

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

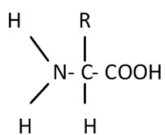
Gunstream - Chapter 02 #16

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

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. NaHCO_3
- B. NaOH
- C. $\text{C}_6\text{H}_{12}\text{O}_6$
- D. 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 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^+ and OH^- concentrations would be equal.**
- B. H^+ concentration would be greater than OH^- concentration.
- C. OH^- concentration would be greater than H^+ 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