

Chapter 2 Concepts of Chemistry

Multiple Choice Questions

1. The ____ contain the genetic information for the body.
 - A. carbohydrates
 - B. lipids
 - C. nucleic acids
 - D. proteins

2. Which substances are the structural materials for building solid body parts?
 - A. Carbohydrates
 - B. Lipids
 - C. Nucleic acids
 - D. Proteins

3. Which of the following is primarily used to make energy?
 - A. Carbohydrates
 - B. Lipids
 - C. Nucleic acids
 - D. Proteins

4. A(n) ____ is composed of two or more atoms.
 - A. metabolism
 - B. molecule
 - C. ion
 - D. electrolyte

5. What is the overall chemical functioning of the body?
 - A. Metabolism
 - B. Molecule
 - C. Anabolism
 - D. Catabolism

Chapter 2 Concepts of Chemistry

6. Molecules are composed of:

- A. at least ten atoms.
- B. at least two atoms.
- C. two compounds.
- D. water and one other atom.

7. An element is any substance that contains one type of:

- A. molecule.
- B. isotope.
- C. atom.
- D. proton.

8. The positively charged particles in the nucleus of an atom are:

- A. neutrons.
- B. electrons.
- C. protons.
- D. isotopes.

9. 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

10. The number of protons in an atom is called the:

- A. atomic number.
- B. atomic weight.
- C. mass number.
- D. combining weight.

Chapter 2 Concepts of Chemistry

11. Which subatomic particle determines the chemical activity of an atom?
- A. Neutron
 - B. Proton
 - C. Electron
 - D. Prion
12. Different forms of the same element with different numbers of neutrons are called:
- A. molecules.
 - B. compounds.
 - C. isotopes.
 - D. lattices.
13. If the atomic number of an element is 9 and the atomic weight is 19, how many neutrons does the atom have?
- A. 10
 - B. 9
 - C. 19
 - D. 28
14. Atoms bonded together to form a chemical unit are called
- A. molecules.
 - B. ions.
 - C. radioisotopes.
 - D. buffers.
15. A molecule made of two or more different atoms bonded together is called a(an):
- A. ion.
 - B. isotope.
 - C. atom.
 - D. compound.

Chapter 2 Concepts of Chemistry

16. A bond created from the sharing of electrons between two atoms is a(an) _____ bond.

- A. covalent
- B. hydrogen
- C. ionic
- D. metallic

17. The attraction between a slightly positive hydrogen and a slightly negative oxygen of another molecule describes a(an) _____ bond.

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

18. The most abundant inorganic molecule in living organisms is:

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

19. Which of the following is NOT a property of water?

- A. Aids in the regulation of body temperature
- B. Organic molecule
- C. Solvent
- D. Inorganic compound

20. Organic compounds always contain _____ atoms.

- A. water
- B. carbon
- C. nitrogen
- D. oxygen

Chapter 2 Concepts of Chemistry

21. The main function of carbohydrates is to provide:

- A. cellular energy.
- B. insulation.
- C. transport molecules.
- D. hereditary information.

22. The most common carbohydrate in the body is:

- A. triglyceride.
- B. DNA.
- C. glucose.
- D. protein.

23. Glycogen is:

- A. a monosaccharide used for quick energy.
- B. a protein found in cell membranes.
- C. a form of glucose that is stored in the liver.
- D. a fat found in margarine.

24. Which of the following is a carbohydrate?

- A. Cholesterol
- B. Fat
- C. Nucleic acid
- D. Starch

25. Which of the following is NOT a function of lipids?

- A. Energy storage for cells
- B. Formation of antibodies
- C. Formation of cell membranes
- D. Formation of sex hormones

Chapter 2 Concepts of Chemistry

26. The lipid molecules that are the main component of cell membranes are:

- A. steroids.
- B. triglycerides.
- C. phospholipids.
- D. prostaglandins.

27. Which of the following is NOT a function of proteins?

- A. They form structural components of solid body parts.
- B. They form many hormones.
- C. They form actin and myosin needed for muscular movement.
- D. They form important energy molecules.

28. 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 body parts such as muscle.
- D. They form antibodies to protect the body from disease.

29. The sum of all the chemical reactions that occur in the body is:

- A. emulsification.
- B. metabolism.
- C. denaturation.
- D. synthesis.

30. Which of the following types of reactions involves the production of a larger product by combining smaller reactants?

- A. Degradation
- B. Hydrolysis
- C. Anabolism
- D. Catabolism

Chapter 2 Concepts of Chemistry

31. Which of the following is a nucleic acid?

- A. DNA
- B. Steroid
- C. Water
- D. Glycogen

32. The _____ of atoms determine how atoms will react with each other.

- A. protons
- B. neutrons
- C. nuclei
- D. electrons

33. If an element has an atomic number of 6 and an atomic weight of 14, how many neutrons does it have?

- A. 6
- B. 14
- C. 7
- D. 8

34. Carbon-12 and carbon-14 are isotopes. They differ in the number of:

- A. protons.
- B. neutrons.
- C. electrons.
- D. chemical bonds they can form.

35. An atom with twelve electrons, twelve protons, and fourteen neutrons has an atomic weight of:

- A. fourteen.
- B. twenty-four.
- C. thirty-eight.
- D. twenty-six.

Chapter 2 Concepts of Chemistry

36. Protons = 7, neutrons = 10, electrons = 7. The atomic weight of this atom is:
A. seven.
B. ten.
C. fourteen.
D. seventeen.
37. A particle in the atom that has neither a negative nor a positive electrical charge is the:
A. electron.
B. element.
C. isotope.
D. neutron.
38. An element is a substance made up entirely of the same type of :
A. atoms.
B. protons.
C. electrons.
D. nucleic acids.
39. An isotope is an atom of an element that varies in mass number due to variation in the number of:
A. atoms.
B. protons.
C. neutrons.
D. electrons.
40. Which of the following is NOT a lipid?
A. Triglyceride
B. Fat
C. Amino acid
D. Steroid

Chapter 2 Concepts of Chemistry

41. A subunit of protein is a(n):

- A. amino acid.
- B. nucleic acid.
- C. fatty acid.
- D. phospholipid.

42. Which of the following types of molecules contain the most energy per gram?

- A. Sugar
- B. Carbohydrate
- C. Lipid
- D. Starch

43. An example of an inorganic molecule is:

- A. CaCl_2 .
- B. C_2H_6 .
- C. $\text{C}_2\text{H}_5\text{OH}$.
- D. $\text{C}_3\text{H}_5(\text{OH})_3$.

44. The chemistry of living organisms is called _____.

- A. general chemistry
- B. organic chemistry
- C. inorganic chemistry
- D. biochemistry

45. Anabolic steroids used by some athletes are compounds that would be classified as:

- A. carbohydrates.
- B. nucleic acids.
- C. lipids.
- D. proteins.

Chapter 2 Concepts of Chemistry

46. The atomic number of an atom is determined by the number of:
- A. protons.
 - B. neutrons.
 - C. electrons.
 - D. protons and neutrons.
47. What is the symbol for sodium?
- A. Na
 - B. S
 - C. So
 - D. N
48. On a warm day Tina jumped into the swimming pool and to her surprise the water was really cold. Which property of water did she discover?
- A. Water molecules are cohesive.
 - B. The temperature of liquid water rises and falls slowly.
 - C. Water possesses hydrogen bonds.
 - D. Water is an organic molecule.
49. Which of the following is not one of the four classes of organic molecules found in cells?
- A. Vitamins
 - B. Lipids
 - C. Proteins
 - D. Carbohydrates
50. The sex hormones belong to which category of lipids?
- A. Steroids
 - B. Proteins
 - C. Triglycerides
 - D. Phospholipids

Chapter 2 Concepts of Chemistry

51. Which of the following is not a function of proteins?

- A. Quick energy
- B. Support
- C. Transport
- D. Enzymes

52. Deoxyribose is a sugar found in _____.

- A. glucose
- B. enzymes
- C. DNA
- D. glycogen

53. Which of the following is not an organic molecule?

- A. CaCO_3
- B. $\text{C}_6\text{H}_{12}\text{O}_6$
- C. $\text{C}_{18}\text{H}_{34}\text{O}_2$
- D. CH_4

54. What category of biological molecules are steroids included in?

- A. Proteins
- B. Lipids
- C. Carbohydrates
- D. Nucleic acids

55. Another name for biochemistry is _____.

- A. anatomy
- B. physiology
- C. physical chemistry
- D. biological chemistry

Chapter 2 Concepts of Chemistry

56. What is the chemical formula for water?

- A. CO_2
- B. CHO
- C. H_2O
- D. $\text{C}_2\text{H}_2\text{O}_2$

57. A(n) _____ is attraction between two partial electric charges of opposite polarity.

- A. atom
- B. hydrogen bond
- C. covalent bond
- D. atomic mass

58. What is the chemical breakdown of complex molecules into simpler molecules with the release of energy?

- A. Catabolism
- B. Anabolism
- C. Hydrolism
- D. Mitosis

59. Which of the following takes up space and has weight?

- A. Gravity
- B. Matter
- C. Light waves
- D. Sound waves

60. What is the most abundant element, by percent body weight, in the human body?

- A. Calcium
- B. Sulfur
- C. Oxygen
- D. Nitrogen

Chapter 2 Concepts of Chemistry

61. _____ are gained or lost to make a molecule more stable; they may also be shared, as in covalent bonds.

- A. Atomic neutrons
- B. Valence electrons
- C. Protons and neutrons
- D. Atoms

62. Which of the following is NOT an inorganic molecule?

- A. Water
- B. Carbon dioxide
- C. Oxygen
- D. DNA

63. Which type of ion has a positive charge?

- A. Electron
- B. Neutron
- C. Cation
- D. Anion

64. Which of the following comments regarding bicarbonate (HCO_3^-) is NOT correct?

- A. This is an inorganic salt.
- B. This is a cation.
- C. This is an ion.
- D. This has a net negative charge.

65. Chromosomes are composed of _____.

- A. amino acids
- B. glycogen
- C. DNA
- D. RNA

Chapter 2 Concepts of Chemistry

66. When _____ reactions in the body result in too much or too little of a substance, it can adversely affect life.

- A. chemical
- B. subatomic
- C. radioactive
- D. biological

67. Lack of water consumption causes _____, which can adversely affect the chemical reactions in the body.

- A. osmosis
- B. dehydration
- C. loss of sodium ion
- D. high blood pressure

68. Because life begins at the _____ level, it is important to know the basic concepts of chemistry to understand the structures and functions of the human body.

- A. systems
- B. organ
- C. tissue
- D. chemical

Chapter 2 Concepts of Chemistry **Key**

Multiple Choice Questions

1. (p. 24) The ____ contain the genetic information for the body.

- A. carbohydrates
- B. lipids
- C.** nucleic acids
- D. proteins

Genetic information is contained in the nucleic acids.

Bloom's: Remembering
Difficulty: Medium
Learning Outcome: 2.3

2. (p. 24) Which substances are the structural materials for building solid body parts?

- A. Carbohydrates
- B. Lipids
- C. Nucleic acids
- D.** Proteins

Proteins act as structural materials for building solid body parts, such as muscle.

Bloom's: Remembering
Difficulty: Easy
Learning Outcome: 2.3

Chapter 2 Concepts of Chemistry **Key**

3. (p. 24) Which of the following is primarily used to make energy?

- A.** Carbohydrates
- B. Lipids
- C. Nucleic acids
- D. Proteins

Carbohydrates are the body's primary source of energy.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.3

4. (p. 20) A(n) _____ is composed of two or more atoms.

- A. metabolism
- B.** molecule
- C. ion
- D. electrolyte

Molecules are made up of at least two atoms.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

5. (p. 20) What is the overall chemical functioning of the body?

- A.** Metabolism
- B. Molecule
- C. Anabolism
- D. Catabolism

Metabolism is the sum of all the chemical reactions that take place in the body.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

6. (p. 20) Molecules are composed of:

- A. at least ten atoms.
- B.** at least two atoms.
- C. two compounds.
- D. water and one other atom.

Molecules are composed of at least two atoms.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

7. (p. 20) An element is any substance that contains one type of:

- A. molecule.
- B. isotope.
- C.** atom.
- D. proton.

An element only contains one type of atom.

Bloom's: Understanding

Difficulty: Medium

Learning Outcome: 2.1

8. (p. 21) The positively charged particles in the nucleus of an atom are:

- A. neutrons.
- B. electrons.
- C.** protons.
- D. isotopes.

Protons are positively charged and are found in the atomic nucleus.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

9. (p. 21) 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

Neutrons and protons are located in the atomic nucleus.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

10. (p. 21) The number of protons in an atom is called the:

- A.** atomic number.
- B. atomic weight.
- C. mass number.
- D. combining weight.

Atomic number is the number of protons in an atom.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

11. (p. 21) Which subatomic particle determines the chemical activity of an atom?

- A. Neutron
- B. Proton
- C.** Electron
- D. Prion

Electrons determine the chemical activity of an atom.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

12. (p. 21) Different forms of the same element with different numbers of neutrons are called:

- A. molecules.
- B. compounds.
- C.** isotopes.
- D. lattices.

Isotopes have the same number of protons and different number of neutrons.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

13. (p. 21) If the atomic number of an element is 9 and the atomic weight is 19, how many neutrons does the atom have?

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

$$19 - 9 = 10 \text{ neutrons}$$

Bloom's: Applying

Difficulty: Medium

Learning Outcome: 2.1

14. (p. 20) Atoms bonded together to form a chemical unit are called

- A.** molecules.
- B. ions.
- C. radioisotopes.
- D. buffers.

Molecules are atoms bonded together.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

15. (p. 20) A molecule made of two or more different atoms bonded together is called a(an):

- A. ion.
- B. isotope.
- C. atom.
- D.** compound.

A compound is two or more different types of atoms chemically bonded together.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

16. (p. 20) A bond created from the sharing of electrons between two atoms is a(an) _____ bond.

- A.** covalent
- B. hydrogen
- C. ionic
- D. metallic

Covalent bonds are formed by the sharing of electrons.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

17. (p. 20) The attraction between a slightly positive hydrogen and a slightly negative oxygen of another molecule describes a(an) _____ bond.

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

Hydrogen bonds are formed between a hydrogen atom and an electronegative atom, usually in another molecule.

Bloom's: Understanding

Difficulty: Medium

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

18. (p. 22) The most abundant inorganic molecule in living organisms is:

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

Water is the most abundant inorganic molecule in living organisms.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.2

19. (p. 22) Which of the following is NOT a property of water?

- A. Aids in the regulation of body temperature
- B.** Organic molecule
- C. Solvent
- D. Inorganic compound

Water is inorganic, not organic.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.2

20. (p. 21) Organic compounds always contain _____ atoms.

- A. water
- B.** carbon
- C. nitrogen
- D. oxygen

Organic compounds always contain carbon and hydrogen atoms.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.2

Chapter 2 Concepts of Chemistry **Key**

21. (p. 24) The main function of carbohydrates is to provide:

- A. cellular energy.
- B. insulation.
- C. transport molecules.
- D. hereditary information.

Carbohydrates provide energy.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.3

22. (p. 24) The most common carbohydrate in the body is:

- A. triglyceride.
- B. DNA.
- C. glucose.
- D. protein.

Glucose is the most common.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

23. (p. 24) Glycogen is:

- A. a monosaccharide used for quick energy.
- B. a protein found in cell membranes.
- C. a form of glucose that is stored in the liver.
- D. a fat found in margarine.

Glucose is stored as glycogen in the liver and skeletal muscles.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

Chapter 2 Concepts of Chemistry **Key**

24. (p. 24) Which of the following is a carbohydrate?

- A. Cholesterol
- B. Fat
- C. Nucleic acid
- D.** Starch

Starch is a carbohydrate .

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

25. (p. 24) Which of the following is NOT a function of lipids?

- A. Energy storage for cells
- B.** Formation of antibodies
- C. Formation of cell membranes
- D. Formation of sex hormones

Antibodies are formed from proteins.

Bloom's: Remembering

Difficulty: Hard

Learning Outcome: 2.3

26. (p. 24) The lipid molecules that are the main component of cell membranes are:

- A. steroids.
- B. triglycerides.
- C.** phospholipids.
- D. prostaglandins.

A major function of phospholipids is to make cell membranes.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

Chapter 2 Concepts of Chemistry **Key**

27. (p. 24) Which of the following is NOT a function of proteins?

- A. They form structural components of solid body parts.
- B. They form many hormones.
- C. They form actin and myosin needed for muscular movement.
- D.** They form important energy molecules.

Carbohydrates, not proteins, form energy molecules.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

28. (p. 24) 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 body parts such as muscle.
- D. They form antibodies to protect the body from disease.

Phospholipids form the backbone of cell membranes.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

29. (p. 20) The sum of all the chemical reactions that occur in the body is:

- A. emulsification.
- B.** metabolism.
- C. denaturation.
- D. synthesis.

Metabolism is the sum of all the chemical reactions that occur in the body.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

30. (p. 21) Which of the following types of reactions involves the production of a larger product by combining smaller reactants?

- A. Degradation
- B. Hydrolysis
- C.** Anabolism
- D. Catabolism

Anabolic reactions use smaller molecules and energy to produce larger molecules.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

31. (p. 24) Which of the following is a nucleic acid?

- A.** DNA
- B. Steroid
- C. Water
- D. Glycogen

DNA is a nucleic acid.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.3

32. (p. 21) The _____ of atoms determine how atoms will react with each other.

- A. protons
- B. neutrons
- C. nuclei
- D.** electrons

Electrons determine how atoms react.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

33. (p. 21) If an element has an atomic number of 6 and an atomic weight of 14, how many neutrons does it have?

- A. 6
- B. 14
- C. 7
- D.** 8

$$14 - 6 = 8 \text{ neutrons}$$

Bloom's: Applying
Difficulty: Medium
Learning Outcome: 2.1

34. (p. 21) Carbon-12 and carbon-14 are isotopes. They differ in the number of:

- A. protons.
- B.** neutrons.
- C. electrons.
- D. chemical bonds they can form.

Isotopes have different number of neutrons.

Bloom's: Remembering
Difficulty: Medium
Learning Outcome: 2.1

35. (p. 21) An atom with twelve electrons, twelve protons, and fourteen neutrons has an atomic weight of:

- A. fourteen.
- B. twenty-four.
- C. thirty-eight.
- D.** twenty-six.

$$12 + 14 = 26$$

Bloom's: Applying
Difficulty: Hard
Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

36. (p. 21) Protons = 7, neutrons = 10, electrons = 7. The atomic weight of this atom is:

- A. seven.
- B. ten.
- C. fourteen.
- D.** seventeen.

$$10 + 7 = 17$$

Bloom's: Applying
Difficulty: Hard
Learning Outcome: 2.1

37. (p. 21) A particle in the atom that has neither a negative nor a positive electrical charge is the:

- A. electron.
- B. element.
- C. isotope.
- D.** neutron.

Neutrons are neutrally charged particles.

Bloom's: Remembering
Difficulty: Medium
Learning Outcome: 2.1

38. (p. 21) An element is a substance made up entirely of the same type of :

- A.** atoms.
- B. protons.
- C. electrons.
- D. nucleic acids.

An element is a substance made entirely of one type of atom.

Bloom's: Remembering
Difficulty: Easy
Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

39. (p. 21) An isotope is an atom of an element that varies in mass number due to variation in the number of:

- A. atoms.
- B. protons.
- C.** neutrons.
- D. electrons.

Isotopes have different number of neutrons.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

40. (p. 24) Which of the following is NOT a lipid?

- A. Triglyceride
- B. Fat
- C.** Amino acid
- D. Steroid

Amino acids are not lipids.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

41. (p. 21) A subunit of protein is a(n):

- A.** amino acid.
- B. nucleic acid.
- C. fatty acid.
- D. phospholipid.

Amino acids are the building blocks of proteins.

Bloom's: Understanding

Difficulty: Medium

Learning Outcome: 2.3

Chapter 2 Concepts of Chemistry **Key**

42. (p. 24) Which of the following types of molecules contain the most energy per gram?

- A. Sugar
- B. Carbohydrate
- C. Lipid**
- D. Starch

Each gram of fat can provide more than twice the energy of a gram of protein or carbohydrate.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

43. (p. 21) An example of an inorganic molecule is:

- A. CaCl_2 .**
- B. C_2H_6 .
- C. $\text{C}_2\text{H}_5\text{OH}$.
- D. $\text{C}_3\text{H}_5(\text{OH})_3$.

All organic molecules contain carbon.

Bloom's: Understanding

Difficulty: Medium

Learning Outcome: 2.2

44. (p. 20) The chemistry of living organisms is called _____.

- A. general chemistry
- B. organic chemistry
- C. inorganic chemistry
- D. biochemistry**

Biochemistry is the study of living things.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

45. (p. 24) Anabolic steroids used by some athletes are compounds that would be classified as:

- A. carbohydrates.
- B. nucleic acids.
- C. lipids.**
- D. proteins.

Anabolic steroids are lipids.

Bloom's: Applying

Difficulty: Hard

Learning Outcome: 2.3

46. (p. 21) The atomic number of an atom is determined by the number of:

- A. protons.**
- B. neutrons.
- C. electrons.
- D. protons and neutrons.

The atomic number of an atom is determined by the number of protons.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

47. (p. 22) What is the symbol for sodium?

- A. Na**
- B. S
- C. So
- D. N

Na (short for natrium) is the symbol for sodium.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.2

Chapter 2 Concepts of Chemistry **Key**

48. (p. 22) On a warm day Tina jumped into the swimming pool and to her surprise the water was really cold. Which property of water did she discover?

- A. Water molecules are cohesive.
- B.** The temperature of liquid water rises and falls slowly.
- C. Water possesses hydrogen bonds.
- D. Water is an organic molecule.

Water is a good temperature buffer because a great deal of energy is required to raise the temperature of water.

Bloom's: Applying
Difficulty: Hard
Learning Outcome: 2.2

49. (p. 24) Which of the following is not one of the four classes of organic molecules found in cells?

- A.** Vitamins
- B. Lipids
- C. Proteins
- D. Carbohydrates

Vitamins are not one of the four categories of organic molecules unique to cells.

Bloom's: Understanding
Difficulty: Medium
Learning Outcome: 2.3

50. (p. 24) The sex hormones belong to which category of lipids?

- A.** Steroids
- B. Proteins
- C. Triglycerides
- D. Phospholipids

The sex hormones are steroids.

Bloom's: Understanding
Difficulty: Medium
Learning Outcome: 2.3

Chapter 2 Concepts of Chemistry **Key**

51. (p. 24) Which of the following is not a function of proteins?

- A. Quick energy
- B. Support
- C. Transport
- D. Enzymes

Carbohydrates, not proteins, serve as a source of quick energy.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

52. (p. 25) Deoxyribose is a sugar found in _____.

- A. glucose
- B. enzymes
- C. DNA
- D. glycogen

The sugar deoxyribose is one portion of a nucleotide monomer that helps to create the biological molecule DNA.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

53. (p. 21) Which of the following is not an organic molecule?

- A. CaCO_3
- B. $\text{C}_6\text{H}_{12}\text{O}_6$
- C. $\text{C}_{18}\text{H}_{34}\text{O}_2$
- D. CH_4

Organic molecules contain hydrogen and carbon.

Bloom's: Understanding

Difficulty: Medium

Learning Outcome: 2.3

Chapter 2 Concepts of Chemistry **Key**

54. (p. 24) What category of biological molecules are steroids included in?

- A. Proteins
- B. Lipids**
- C. Carbohydrates
- D. Nucleic acids

Steroids are very large lipid molecules that are used to make some hormones.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

55. (p. 20) Another name for biochemistry is _____.

- A. anatomy
- B. physiology
- C. physical chemistry
- D. biological chemistry**

Biochemistry is also known as biological chemistry.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

56. (p. 23) What is the chemical formula for water?

- A. CO₂
- B. CHO
- C. H₂O**
- D. C₂H₂O₂

Water is H₂O.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.2

Chapter 2 Concepts of Chemistry **Key**

57. (p. 20) A(n) _____ is attraction between two partial electric charges of opposite polarity.

- A. atom
- B.** hydrogen bond
- C. covalent bond
- D. atomic mass

This comment describes a hydrogen bond.

Bloom's: Understanding

Difficulty: Hard

Learning Outcome: 2.1

58. (p. 20-21) What is the chemical breakdown of complex molecules into simpler molecules with the release of energy?

- A.** Catabolism
- B. Anabolism
- C. Hydrolism
- D. Mitosis

This describes a catabolic chemical reaction.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

59. (p. 21) Which of the following takes up space and has weight?

- A. Gravity
- B.** Matter
- C. Light waves
- D. Sound waves

Matter takes up space and has weight.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.1

Chapter 2 Concepts of Chemistry **Key**

60. (p. 22) What is the most abundant element, by percent body weight, in the human body?

- A. Calcium
- B. Sulfur
- C.** Oxygen
- D. Nitrogen

Oxygen is the most abundant element by percent body weight.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

61. (p. 21) _____ are gained or lost to make a molecule more stable; they may also be shared, as in covalent bonds.

- A. Atomic neutrons
- B.** Valence electrons
- C. Protons and neutrons
- D. Atoms

Valence electrons are gained or lost to make a molecule more stable, or they may be shared, as in covalent bonds.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.1

62. (p. 24-25) Which of the following is NOT an inorganic molecule?

- A. Water
- B. Carbon dioxide
- C. Oxygen
- D.** DNA

DNA is an organic molecule.

Bloom's: Understanding

Difficulty: Medium

Learning Outcome: 2.2

Chapter 2 Concepts of Chemistry **Key**

63. (p. 23) Which type of ion has a positive charge?

- A. Electron
- B. Neutron
- C. Cation**
- D. Anion

Cations have positive charges.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.2

64. (p. 23) Which of the following comments regarding bicarbonate (HCO_3^-) is NOT correct?

- A. This is an inorganic salt.
- B. This is a cation.**
- C. This is an ion.
- D. This has a net negative charge.

Bicarbonate is an anion, not a cation.

Bloom's: Understanding

Difficulty: Hard

Learning Outcome: 2.2

65. (p. 25) Chromosomes are composed of _____.

- A. amino acids
- B. glycogen
- C. DNA**
- D. RNA

Chromosomes are composed of DNA.

Bloom's: Remembering

Difficulty: Medium

Learning Outcome: 2.3

Chapter 2 Concepts of Chemistry **Key**

66. (p. 26) When _____ reactions in the body result in too much or too little of a substance, it can adversely affect life.

- A.** chemical
- B. subatomic
- C. radioactive
- D. biological

Chemical reactions affect life span.

Bloom's: Remembering

Difficulty: Easy

Learning Outcome: 2.4

67. (p. 22) Lack of water consumption causes _____, which can adversely affect the chemical reactions in the body.

- A. osmosis
- B.** dehydration
- C. loss of sodium ion
- D. high blood pressure

Lack of water can cause dehydration.

Bloom's: Applying

Difficulty: Hard

Learning Outcome: 2.4

68. (p. 20) Because life begins at the _____ level, it is important to know the basic concepts of chemistry to understand the structures and functions of the human body.

- A. systems
- B. organ
- C. tissue
- D.** chemical

Life begins at the chemical level.

Bloom's: Applying

Difficulty: Medium

Learning Outcome: 2.1