter, and Energy

Check All That Apply Questions

12. *(p. 34)* Which of these is a cation? Check all that apply.
_____ O_2
__X__ K^+
__X__ Na^+
__X__ Ca^{2+}
_____ Cl^-

Blooms Level: 2. Understand
HAPS Objective: C01.01c Explain how ions and isotopes are produced by changing the relative number of specific subatomic particles
HAPS Topic: Module C01 Atoms & molecules
Learning Outcome: 02.1e Distinguish between ions, electrolytes, and free radicals.
Section: 02.01
Topic: Life, Matter, and Energy

True / False Questions

13. *(p. 36)* Ionic bonds break apart in water more easily than covalent bonds.
TRUE

Blooms Level: 2. Understand
HAPS Objective: C02.01b Explain the mechanism of each type of bond
HAPS Topic: Module C02 Chemical bonding
Learning Outcome: 02.1f Define the types of chemical bonds.
Section: 02.01
Topic: Life, Matter, and Energy

Multiple Choice Questions

14. *(p. 36)* Oxygen has an atomic number of eight. When two oxygen atoms come together, they form a(n) _____ bond.
A. hydrogen
B. nonpolar covalent
C. polar covalent
D. ionic
E. Van der Waals

Blooms Level: 3. Apply
HAPS Objective: C02.01b Explain the mechanism of each type of bond
HAPS Topic: Module C02 Chemical bonding
Learning Outcome: 02.1f Define the types of chemical bonds.
Section: 02.01
Topic: Life, Matter, and Energy

15. *(p. 36)* When table salt, sodium chloride (NaCl), is placed in water
A. Na^+ and Cl^- form ionic bonds with each other.
B. Na^+ and Cl^- form polar covalent bonds with each other.
C. Na^+ and Cl^- form hydrogen bonds with water.
D. ionic bonds between Na^+ and Cl^- are broken.
E. Na^+ and Cl^- become separated by their Van der Waals forces.

Blooms Level: 3. Apply
HAPS Objective: C02.01b Explain the mechanism of each type of bond
HAPS Topic: Module C02 Chemical bonding
Learning Outcome: 02.1f Define the types of chemical bonds.
Section: 02.01
Topic: Life, Matter, and Energy

16. *(p. 34)* The bonding properties of an atom are determined by its
A. electrons.
B. protons.
C. positrons.
D. neutrons.
E. photons.

Blooms Level: 2. Understand
HAPS Objective: C02.01b Explain the mechanism of each type of bond
HAPS Topic: Module C02 Chemical bonding
Learning Outcome: 02.1f Define the types of chemical bonds.
Section: 02.01
Topic: Life, Matter, and Energy

17. *(p. 36)* What type of bond attracts one water molecule to another?
A. An ionic bond
B. A peptide bond
C. A hydrogen bond
D. A covalent bond
E. A hydrolytic bond

Blooms Level: 1. Remember
HAPS Objective: C02.01b Explain the mechanism of each type of bond
HAPS Topic: Module C02 Chemical bonding
Learning Outcome: 02.1f Define the types of chemical bonds.
Section: 02.01
Topic: Life, Matter, and Energy

True / False Questions

18. *(p. 39)* The high heat capacity of water makes it a very ineffective coolant.
FALSE

Blooms Level: 2. Understand
HAPS Objective: C03.01 Discuss the physiologically important properties of water
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2a Describe the biologically important properties of water.
Section: 02.02
Topic: Life, Matter, and Energy

Multiple Choice Questions

19. *(p. 39)* When you jump off a high diving board into water, you notice the great resistance of water. This resistance is called _____ and is caused by water's great _____.
A. surface tension; adhesiveness
B. surface tension; cohesiveness
C. hydrophobic tension; adhesiveness
D. hydrophilic tension; cohesiveness
E. hydrophilic tension; adhesiveness

Blooms Level: 3. Apply
HAPS Objective: C03.01 Discuss the physiologically important properties of water
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2a Describe the biologically important properties of water.
Section: 02.02
Topic: Life, Matter, and Energy

20. *(p. 39)* Which of these is hydrophobic?
A. Sugar
B. K^+
C. Cl^-
D. Water
E. Fat

Blooms Level: 3. Apply
HAPS Objective: C03.01 Discuss the physiologically important properties of water
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2a Describe the biologically important properties of water.
Section: 02.02
Topic: Life, Matter, and Energy

True / False Questions

21. *(p. 40)* A solution is a mixture composed of two or more substances that are physically blended but not chemically combined.
TRUE

Blooms Level: 2. Understand
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2b Define mixture and distinguish between three types of mixtures
Section: 02.02
Topic: Life, Matter, and Energy

Multiple Choice Questions

22. *(p. 40)* Consider a mixture of blood, which contains sodium chloride, protein, and cells or formed elements. The sodium chloride is in a(n) _____, the protein is in a(n) _____, and the cells are in a _____.
A. emulsion; solution; suspension
B. solvent; emulsion; colloid
C. colloid; suspension; solution
D. suspension; colloid; solution
E. solution; colloid; suspension

Blooms Level: 3. Apply
HAPS Objective: C03.02 Distinguish among the terms solution, solute, solvent, colloid suspension, and emulsion
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2b Define mixture and distinguish between three types of mixtures
Section: 02.02
Topic: Life, Matter, and Energy

True / False Questions

23. *(p. 41)* Blood pH is approximately 7.4, which is slightly acidic.
FALSE

Blooms Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2c Define acid and base and interpret the pH scale.
Section: 02.02
Topic: Life, Matter, and Energy

Multiple Choice Questions

24. *(p. 41)* A solution with pH 4 has _____ the H^+ concentration of a solution with pH 8.
A. half
B. twice
C. 4 times
D. 10,000 times
E. 1/10,000

Blooms Level: 5. Evaluate
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2c Define acid and base and interpret the pH scale.
Section: 02.02
Topic: Life, Matter, and Energy

25. *(p. 41)* Which of these has the highest H^+ concentration?
A. Lemon juice, pH = 2.3
B. Red wine, pH = 3.2
C. Tomato juice, pH = 4.7
D. Saliva, pH = 6.6
E. Household ammonia, pH = 10.8

Blooms Level: 3. Apply
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2c Define acid and base and interpret the pH scale.
Section: 02.02
Topic: Life, Matter, and Energy

26. *(p. 41)* Blood has a pH ranging from 7.35 to 7.45. Slight deviations from this can cause major problems or even death. You are doing an intense workout, and your skeletal muscle cells are producing metabolic acids such as lactic acid. Your blood pH does not drop significantly in spite of the metabolic acids released into the blood. You maintain a constant blood pH because
A. metabolic acids are neutralized in muscle cells before being released into the blood.
B. metabolic bases are produced at the same rate by muscle cells to neutralize the acids.
C. the respiratory system removes excess H^+ from the blood before the pH is lowered.
D. the body contains chemicals called buffers that resist changes in pH.
E. endothelial cells secrete excess H^+ to prevent a decrease in pH.

Blooms Level: 5. Evaluate
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2c Define acid and base and interpret the pH scale.
Section: 02.02
Topic: Life, Matter, and Energy

27. *(p. 41)* A solution that resists a change in pH when acid or base is added to it is
A. a buffer.
B. a catalyst.
C. a reducing agent.
D. an oxidizing agent.
E. a colloid.

Blooms Level: 1. Remember
HAPS Objective: C03.04 Define the terms pH, acid, base, and buffer and give examples of physiological significance
HAPS Topic: Module C03 Inorganic compounds & solutions
Learning Outcome: 02.2c Define acid and base and interpret the pH scale.
Section: 02.02
Topic: Life, Matter, and Energy

28. *(p. 56)* The most relevant form of energy in human physiology is the energy stored in
A. electrolytes ionized in water.
B. free radicals with an odd number of electrons.
C. radioisotopes.
D. the chemical bonds of organic molecules.
E. Van der Waals forces.

Blooms Level: 3. Apply
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell
HAPS Topic: Module C05 Energy transfer using ATP
Learning Outcome: 02.3f Describe the structure, production, and function of ATP.
Section: 02.03
Topic: Life, Matter, and Energy

29. *(p. 58)* Any chemical reaction that removes electrons from an atom is called
A. reduction.
B. condensation.
C. hydrolysis.
D. anabolism.
E. oxidation.

Blooms Level: 1. Remember
HAPS Objective: O02.05 Describe the processes of oxidation, reduction, decarboxylation, and phosphorylation
HAPS Topic: Module O02 Introduction to metabolism
Learning Outcome: 02.4d Define oxidation and reduction and relate these to changes in the energy content of a molecule.
Section: 02.04
Topic: Life, Matter, and Energy

30. *(p. 55)* When ATP breaks down to ADP, potential energy stored in bonds is released. This energy stored in bonds is _____ energy.
A. electromagnetic
B. electrical
C. chemical
D. heat
E. kinetic

Blooms Level: 1. Remember
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell
HAPS Topic: Module C05 Energy transfer using ATP
Learning Outcome: 02.3f Describe the structure, production, and function of ATP.
Section: 02.03
Topic: Life, Matter, and Energy

31. *(p. 57)* Which of the following equations depicts an exchange reaction?
A. $AB \rightarrow A + B$
B. $A + B \rightarrow AB$
C. $AB + CD \rightarrow AC + BD$
D. $AB \rightarrow A^- + B^+$
E. $A + B \rightarrow AB \rightarrow C + D$

Blooms Level: 2. Understand
Learning Outcome: 02.4b List and define the fundamental types of chemical reactions.
Section: 02.04
Topic: Life, Matter, and Energy

True / False Questions

32. *(p. 57)* In an exchange reaction, covalent bonds are broken and new covalent bonds are formed.
TRUE

Blooms Level: 5. Evaluate
Learning Outcome: 02.4b List and define the fundamental types of chemical reactions.
Section: 02.04
Topic: Life, Matter, and Energy

33. *(p. 43)* The opposite of a dehydration synthesis is hydrolysis.
TRUE

Blooms Level: 1. Remember
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3a Discuss the relevance of polymers to biology and explain how they are formed and broken by dehydration synthesis and hydrolysis.
Section: 02.03
Topic: Life, Matter, and Energy

Multiple Choice Questions

34. *(p. 58)* Any chemical reaction in which an atom gains electrons is called
A. reduction.
B. condensation.
C. hydrolysis.
D. anabolism.
E. oxidation.

Blooms Level: 1. Remember
HAPS Objective: O02.05 Describe the processes of oxidation, reduction, decarboxylation, and phosphorylation
HAPS Topic: Module O02 Introduction to metabolism
Learning Outcome: 02.4d Define oxidation and reduction and relate these to changes in the energy content of a molecule.
Section: 02.04
Topic: Life, Matter, and Energy

35. *(p. 58)* The breakdown of glycogen (an energy-storage compound) is an example of a(n) _____ reaction.
A. exergonic
B. endergonic
C. exchange
D. synthesis
E. equilibrium

Blooms Level: 2. Understand
HAPS Objective: O02.01 Define metabolism, anabolism and catabolism
HAPS Topic: Module O02 Introduction to metabolism
Learning Outcome: 02.4c Define metabolism and its two subdivisions.
Section: 02.04
Topic: Life, Matter, and Energy

36. *(p. 58)* Digestive enzymes break down the starch in a potato into thousands of glucose molecules. This exemplifies a(n) _____ reaction.
A. synthesis
B. decomposition
C. exchange
D. anabolic
E. reductive

Blooms Level: 2. Understand
HAPS Objective: O02.01 Define metabolism, anabolism and catabolism
HAPS Topic: Module O02 Introduction to metabolism
Learning Outcome: 02.4c Define metabolism and its two subdivisions.
Section: 02.04
Topic: Life, Matter, and Energy

True / False Questions

37. *(p. 58)* All the chemical reactions in which larger molecules are broken down to smaller ones are called catabolic reactions.
TRUE

Blooms Level: 1. Remember
HAPS Objective: O02.01 Define metabolism, anabolism and catabolism
HAPS Topic: Module O02 Introduction to metabolism
Learning Outcome: 02.4c Define metabolism and its two subdivisions.
Section: 02.04
Topic: Life, Matter, and Energy

Multiple Choice Questions

38. *(p. 58)* Glucose is broken down in most of your cells to form carbon dioxide, oxygen, and the energy currency of the cell called ATP. This type of reaction is both _____ and _____.
A. anabolic; endergonic
B. catabolic; exergonic
C. anabolic; exergonic
D. catabolic; endergonic
E. anabolic; exothermic

Blooms Level: 3. Apply
HAPS Objective: O02.01 Define metabolism, anabolism and catabolism
HAPS Topic: Module O02 Introduction to metabolism
Learning Outcome: 02.4c Define metabolism and its two subdivisions.
Section: 02.04
Topic: Life, Matter, and Energy

39. *(p. 58)* Which of the following words includes all of the other terms?
A. Catabolism
B. Anabolism
C. Metabolism
D. Oxidative reactions
E. Reductive reactions

Blooms Level: 3. Apply
HAPS Objective: O02.01 Define metabolism, anabolism and catabolism
HAPS Topic: Module O02 Introduction to metabolism
Learning Outcome: 02.4c Define metabolism and its two subdivisions.
Section: 02.04
Topic: Life, Matter, and Energy

40. *(p. 43)* A _____ reaction converts a _____ to its monomers.
A. hydrolysis; polymer
B. dehydration synthesis; molecule
C. dehydration synthesis; polymer
D. polymer; molecule
E. condensation; reactant

Blooms Level: 3. Apply
HAPS Objective: C04.03 Define and give examples of dehydration synthesis and hydrolysis reactions
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3a Discuss the relevance of polymers to biology and explain how they are formed and broken by dehydration synthesis and hydrolysis.
Section: 02.03
Topic: Life, Matter, and Energy

41. *(p. 44)* _____ is a monosaccharide, whereas _____ is a polysaccharide.
A. Fructose; sucrose
B. Galactose; maltose
C. Lactose; glycogen
D. Glucose; starch
E. Cellulose; glucose

Blooms Level: 3. Apply
HAPS Objective: C04.04b Compare and contrast general molecular structure
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3c Describe or define the subclasses of each of those categories of biomolecules.
Section: 02.03
Topic: Life, Matter, and Energy

42. *(p. 44)* Which of the following is a disaccharide?
A. Galactose
B. Lactose
C. Glucose
D. Fructose
E. Amylose

Blooms Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples (of organic molecules)
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3c Describe or define the subclasses of each of those categories of biomolecules.
Section: 02.03
Topic: Life, Matter, and Energy

43. *(p. 44)* Table sugar is a disaccharide called _____ and is made up of the monomer(s) _____.
A. maltose; glucose
B. sucrose; glucose and fructose
C. lactose; glucose and galactose
D. glycogen; glucose
E. glucose; galactose and fructose

Blooms Level: 1. Remember
HAPS Objective: C04.04c Provide specific examples (of organic molecules)
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3c Describe or define the subclasses of each of those categories of biomolecules.
Section: 02.03
Topic: Life, Matter, and Energy

True / False Questions

44. *(p. 45)* Unsaturated fatty acids have as much hydrogen as they can carry.
FALSE

Blooms Level: 2. Understand
HAPS Objective: C04.04c Provide specific examples (of organic molecules)
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3c Describe or define the subclasses of each of those categories of biomolecules.
Section: 02.03
Topic: Life, Matter, and Energy

Multiple Choice Questions

45. *(p. 45)* Triglycerides are molecules consisting of one 3-carbon compound called _____ bound to three _____.
A. eicosanoid; fatty acids
B. steroid; glycerols
C. eicosanoid; steroid
D. glycerol; fatty acids
E. steroid; fatty acids

Blooms Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3b Describe the structural properties that distinguish carbohydrates, lipids, proteins, and nucleic acids from each other
Section: 02.03
Topic: Life, Matter, and Energy

True / False Questions

46. *(p. 49)* A dipeptide is a molecule with two peptide bonds.
FALSE

Blooms Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3c Describe or define the subclasses of each of those categories of biomolecules.
Section: 02.03
Topic: Life, Matter, and Energy

Multiple Choice Questions

47. *(p. 49)* Proteins can serve all of the following functions *except*
A. catalyze metabolic reactions.
B. give structural strength to cells and tissues.
C. produce muscular and other forms of movement.
D. regulate transport of solutes into and out of cells.
E. store hereditary information.

Blooms Level: 1. Remember
HAPS Objective: C04.04e Discuss physiological and structural roles in the human body
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3d Discuss the roles that each of these categories of molecules play in the body.
Section: 02.03
Topic: Life, Matter, and Energy

48. *(p. 51)* A drastic conformational change in proteins in response to conditions such as extreme heat or pH will lead to loss of a protein's function. This drastic change in three-dimensional shape is called
A. contamination.
B. denaturation.
C. saturation.
D. sedimentation.
E. deconformation.

Blooms Level: 1. Remember
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme catalyzed reactions
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3d Discuss the roles that each of these categories of molecules play in the body.
Section: 02.03
Topic: Life, Matter, and Energy

49. *(p. 49)* Proteins are _____ built from _____ different amino acids.
A. monomers; 10
B. molecules; 10
C. polymers; 20
D. macromolecules; 40
E. polypeptides; 80

Blooms Level: 1. Remember
HAPS Objective: C04.04b Compare and contrast general molecular structure
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3b Describe the structural properties that distinguish carbohydrates, lipids, proteins, and nucleic acids from each other
Section: 02.03
Topic: Life, Matter, and Energy

50. *(p. 52)* Enzymes are specific to substrates because of the shape of their
A. active sites.
B. receptors.
C. secondary structure.
D. terminal amino acids.
E. alpha chain.

Blooms Level: 1. Remember
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme catalyzed reactions
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3e Explain how enzymes function.
Section: 02.03
Topic: Life, Matter, and Energy

51. *(p. 52)* _____ is the substrate of _____.
A. Glucose; lactose
B. Lactase; glucose
C. Lactose; lactase
D. Galactose; lactose
E. Sucrase; sucrose

Blooms Level: 3. Apply
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme catalyzed reactions
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3e Explain how enzymes function.
Section: 02.03
Topic: Life, Matter, and Energy

52. *(p. 52)* Most enzymes are _____ that act as catalysts, helping chemical reactions go faster at normal body temperature.
A. cofactors
B. proteins
C. lipids
D. carbohydrates
E. nucleic acids

Blooms Level: 3. Apply
HAPS Objective: C04.06 Demonstrate factors that affect enzyme activity, including denaturation, and interpret graphs showing the effects of various factors on the rate of enzyme catalyzed reactions
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3e Explain how enzymes function.
Section: 02.03
Topic: Life, Matter, and Energy

True / False Questions

53. *(p. 55)* ATP is the body's most important form of long-term energy storage.
FALSE

Blooms Level: 2. Understand
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell
HAPS Topic: Module C05 Energy transfer using ATP
Learning Outcome: 02.3f Describe the structure, production, and function of ATP.
Section: 02.03
Topic: Life, Matter, and Energy

Multiple Choice Questions

54. *(p. 55)* ATP _____ endergonic and exergonic reactions.
A. opposes
B. decomposes
C. reduces
D. links
E. dehydrates

Blooms Level: 3. Apply
HAPS Objective: C05.01 Describe the generalized reversible reaction for release of energy from ATP and explain the role of ATP in the cell
HAPS Topic: Module C05 Energy transfer using ATP
Learning Outcome: 02.3f Describe the structure, production, and function of ATP.
Section: 02.03
Topic: Life, Matter, and Energy

55. *(p. 53)* Nucleic acids are _____ of _____.
A. molecules; monosaccharides
B. monomers; ATP
C. polymers; nucleotides
D. polymers; cAMP
E. polymers; DNA

Blooms Level: 3. Apply
HAPS Objective: C04.04b Compare and contrast general molecular structure
HAPS Topic: Module C04 Organic compounds
Learning Outcome: 02.3b Describe the structural properties that distinguish carbohydrates, lipids, proteins, and nucleic acids from each other
Section: 02.03
Topic: Life, Matter, and Energy