

Study Guide and
Student Solutions Manual

for

McMurry's
Organic Chemistry
Seventh Edition

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Contents

Solutions to Problems

Chapter 1	Structure and Bonding	1
Chapter 2	Polar Covalent Bonds; Acids and Bases	20
Review Unit 1		38
Chapter 3	Organic Compounds: Alkanes and Their Stereochemistry	41
Chapter 4	Organic Compounds: Cycloalkanes and Their Stereochemistry	64
Chapter 5	An Overview of Organic Reactions	87
Review Unit 2		102
Chapter 6	Alkenes: Structure and Reactivity	106
Chapter 7	Alkenes: Reactions and Synthesis	131
Chapter 8	Alkynes: An Introduction to Organic Synthesis	159
Review Unit 3		182
Chapter 9	Stereochemistry	185
Chapter 10	Organohalides	213
Chapter 11	Reactions of Alkyl Halides: Nucleophilic Substitutions and Eliminations	231
Review Unit 4		262
Chapter 12	Structure Determination: Mass Spectrometry and Infrared Spectroscopy	266
Chapter 13	Structure Determination: Nuclear Magnetic Resonance Spectroscopy	287
Review Unit 5		314
Chapter 14	Conjugated Dienes and Ultraviolet Spectroscopy	317
Chapter 15	Benzene and Aromaticity	341
Chapter 16	Chemistry of Benzene: Electrophilic Aromatic Substitution	359
Review Unit 6		398
Chapter 17	Alcohols and Phenols	402
Chapter 18	Ethers and Epoxides; Thiols and Sulfides	437
Review Unit 7		465
Chapter 19	Aldehydes and Ketones: Nucleophilic Addition Reactions	468
Chapter 20	Carboxylic Acids and Nitriles	511
Chapter 21	Carboxylic Acid Derivatives: Nucleophilic Acyl Substitution Reactions	536
Review Unit 8		574
Chapter 22	Carbonyl Alpha-Substitution Reactions	578
Chapter 23	Carbonyl Condensation Reactions	607
Chapter 24	Amines and Heterocycles	642
Review Unit 9		684
Chapter 25	Biomolecules: Carbohydrates	687
Chapter 26	Biomolecules: Amino Acids, Peptides, and Proteins	719
Review Unit 10		747
Chapter 27	Biomolecules: Lipids	750
Chapter 28	Biomolecules: Nucleic Acids	776
Chapter 29	The Organic Chemistry of Metabolic Pathways	792
Review Unit 11		817
Chapter 30	Orbitals and Organic Chemistry: Pericyclic Reactions	821
Chapter 31	Synthetic Polymers	842
Review Unit 12		858

Appendices

Functional-Group Synthesis	861
Functional-Group Reactions	866
Reagents in Organic Chemistry	870
Name Reactions in Organic Chemistry	877
Abbreviations	885
Infrared Absorption Frequencies	888
Proton NMR Chemical Shifts	891
Nobel Prize Winners in Chemistry	892
Answers to Review-Unit Questions	901

Preface

What enters your mind when you hear the words "organic chemistry?" Some of you may think, "the chemistry of life," or "the chemistry of carbon." Other responses might include "pre-med," "pressure," "difficult," or "memorization." Although formally the study of the compounds of carbon, the discipline of organic chemistry encompasses many skills that are common to other areas of study. Organic chemistry is as much a liberal art as a science, and mastery of the concepts and techniques of organic chemistry can lead to improved competence in other fields.

As you work on the problems that accompany the text, you will bring to the task many problem-solving techniques. For example, planning an organic synthesis requires the skills of a chess player; you must plan your moves while looking several steps ahead, and you must keep your plan flexible. Structure-determination problems are like detective problems, in which many clues must be assembled to yield the most likely solution. Naming organic compounds is similar to the systematic naming of biological specimens; in both cases, a set of rules must be learned and then applied to the specimen or compound under study.

The problems in the text fall into two categories: drill and complex. Drill problems, which appear throughout the text and at the end of each chapter, test your knowledge of one fact or technique at a time. You may need to rely on memorization to solve these problems, which you should work on first. More complicated problems require you to recall facts from several parts of the text and then use one or more of the problem-solving techniques mentioned above. As each major type of problem—synthesis, nomenclature, or structure determination—is introduced in the text, a solution is extensively worked out in this *Solutions Manual*.

Here are several suggestions that may help you with problem solving:

1. The text is organized into chapters that describe individual functional groups. As you study each functional group, *make sure that you understand the structure and reactivity of that group*. In case your memory of a specific reaction fails you, you can rely on your general knowledge of functional groups for help.
2. *Use molecular models*. It is difficult to visualize the three-dimensional structure of an organic molecule when looking at a two-dimensional drawing. Models will help you to appreciate the structural aspects of organic chemistry and are indispensable tools for understanding stereochemistry.
3. Every effort has been made to make this *Solutions Manual* as clear, attractive, and error-free as possible. Nevertheless, you should *use the Solutions Manual in moderation*. The principal use of this book should be to check answers to problems you have already worked out. The *Solutions Manual* should not be used as a substitute for effort; at times, struggling with a problem is the only way to teach yourself.
4. *Look through the appendices at the end of the Solutions Manual*. Some of these appendices contain tables that may help you in working problems; others present information related to the history of organic chemistry.

Although the *Solutions Manual* is written to accompany *Organic Chemistry*, it contains several unique features. Each chapter of the *Solutions Manual* begins with an outline of the text that can be used for a concise review of the text material and can also serve as a reference. After every few chapters a Review Unit has been inserted. In most cases, the chapters covered in the Review Units are related to each other, and the units are planned to appear at approximately the place in the textbook where a test might be given. Each unit lists the vocabulary for the chapters covered, the skills needed to solve problems, and several important points that might need reinforcing or that restate material in the text from a slightly different point of view. Finally, the small self-test that has been included allows you to test yourself on the material from more than one chapter.

I have tried to include many types of study aids in this *Solutions Manual*. Nevertheless, this book can only serve as an adjunct to the larger and more complete textbook. If *Organic Chemistry* is the guidebook to your study of organic chemistry, then the *Solutions Manual* is the roadmap that shows you how to find what you need.

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