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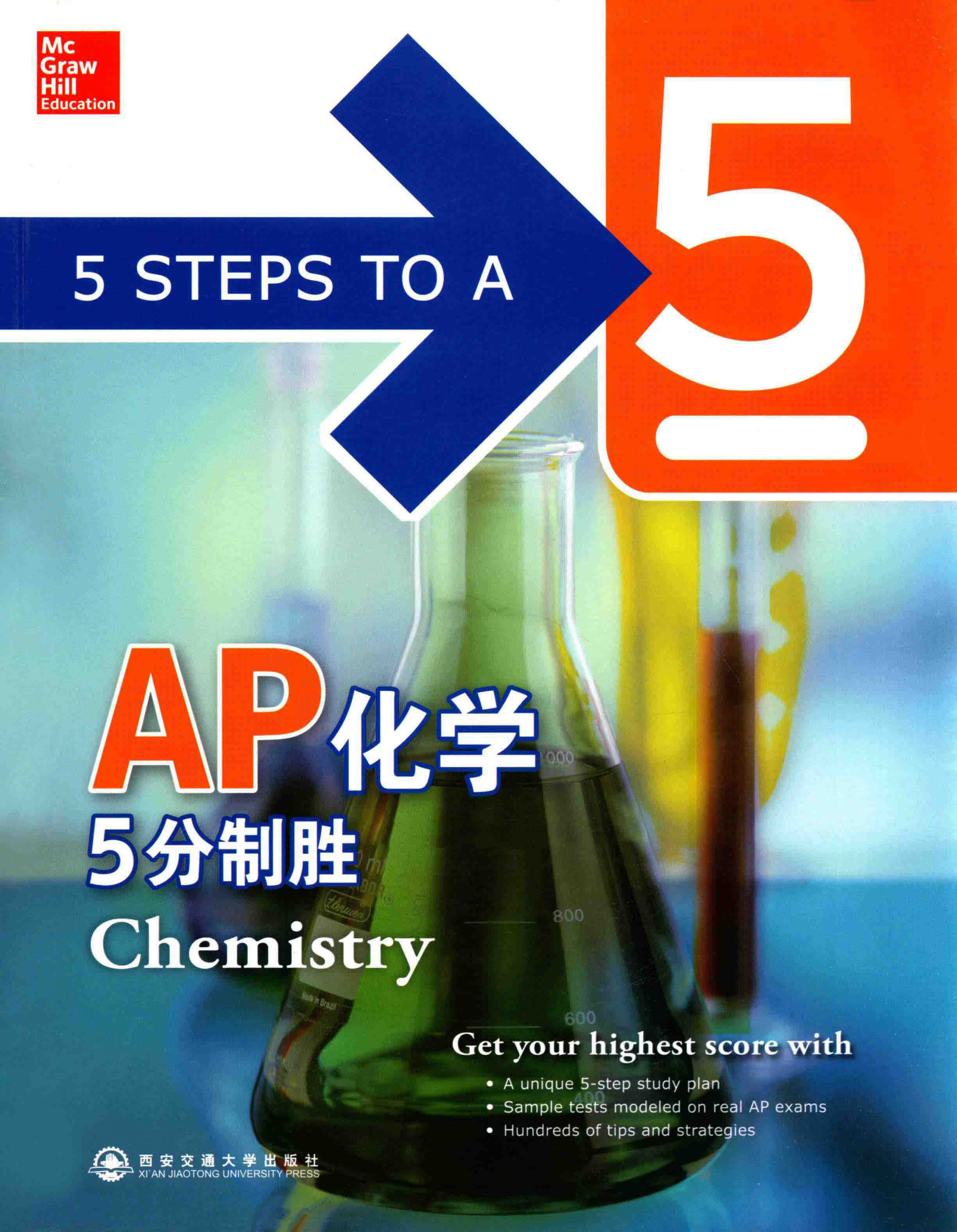
AP化学 5分制胜 Chemistry



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Chemistry

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前　言

AP项目（Advanced Placement Program）始于1955年，由美国大学理事会（the College Board）主持，是在高中阶段开设的具有大学水平的课程，即大学预修课程。AP项目目前设有34门课程和考试，它可以使有余力、有能力、成绩优秀的高中生有机会先修部分美国大学基础课程以获得大学学分，因此吸引了很多成绩优秀的学生选修。目前，已有60多个国家的几千所大学把AP学分作为其入学参考标准，其中包括哈佛大学、耶鲁大学、牛津大学、剑桥大学等世界知名大学。

美国每年约有200万高中毕业生，他们都要参加美国高考SAT和AP课程的考试。美国高中生会在11年级时完成SAT考试，在12年级（高中最后一年）完成两件大事：第一，根据SAT的考试成绩申请大学和奖学金；第二，选修AP课程，并进行备考。在高中选修AP课程和通过AP考试不仅是对学生能力和学业水平的证明，还可以使学生：1. 在申请大学时具有很大的优势。美国大学把学生在AP考试中的表现作为衡量其是否能够胜任大学学习的依据。从美国大学录取顾问委员会公布的影响大学录取因素的比较分析可以看出，AP成绩以80.3%的影响力位居第一，因为它向学校充分展示了学生的才智、专长及学习能力。2. 进入大学后，可以获得大学学分，免修同类课程，提早选修更高级的课程或跳级。3. 提前毕业。4. 节省大学学费。在美国，初等教育是免费的，但高等教育是收费的。选修的AP课程越多，免修的大学课程也就越多，节省的学费也就越多。另外，对中国学生而言，除了可以获得美国大学学分、省时省钱外，还可以在国内提前适应美国大学课程。

AP考试成绩的评定为5分制，满分5分表示极为优秀，4分为优秀，3分相当于合格，即可为大多数学校所接受，2分为可能有资格，1分则不予推荐。 AP考试在每年5月份举行一次，为期两周。每门课程的考试时间约为2～3个小时，考试费用为每科1000元人民币或1400元港币左右。

更多信息可查询以下网站：

AP考试官网：http://www.collegeboard.com

AP国内报名网站：http://apchina.net.cn

香港考务局报名网址：https://www2.hkeaa.edu.hk

为满足国内考生对AP考试资料日益增长的需求，我们从美国知名教育出版公司McGraw-Hill Education引进了本系列AP考试丛书，共包括7本，分别为《AP微观 / 宏观经济学5分制胜》、《AP统计学5分制胜》、《AP微积分5分制胜》、《AP美国历史5分制胜》、《AP物理5分制胜》、《AP生

物5分制胜》和《AP化学5分制胜》。AP各学科分册由相关领域专家编写，精准把握考试命题特点，设计“五步”高效学习方案，总结与考试相关的学科内容和要点，精选针对性练习以及全真模拟试题，并配以答案和准确详尽的解析。本系列丛书适用于备考AP的所有考生，便于考生巩固所学，紧抓重点，取得高分。

本书为其中的《AP化学5分制胜》。AP化学考试并不简单，但是回报丰厚——换取大学学分以及在化学学习上更进一步。大家需要努力地学习才能取得优异成绩，而本书会帮助你掌握和巩固必备知识，为考试作好准备。本书的两位作者都具有多年大学普通化学的教学经验。John Moore是*Chemistry for Dummies*一书的作者，他还和Richard Langley共同撰写了*Chemistry for the Utterly Confused*——一本适用于大学生和高中生的化学指南。两位作者都有丰富的经验和精湛的技能来充分阐述AP化学考试所需的知识和策略。Richard Langley曾任高中理科教师，John Moore也有多年为公立学校的老师和学生教授化学课程的经验。并且，他们都有多年参与AP化学考试阅卷的经验，有关于考试评分方法的第一手资料。两位作者努力使本书的内容易于理解，并严格按照AP化学考试的题型设计测试题。只要考生认真钻研本书中的讲解和题目，就可以对AP所考查的化学知识有更深入的了解，同时增加对考试题型的熟悉程度，从而做到高效备考。

现在来简单介绍一下本书的内容框架。Introduction部分介绍了“五步”计划。第1章对AP化学的考试特点进行了概述。第2章为考生提供了三种备考方案及其时间安排。如果考生选择为期一学年的方案，可以将这本书与自己参加的AP化学课程同步使用。如果考生选择其他两种方案中的一种，也可以与自己参加的AP化学课程同步使用，但是需要更侧重这本辅导书的使用。不管怎样，只要大家付出了时间和努力，就会有收获。第3章是一份预测题，帮助考生评估自己复习前的水平，发现在之后的复习中需要额外注意的薄弱之处。第4章为每个考试题型提出了一些有效的应试策略，让复习更有技巧性。从第5章到第19章是对化学知识的逐一讲解，涵盖了AP考试中的几乎所有考查内容。本书最后还提供了两套完整的全真模拟试题，可以帮助考生检测复习效果，并体验真实的考试场景。

本书还有一些有利于考生学习的细节设置。例如，每章末尾配有复习题，帮助考生检查自己对相关内容的理解程度。这里提醒一下考生，请特别注意free-response questions部分的题目，这是能够让自己有突出表现的部分，且分值与多项选择题几乎相同。此外，还可利用快速回顾（Rapid Review）来复习每章的重点知识。

请随身携带这本书，在接下来的数周或数月内它将成为各位考生的忠实朋友，帮助你们实现“满分5分”的目标！

INTRODUCTION: THE FIVE-STEP PROGRAM

The Basics

Not too long ago, you enrolled in AP Chemistry. A curiosity about chemistry, encouragement from a respected teacher, or the simple fact that it was a requirement may have been your motivation. No matter what the reason, you find yourself flipping through a book, which promises to help you culminate this experience with the highest of honors, a 5 in AP Chemistry. Yes, it is possible to achieve this honor without this book. There are many excellent teachers of AP Chemistry out there who teach, coax, and otherwise prepare their students into a 5 every year. However, for the majority of students preparing for the exam, the benefits of buying this book far outweigh its cost.

The key to doing well on the Advanced Placement (AP) Chemistry Exam is to outline a method of attack and not to deviate from this method. We will work with you to make sure you take the best path towards the test. You will need to focus on each step, and this book will serve as a tool to guide your steps. But do not forget—no tool is useful if you do not use it.

Organization of the Book

This book conducts you through the five steps necessary to prepare yourself for success on the exam. These steps will provide you with the skills and strategies vital to the exam, and the practice that will lead you to towards the perfect 5.

First, we start by introducing the basic five-step plan used in this book. Then in Chapter 1, we will give you some background information about the AP Chemistry exam. Next, in Chapter 2, we present three different approaches to preparing for the exam. In Chapter 3, we give you an opportunity to evaluate your knowledge with a Diagnostic Exam. The results of this exam will allow you to customize your study. In Chapter 4, we offer you a multitude of tips and suggestions about the different types of question on the AP Chemistry exam. Many times good test-taking practices can help raise your score.

Since the volume of the material to be mastered can be intimidating, Chapters 5 to 19 present a comprehensive review of the material that you will cover in an AP Chemistry course. This is review material, but since not all of this material appears in every AP Chemistry class, it will also help to fill in the gaps in your chemistry knowledge. You can use it in conjunction with your textbook if you are currently taking AP Chemistry, or you can use it as a review of the concepts you covered. At the end of each chapter, you will find both a multiple-choice and free-response exam for you to test yourself. The answers and explanations are included. This will also help you identify any topics that might require additional study.

After these content chapters, there are two complete chemistry practice exams, including multiple-choice and free-response questions. The answers and explanations are included. These exams will allow you to test your skills. The multiple-choice questions will provide you with practice on questions similar to those asked on past AP exams. These are not the exact questions, but ones that will focus you on the key AP Chemistry topics. There are also

examples of free-response questions; there are fewer of these, since they take much longer to answer. After you take an exam, you should review each question. Ask yourself, why was this question present? Why do I need to know this? Make sure you check your answers against the explanations. If necessary, use the index to locate a particular topic and reread the review material. We suggest that you take the first exam, identify those areas that need additional study, and review the appropriate material. Then take the second exam and use the results to guide your additional study.

Finally, in the appendixes you will find additional resources to aid your preparation. These include:

- A tip sheet on how to avoid "stupid" mistakes and careless errors
- Common conversions
- How to balance Redox equations
- A list of common ions
- A bibliography
- A number of useful Web sites
- A glossary of terms related to AP Chemistry
- A table of half-reactions for use while answering free-response questions
- A table of equations and abbreviations for use while answering free-response questions
- A periodic table for use when answering any exam questions

The Five-Step Program

Step 1: Set Up Your Study Program

In Step 1, you will read a brief overview of the AP Chemistry exams, including an outline of the topics. You will also follow a process to help determine which of the following preparation programs is right for you:

- Full school year: September through May.
- One semester: January through May.
- Six weeks: Basic training for the exam.

Step 2: Determine Your Test Readiness

Step 2 provides you with a diagnostic exam to access your current level of understanding. This exam will let you know about your current level of preparedness, and on which areas you should focus your study.

- Take the diagnostic exam slowly and analyze each question. Do not worry about how many questions you get right. Hopefully this exam will boost your confidence.
- Review the answers and explanations following the exam, so that you see what you do and do not yet fully understand.

Step 3: Develop Strategies for Success

Step 3 provides strategies that will help you do your best on the exam. These strategies cover both the multiple-choice and free-response sections of the exam. Some of these tips are based upon experience in writing questions, and others have been gleaned from our years of experience reading (grading) the AP Chemistry exams.

- Learn how to read and analyze multiple-choice questions.
- Learn how to answer multiple-choice questions.
- Learn how to plan and write answers to the free-response questions.

Step 4: Review the Knowledge You Need to Score High

Step 4 encompasses the majority of this book. In this step, you will learn or review the material you need to know for the test. Your results on the diagnostic exam will let you know on which material you should concentrate your study. Concentrating on some material does not mean you can ignore the other material. You should review all the material, even what you already know.

There is a lot of material here, enough to summarize a year long experience in AP Chemistry and highlight the, well, highlights. Some AP courses will have covered more material than yours, some will have covered less; but the bottom line is that if you thoroughly review this material, you will have studied all that is on the exam, and you will have significantly increased your chances of scoring well. This edition gives new emphasis to some areas of chemistry to bring your review more in line with the revised AP Chemistry exam format. For example, there is more discussion of reactions and the laboratory experience. Each chapter contains a short exam to monitor your understanding of the current chapter.

Step 5: Build Your Test-taking Confidence

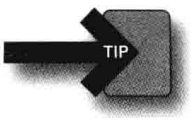
In Step 5, you will complete your preparation by testing yourself on practice exams. This section contains *two* complete chemistry exams, solutions, and sometimes more importantly, advice on how to avoid the common mistakes. In this edition, the free-response exams have been updated to more accurately reflect the content tested on the AP exams. Be aware that these practice exams are *not* reproduced questions from actual AP Chemistry exams, but they mirror both the material tested by AP and the way in which it is tested.

The Graphics Used in this Book

To emphasize particular skills and strategies, we use several icons throughout this book. An icon in the margin will alert you to pay particular attention to the accompanying text. We use these three icons:

This icon highlights a very important concept or fact that you should not pass over.

This icon calls your attention to a strategy that you may want to try.



This icon indicates a tip that you might find useful.

Boldfaced words indicate terms that are included in the glossary at the end of this book.

ABOUT THE AUTHORS

JOHN MOORE grew up in the foothills of western North Carolina. He attended the University of North Carolina–Asheville, where he received his bachelor's degree in chemistry. He earned his master's degree in chemistry from Furman University in Greenville, South Carolina. After a stint in the United States Army he decided to try his hand at teaching. In 1971 he joined the faculty of Stephen F. Austin State University in Nacogdoches, Texas, where he still teaches chemistry. In 1985 he started back to school part-time, and in 1991 received his doctorate in education from Texas A&M University. In 2003 his first book, *Chemistry for Dummies,* was published.

RICHARD LANGLEY grew up in southwestern Ohio. He attended Miami University in Oxford, Ohio, where he earned bachelor's degrees in chemistry and mineralogy and a master's degree in chemistry. He next went to the University of Nebraska in Lincoln, where he received his doctorate in chemistry. He took a postdoctoral position at Arizona State University in Tempe, Arizona, then became a visiting assistant professor at the University of Wisconsin–River Falls. He has taught at Stephen F. Austin State University in Nacogdoches, Texas, since 1982.

The authors are coauthors of *Chemistry for the Utterly Confused*, *Biochemistry for Dummies,* and *Organic Chemistry II for Dummies.*

Both authors are graders for the free-response portion of the AP Chemistry Exam. In fact, between them, they have almost twenty years of AP grading experience and estimate that together they have graded over 100,000 exams.

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