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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. CO₂
- B. CHO
- C. H₂O
- D. C₂H₂O₂

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

$19 - 9 = 10$ 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. CaCl₂.**
- B. C₂H₆.
- C. C₂H₅OH.
- D. C₃H₅(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. Which of the following comments regarding bicarbonate (HCO_3^-) is NOT
(p. 23) 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