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# THE RIOT *AND* THE DANCE TEACHER'S GUIDE

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*o* OBJECTIVES *o*  
QUIZZES & EXAMS  
ANSWER KEYS

**DR. GORDON WILSON**  
ILLUSTRATED *BY* FORREST DICKISON

Gordon Wilson, *The Riot and the Dance: Teacher's Guide*  
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Published by Canon Press  
P.O. Box 8729, Moscow, Idaho 83843  
800.488.2034 | [www.canonpress.com](http://www.canonpress.com)

Cover design by James Engerbretsen. Cover illustrations by Forrest Dickison.  
Interior design by Laura Storm Design. Interior Layout by Valerie Anne Bost  
Printed in the United States of America.

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PART 1

# THE LIVING CELL





# A SMIDGE *OF* CHEMISTRY

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## OBJECTIVES

1. Know the definitions of atom, element, molecule, compound, atomic number, atomic weight, isotope, ion (cation and anion), salt, and buffer. Be able to give examples.
2. Know the three subatomic particles of an atom, their location, and charge.
3. Given the atomic number of an element be able to draw a simple diagram of one of its atoms with electrons properly distributed in their shells and orbitals.
4. Know the definitions of the three types (and sub-types) of chemical bonds and their relative strengths. Be able to draw each kind of bond using the examples given in the book.
5. Know the properties of water.
6. Know the pH scale and what it is a measure of. Know what is considered neutral pH, the acidic range, and the basic (alkaline) range. If there is a change of one pH unit, know how much more or less acidic it is.



**Thoroughly study the above objectives before you take the chapter quiz. Be sure you know how to spell the terms.**



## CHAPTER 1 QUIZ

1. A substance that has distinct chemical properties and cannot be broken down into simpler substances by normal chemical means is a(n) \_\_\_\_\_.
2. The smallest unit of an element is a(n) \_\_\_\_\_.
3. A molecule containing two or more elements is a(n) \_\_\_\_\_.
4. The two subatomic particles contained in the nucleus of an atom are \_\_\_\_\_ and \_\_\_\_\_. What are their charges? (place the appropriate charge next to each name)
5. The subatomic particles contained in the shells orbiting the nucleus are the \_\_\_\_\_. Charge? \_\_\_\_\_
6. Atomic number is the number of \_\_\_\_\_.
7. Draw an oxygen atom (atomic number: 8).
8. Draw a water molecule ( $\text{H}_2\text{O}$ ) showing orbitals and shared electrons (atomic number of hydrogen: 1).
9. A complete transfer of electrons from one atom to another resulting in oppositely charged atoms sticking together is called a(n) \_\_\_\_\_ bond.

10. When atoms are joined together because they are sharing electrons it is called a(n) \_\_\_\_\_ bond.
11. In a \_\_\_\_\_ covalent bond electrons are unevenly shared whereas in a \_\_\_\_\_ covalent bond electrons are evenly shared.
12. Weak attractions between partially positively charged atoms and partially negatively charged atoms within the same molecule or between different molecules are called \_\_\_\_\_ bonds.
13. The pH scale is a measure of a substance's \_\_\_\_\_ ion concentration.
14. A move from pH 6 to pH 5 has made the solution \_\_\_\_\_ times more acidic.
- 2
  - 5
  - 10
  - 100
15. Substances that resist changes in pH are called \_\_\_\_\_.

# BIOMOLECULES

## THE CHEMICALS OF LIFE

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### OBJECTIVES

1. Know the four major categories of biomolecules and the sub-categories of each.
2. Know the “TinkerToy” rules for the major elements of life; i.e., carbon, hydrogen, oxygen, nitrogen, phosphorus, and sulfur.
3. Know the building blocks (and how to draw them) of the four major categories of biomolecules. Carbohydrates—monosaccharide (glucose); Lipids—glycerol and fatty acid; be able to draw a stick figure of a phospholipid and be able to recognize a cholesterol molecule; Proteins—amino acids; Nucleic acids—be able to draw a stick figure of a nucleotide.
4. Know how to draw either a dehydration synthesis or hydrolysis reaction between two monosaccharides, between a glycerol and a fatty acid, or between two amino acids. Know how to connect stick figures of nucleotides together.
5. Know how to draw a phospholipid bilayer.
6. Know the relationship between the amino acid sequence in a protein and the function of a protein.
7. Know the basic functions of the four major categories of biomolecules.



Thoroughly study the above objectives before you take the chapter quiz. Be sure you know how to spell the terms. Study hard for this chapter. You'll need lots of practice drawing these biomolecules.



## CHAPTER 2 QUIZ

1. What are the 'TinkerToy rules' (how many bonds does it usually form with other atoms) for the following?
  - a. Carbon \_\_\_\_\_
  - b. Hydrogen \_\_\_\_\_
  - c. Oxygen \_\_\_\_\_
  - d. Nitrogen \_\_\_\_\_
  - e. Phosphorus \_\_\_\_\_
  - f. Sulfur \_\_\_\_\_
2. Name the four major biomolecule categories.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
3. Name one example of a disaccharide. \_\_\_\_\_
4. Cellulose is one type of \_\_\_\_\_.
5. Give one function of cellulose: \_\_\_\_\_
6. Draw glucose doing a dehydration synthesis reaction with another glucose forming a disaccharide. Label the glycosidic linkage.





11. A chain of 60 amino acids is called a \_\_\_\_\_.
12. Draw a stick figure of a nucleotide and label its three components.
13. The sequence of amino acids determines the \_\_\_\_\_ of the protein, which in turn determines the \_\_\_\_\_ of the protein.
14. Name five different types of jobs done by proteins.
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
15. Name two functions of nucleotides other than storing genetic information.
- a. \_\_\_\_\_
  - b. \_\_\_\_\_



**Study all the objectives for this unit. Make sure you know the correct answers for the quizzes. Understand the concepts and terms; don't just memorize them. Then take the Unit Exam.**