

Chapter 2: - Chemical Aspects of Life

## Chapter 2 Chemical Aspects of Life

### Multiple Choice Questions

1. Anything that has weight and occupies space can be described as

- A. an atom.
- B. matter.**
- C. a compound.
- D. a molecule.

*Bloom's Level: 1. Remember  
Gunstream - Chapter 02 #1  
Learning Outcome: 02.01 Describe the basic structure of an atom.  
Section 02.01  
Topic: Chemistry*

2. There are \_\_\_\_ naturally occurring elements of which \_\_\_\_\_ are commonly found in the human body.

- A. 96; 22
- B. 104; 28
- C. 92; 26**
- D. 58; 34

*Bloom's Level: 1. Remember  
Gunstream - Chapter 02 #2  
Section 02.01  
Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

3. Which of the following is NOT an example of a lipid?

- A. fats.
- B. amino acids.**
- C. steroids.
- D. phospholipids.

*Bloom's Level: 2. Understand*

*Gunstream - Chapter 02 #3*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

4. Proteins are made up of

- A. fats.
- B. amino acids.**
- C. nucleotides.
- D. sugars.

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #4*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

5. Nucleic acids are made up of

- A. fats.
- B. amino acids.
- C. nucleotides.**
- D. sugars.

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #5*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

6. About 96% of the body consists of what four elements?
- A. oxygen, hydrogen, glucose, and carbon
  - B. oxygen, hydrogen, carbon, and copper
  - C. oxygen, hydrogen, carbon, and sodium
  - D. oxygen, hydrogen, carbon, and nitrogen**

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #6*

*Learning Outcome: 02.06 Distinguish between inorganic and organic compounds.*

*Section 02.01*

*Topic: Chemistry*

7. A chemical formula expresses
- A. the chemical composition of a molecule.
  - B. the number of atoms for each element in the molecule.
  - C. the atoms involved in chemical bonding.
  - D. all of these choices are correct**

*Bloom's Level: 2. Understand*

*Gunstream - Chapter 02 #7*

*Learning Outcome: 02.03 Explain the meaning of a chemical formula.*

*Section 02.02*

*Topic: Chemistry*

8. Covalent bonds form when
- A. two or more atoms share electrons equally.
  - B. a positive ion and a negative ion attract.
  - C. two or more molecules share electrons unequally.
  - D. two or more atoms share electrons equally and two or more molecules share electrons unequally.**

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #8*

*Learning Outcome: 02.04 Compare ionic, covalent, and hydrogen bonds.*

*Section 02.02*

*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

9. To be considered an organic molecule a substance must contain

- A. carbon and nitrogen.
- B. carbon and hydrogen.**
- C. carbon and oxygen.
- D. oxygen and hydrogen.

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #9*

*Learning Outcome: 02.06 Distinguish between inorganic and organic compounds.*

*Section 02.03*

*Topic: Chemistry*

10. The process used to convert liquid vegetable oils to solids by changing its bonds is called

- A. carbonization.
- B. hydrogenation.**
- C. solidification.
- D. oxygenation.

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #10*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

11. If an atom has 8 protons and 8 neutrons in its nucleus, and 8 orbiting electrons, its atomic number would be

- A. 24.
- B. 16.
- C. 8.**
- D. 12.

*Bloom's Level: 3. Apply*

*Gunstream - Chapter 02 #11*

*Learning Outcome: 02.01 Describe the basic structure of an atom.*

*Section 02.01*

*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

12. To form an ionic bond one atom must donate its \_\_\_\_\_ to another.

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

*Bloom's Level: 2. Understand*  
*Gunstream - Chapter 02 #12*  
*Learning Outcome: 02.04 Compare ionic, covalent, and hydrogen bonds.*  
*Section 02.02*  
*Topic: Chemistry*

13. Hydrogen bonds occur between

- A. multiple ions.
- B. non-polar molecules.
- C.** polar molecules.
- D. ions and non-polar molecules.

*Bloom's Level: 1. Remember*  
*Gunstream - Chapter 02 #13*  
*Learning Outcome: 02.04 Compare ionic, covalent, and hydrogen bonds.*  
*Section 02.02*  
*Topic: Chemistry*

14. The valence electrons are those

- A. active in chemical bonds.
- B. close to the nucleus of the atom.
- C. in the outermost shell.
- D.** located in the outermost shell and active in chemical bonding.

*Bloom's Level: 1. Remember*  
*Gunstream - Chapter 02 #14*  
*Learning Outcome: 02.01 Describe the basic structure of an atom.*  
*Section 02.02*  
*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

15. A saturated fat will have
- A. significant numbers of carbon-carbon double bonds.
  - B.** very few hydrogen atoms.
  - C. little or no carbon-carbon double bonds.
  - D. excessive nutrients.

*Bloom's Level: 2. Understand*

*Gunstream - Chapter 02 #15*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

16. Lactose, the sugar contained in milk, is an example of a
- A. simple sugar.
  - B. monosaccharide.
  - C.** disaccharide.
  - D. none of these choices are correct

*Bloom's Level: 1. Remember*

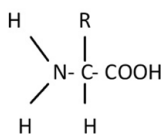
*Gunstream - Chapter 02 #16*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

17. This would be the general representation of a(n)



- A.** an amino acid.
- B. a fatty acid.
- C. a nucleic acid.
- D. glycerol.

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #17*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

18. Enzymes are necessary in cells to
- A. maintain cell structure.
  - B. slow down chemical reactions.
  - C.** speed up chemical reactions.
  - D. act as energy.

*Bloom's Level: 2. Understand*  
*Gunstream - Chapter 02 #18*  
*Learning Outcome: 02.12 Explain the role of enzymes.*  
*Section 02.03*  
*Topic: Chemistry*  
*Topic: Nutrition and Metabolism*

19. The difference between DNA and RNA is that
- A. each contains different sugars.
  - B. each has different bases.
  - C. each has a difference in the number of strands.
  - D.** there are differences in sugars, bases, and the number of strands.

*Bloom's Level: 2. Understand*  
*Gunstream - Chapter 02 #19*  
*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*  
*Section 02.03*  
*Topic: Chemistry*

20. Steroids are a form of
- A. protein.
  - B.** lipid.
  - C. sugar.
  - D. nucleic acid.

*Bloom's Level: 1. Remember*  
*Gunstream - Chapter 02 #20*  
*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*  
*Section 02.03*  
*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

21. A substance that cannot be broken down into a simpler substance by chemical means is a/an

- A.** element.
- B. compound.
- C. molecule.
- D. nucleic acid.

*Bloom's Level: 1. Remember*  
*Gunstream - Chapter 02 #21*  
*Learning Outcome: 02.01 Describe the basic structure of an atom.*  
*Section 02.01*  
*Topic: Chemistry*

22. The positively charged particles located in the nucleus of an atom are the

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

*Bloom's Level: 1. Remember*  
*Gunstream - Chapter 02 #22*  
*Learning Outcome: 02.01 Describe the basic structure of an atom.*  
*Section 02.01*  
*Topic: Chemistry*

23. The number of protons plus the number of neutrons determines the \_\_\_\_\_ of an atom.

- A. isotope
- B. valence electrons
- C. atomic number
- D.** atomic weight

*Bloom's Level: 2. Understand*  
*Gunstream - Chapter 02 #23*  
*Learning Outcome: 02.01 Describe the basic structure of an atom.*  
*Section 02.01*  
*Topic: Chemistry*



Chapter 2: - Chemical Aspects of Life

24. Two or more atoms combine chemically to form a/an \_\_\_\_\_, the smallest unit of a/an \_\_\_\_\_.
- A. molecule; isotope
  - B. molecule; element
  - C. molecule; compound**
  - D. element; compound

*Bloom's Level: 2. Understand*  
*Gunstream - Chapter 02 #24*  
*Learning Outcome: 02.03 Explain the meaning of a chemical formula.*  
*Section 02.02*  
*Topic: Chemistry*

25. When one atom donates an electron to another atom, the donating atom becomes a \_\_\_\_\_ charged ion, and the receiving atom becomes a \_\_\_\_\_ charged ion. These ions are joined together by a/an \_\_\_\_\_ chemical bond.
- A. positively; negatively; ionic**
  - B. negatively; positively; ionic
  - C. negatively; positively; covalent
  - D. positively; negatively; hydrogen

*Bloom's Level: 1. Remember*  
*Bloom's Level: 2. Understand*  
*Gunstream - Chapter 02 #25*  
*Learning Outcome: 02.04 Compare ionic, covalent, and hydrogen bonds.*  
*Section 02.02*  
*Topic: Chemistry*

26. The element that forms the backbone of organic molecules is
- A. hydrogen.
  - B. oxygen.
  - C. carbon.**
  - D. nitrogen.

*Bloom's Level: 1. Remember*  
*Gunstream - Chapter 02 #26*  
*Learning Outcome: 02.06 Distinguish between inorganic and organic compounds.*  
*Section 02.03*  
*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

27. Which of the following is the organic compound?

- A.  $\text{NaHCO}_3$
- B.  $\text{NaOH}$
- C.  $\text{C}_6\text{H}_{12}\text{O}_6$**
- D.  $\text{CO}_2$

*Bloom's Level: 3. Apply*

*Gunstream - Chapter 02 #27*

*Learning Outcome: 02.03 Explain the meaning of a chemical formula.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Water, Electrolyte, and Acid-Base Balance*

28. The dissociation of a/an \_\_\_\_\_ releases hydrogen ions and increases the concentration of hydrogen ions in a solution.

- A. acid**
- B. base
- C. salt
- D. solvent

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #28*

*Learning Outcome: 02.08 Compare acids and bases.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Water, Electrolyte, and Acid-Base Balance*

29. A pH of \_\_\_\_\_ measures a low concentration of hydrogen ions, whereas a pH of \_\_\_\_\_ measures a high concentration of  $\text{H}^+$ .

- A. 0; 14
- B. 7; 14
- C. 14; 0**
- D. 0; 7

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #29*

*Learning Outcome: 02.09 Explain the use of the pH scale.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Water, Electrolyte, and Acid-Base Balance*

Chapter 2: - Chemical Aspects of Life

30. A carbohydrate molecule consisting of glucose combined with fructose is a
- A. monosaccharide.
  - B. disaccharide.**
  - C. polysaccharide.
  - D. starch.

*Bloom's Level: 2. Understand*

*Gunstream - Chapter 02 #30*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

31. The monosaccharide that is the major carbohydrate fuel for body cells is
- A. sucrose.
  - B. fructose.
  - C. galactose.
  - D. glucose.**

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #31*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Nutrition and Metabolism*

32. When the body has excess energy and builds molecules to store it, which molecule do we build MOST?
- A. Glycogen
  - B. Glucose
  - C. Triglycerides**
  - D. Cholesterol

*Bloom's Level: 4. Analyze*

*Gunstream - Chapter 02 #32*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Nutrition and Metabolism*

33. Proteins are composed of subunits called \_\_\_\_\_ and functional proteins include \_\_\_\_\_, which speed up chemical reactions in the body.

- A.** amino acids; enzymes
- B. fatty acids; enzymes
- C. fatty acids; triglycerides
- D. amino acids; antibodies

*Bloom's Level: 2. Understand*

*Gunstream - Chapter 02 #33*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Learning Outcome: 02.12 Explain the role of enzymes.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Nutrition and Metabolism*

34. Select the correct statement.

- A. DNA and RNA are double-stranded molecules composed of nucleotides.
- B. DNA and RNA are single-stranded molecules with dissimilar nucleotides.
- C.** DNA contains the genetic code, and RNA carries the coded information to the sites of protein synthesis.
- D. DNA is double-stranded but RNA is single-stranded, although their nucleotides are identical.

*Bloom's Level: 4. Analyze*

*Gunstream - Chapter 02 #34*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

35. The molecule that provides immediate energy for cellular processes is

- A. glucose.
- B. glycogen.
- C. starch.
- D.** adenosine triphosphate.

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02 #35*

*Learning Outcome: 02.13 Describe the composition and role of ATP.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Nutrition and Metabolism*

Chapter 2: - Chemical Aspects of Life

36. Adding additional neutrons to an atom would form

- A.** isotopes
- B. ions
- C. covalent bonds
- D. iodine

*Bloom's Level: 2. Understand*  
*Gunstream - Chapter 02*  
*Learning Outcome: 02.02 Distinguish between atoms, isotopes and radioisotopes.*  
*Section 02.01*  
*Topic: Chemistry*

37. An atom that has 6 electrons in its outer valence shell will be most likely to

- A. donate 2 electrons.
- B. donate 6 electrons.
- C.** receive 2 electrons.
- D. receive 6 electrons.

*Bloom's Level: 4. Analyze*  
*Gunstream - Chapter 02*  
*Learning Outcome: 02.04 Compare ionic, covalent, and hydrogen bonds.*  
*Section 02.02*  
*Topic: Chemistry*

38. An ionic bond forms between

- A. a cation and another cation.
- B.** a cation and an anion.
- C. an anion and another anion.
- D. all of the above.

*Bloom's Level: 3. Apply*  
*Gunstream - Chapter 02*  
*Learning Outcome: 02.04 Compare ionic, covalent, and hydrogen bonds.*  
*Section 02.02*  
*Topic: Chemistry*

Chapter 2: - Chemical Aspects of Life

39. When placed in water, ionic compounds dissociate into
- A. water molecules.
  - B. salts.
  - C. hydrogen ions.
  - D. electrolytes.**

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02*

*Learning Outcome: 02.10 Explain the importance of inorganic salts.*

*Section 02.02*

*Topic: Chemistry*

40. At a pH of 7, which of the following would be true?
- A. H<sup>+</sup> and OH<sup>-</sup> concentrations would be equal.**
  - B. H<sup>+</sup> concentration would be greater than OH<sup>-</sup> concentration.
  - C. OH<sup>-</sup> concentration would be greater than H<sup>+</sup> concentration.
  - D. None of the above.

*Bloom's Level: 2. Understand*

*Gunstream - Chapter 02*

*Learning Outcome: 02.09 Explain the use of the pH scale.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Water, Electrolyte, and Acid-Base Balance*

41. The form of carbohydrate our bodies use to store reserve energy is
- A. disaccharides
  - B. starches
  - C. glycogen**
  - D. glucose

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

*Topic: Nutrition and Metabolism*

Chapter 2: - Chemical Aspects of Life

42. A monounsaturated fat would have
- A.** one carbon-carbon double bond in a fatty acid tail.
  - B. two fatty acid tails and a phosphate group.
  - C. two carbon-carbon double bonds in its fatty acid tails.
  - D. four carbon rings.

*Bloom's Level: 2. Understand*

*Gunstream - Chapter 02*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*

43. The name for the covalent bond between two amino acids is termed
- A. protein bond.
  - B. ionic bond.
  - C. enzyme bond.
  - D.** peptide bond.

*Bloom's Level: 1. Remember*

*Gunstream - Chapter 02*

*Learning Outcome: 02.04 Compare ionic, covalent, and hydrogen bonds.*

*Learning Outcome: 02.11 Distinguish between carbohydrates, lipids, proteins, and nucleic acids and their roles in the body.*

*Section 02.03*

*Topic: Chemistry*