

新东方SAT考试辅导教材

BIOLOGY E/M

SAT^{*} II

生物



- 全面覆盖 SAT II 生物考点
- 专家点拨解题思路，增加取胜把握
- 倾囊相授解题技巧，直击正确答案
- 4套全真模拟试题，提高应试技能

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BIOLOGY

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SAT 考试概述

一、考试认可

SAT 考试(Scholastic Assessment Test)是由美国大学委员会(College Board)组织的“学术水平测验考试”，是美国高中生进入美国大学的标准入学考试。SAT 考试成绩是美国大学唯一能够得到的、可以比较来自不同地区和学校学生的成绩，所以对录取与否及奖学金多少的影响非常大。美国 3600 余所大学都接受 SAT 考试成绩。

二、考试简介

SAT 考试分为两部分：

1. SAT I (SAT Reasoning Test)：包括数学、阅读、写作 3 个部分，考试时间为 3 小时 45 分钟，各部分的测试内容、测试题型和分值如下：

数学部分：

测试内容	测试题型	分值
运算能力、代数与函数、几何、数据分析、统计学及基础概率论	选择题、应用题	800

阅读部分：

测试内容	测试题型	分值
批判性阅读与句子理解	阅读理解、句子填空	800

写作部分：

测试内容	测试题型	分值
语法、词汇、语言应用	写作、语法	800

2. SAT II (SAT Subject Tests)：包括数学、物理、化学、生物、文学、美国历史、世界历史、外语(汉语、日语、德语、法语、西班牙语、拉丁语等 20 种)。部分美国名校只要求中国留学申请人提供 SAT I 的成绩，部分院校及专业要求申请人提供 SAT II 的单科考试成绩。

SAT II 考试时间为 1 小时，大部分为选择题，每科满分为 800 分，主要考查考生某一学科的知识 and 运用这些知识的能力。

三、考试报名

决定报名前，首先要有一张国际通用信用卡，如果没有，需要办理一张中国银行的“长城国际信用卡”。具体报名程序如下：

1. 登录 www.collegeboard.com 注册个人信息，从而获得用户名和密码；
2. 登录 SAT 首页，进入自己的账户。填写个人在校成绩、期望申请的专业等信息；
3. 上述信息填写完毕后，第二次登录时，这些信息不会出现，此时直接点击“new registration”进入即可。在注册第一页选择考试类型、考点、年级(美国的 12 年级等于中国的高中三年级)等；
4. 点“continue”进入下一页面，选择考试时间；
5. 进入下一页面，选择是否接受“student answer service”的服务(如果选“yes”，要交额外的费用，但考试后可获得考试报告)；
6. 进入下一页面，填写欲申请的学校(也可以不填)；
7. 进入下一页面，选择考试地点(如选择香港，点“search”，会出现几个地点，可选择其中之一；点“add”，再选择)；
8. 进入下一页面，此时会出现“registration information”、“fee and payment”和“credit card information”。填写信用卡类型、卡号及有效期，之后会得到确认单，报名即完成。

四、什么是 PSAT?

PSAT (Preliminary SAT) 是 SAT 的预备测验, 这个测验的分数可以用来申请 NMSQT (National Merit Scholarship Qualifying Test, 美国的模范学生奖学金资格测验)。对于广大中国考生而言, PSAT 难度要低于 SAT, 但是考试科目基本一致, 都是阅读、写作、数学, 考生可以通过 PSAT 的培训来逐步适应 SAT 的考试。可以说, PSAT 是 SAT 的预演与准备, PSAT 与 SAT 相结合的培训能够更有效地帮助中国考生打好基础、适应考试, 更有利于考生在 SAT 考试中考出好成绩。

五、计分方式

1. SAT 每一类型考题都是由易而难排列。
2. 除 SAT I 部分数学题目外, SAT II 和 SAT I 其他所有题目答错皆倒扣分, 但未作答的题目则以零分计算。
3. 作答时可利用题目的空白处计算或做记号, 但所有答案均需填写在答题纸上才计分。答题纸要小心填写, 如有污损应擦拭干净。
4. SAT I 阅读、数学及写作各部分的分值均为 800 分, SAT II 每科分值也是 800 分。

六、成绩查询

考试后两周, 考生可通过网站 www.collegeboard.com 查询考试成绩。

七、考试建议

1. 准许带进考场的物品:

(1) 护照及准考证

(2) 2 支 2B 铅笔和橡皮擦

注意: 不要使用自动铅笔、钢笔或圆珠笔。自动铅笔涂黑的效果不如 2B 铅笔, 使用钢笔或圆珠笔答题则会得 0 分。

(3) 计算器(用于数学部分)

(4) 手表(不带语音报时功能)

(5) 手袋或背包(必须放在座位下方)

(6) 一些食品和饮料(必须放在所带的手袋和背包里, 考试休息间隙时可以食用)

2. 不准带进考场的物品:

(1) 草稿纸

(2) 字典、书和笔记本

(3) 圆规和各种尺子

(4) 荧光笔和彩色铅笔

(5) 随身听和便携式 CD 播放器

(6) 相机

(7) 带有语音报时功能的手表

(8) 手机以及除计算器外的其他电子设备

3. 备考建议

SAT 考查考生经过长期学习所获得的能力, 准备考试有短期和长期两种准备:

A. 短期准备:

(1) 熟悉题目结构、题型、考试要求及考试程序;

(2) 详读 International SAT Program Registration Bulletin 手册, 了解更多考试及考前和考后的相关事项。

B. 长期准备:

一般而言, 短期集中的练习对熟悉考试题型和减少考试焦虑颇有帮助, 但长期努力才是准备考试的不二法门。考生应多选修较富挑战性的学术性课程, 广泛研读学术性及课外书籍。

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PART I

ABOUT THE SAT II: BIOLOGY E/M TEST

CHAPTER 1

WHAT YOU NEED TO KNOW ABOUT THE SAT II: BIOLOGY E/M TEST

THE SAT II: SUBJECT TESTS

What Are the SAT II: Subject Tests?

The SAT II: Subject Tests (formerly known as Achievement Tests) are the lesser-known supplements to the SAT I, sponsored by the same people—the College Entrance Examination Board. The tests are actually created by the Educational Testing Service, which also creates the SAT I. Just as for the SAT I, to take the SAT II: Subject Tests you must sign up for the test(s) in advance, number 2 pencils in hand, and have your results reported to whichever colleges and universities you wish to consider them.

But, whereas, the SAT I tests general verbal reasoning, mathematical reasoning, and writing skills, the SAT IIs cover specific knowledge in a wide variety of subjects, including English, mathematics, history, science, and foreign languages. SAT IIs are much shorter than the SAT I; they're only 1 hour long, so you can take up to three (3) in any one sitting, although you're not required to. You can choose which SAT II: Subject Tests to take, and how many you'll take on one day. Some students may take the SAT II in World History, Math, and Biology in the same sitting, whereas others might choose just Biology and Math on the same day.

Why Should I Take the SAT IIs in Addition to the SAT I?

The College Board claims that SAT IIs can help colleges measure your academic performance and predict your future achievement—but they say the same thing about the SAT I. The difference is that SAT IIs test your knowledge in specific subjects such as Biology, French, or U.S. History, therefore, they provide colleges and universities with a way to gauge your ability in these subjects, something they cannot get from the SAT I. Many colleges and universities now require students to submit scores for SAT II: Subject Tests as part of their application. Along with your high school transcript, SAT I score, letters of recommendation, interview, and essays, these scores provide another way for colleges to weigh your application against other applicants.

Although colleges can look at grades to determine how a student is doing in a certain subject, it is often difficult for them to understand if an "A" at one school is equivalent to an "A" at another. If Biology is your strongest subject, then a high SAT II: Biology score, combined with good grades on your transcript, can convey that strength to a college or university.

How Many SAT IIs Should I Take? And Which SAT IIs Should I Take?

You can take as many SAT IIs as you would like. According to the College Board, in 2003, 57% of SAT II test-takers took three tests, and 26% took four or more. Remember, though, that you're limited to taking three tests in one sitting; if you want to take more than three, you'll have to sign up for two testing dates. Your first consideration in choosing how many and which subject tests to take should be the requirements of the colleges or universities to which you're applying. Many colleges require applicants to take specific tests, or to take a minimum number of tests.

If you can choose, then you should take the SAT IIs for which you're best prepared, and on which you will score highest. If you've taken a class in a specific subject and done well in that class, then you will probably be well prepared to take the SAT II in that subject. When choosing how many to take, remember that taking more SAT IIs is not always better. Focusing your preparation on a smaller number of tests will probably leave you better off than taking a larger number for which you are not adequately prepared.

When Should I Take the SAT IIs?

You should take the SAT IIs when you will be most prepared. Ideally, you should take the test as soon as possible after you've finished a course in that subject. So, if you took biology in sophomore year, you may wish to take the SAT II: Biology test in May or June following that year. Do consider that you may wish to leave yourself time to review for each test properly, especially if some time has passed since you last encountered the material.

THE SAT II: BIOLOGY E/M TEST

What Is the Format of the SAT II: Biology-E/M Test? And What Does "E/M" Mean?

The SAT II: Biology test is a 1-hour test consisting of 80 multiple-choice questions. The SAT II: Biology test is unique among the SAT IIs in that you have a choice between the "E" version of the test, which focuses more on ecology (subjects such as ecosystems, biomes, food chains and webs, and the water cycle), and the "M" version of the test, which focuses more on molecular biology (subjects such as genetics, inheritance, respiration, and photosynthesis). All test-takers get the same 60 "core" questions, which cover all areas of biology. You can then choose between two 20-questions sections, the ecology section or the molecular section.

What Is Covered on the SAT II: Biology Test?

Both the Biology-E and the Biology-M tests are designed to cover the material that would be covered typically in a high school biology course and lab. You are also expected to be familiar with algebra and how to use the metric system; some questions will ask you to interpret data as if you had completed a laboratory experiment, and will occasionally require you to do simple mathematical calculations.

The College Board gives an approximate outline of the how much of each area of biology the tests cover:

Area	Percentage of Biology-E Devoted to Area	Percentage of Biology-M Devoted to Area
Cellular and Molecular Biology	15	27
Ecology	23	13
Genetics	15	20
Organismal Biology	25	25
Evolution and Diversity	22	15

Although the test may not always be exactly 23% ecology or 27% cellular and molecular biology, you should be aware that the Biology-M test focuses more on cellular and molecular biology and cellular genetics, while the Biology-E test focuses more on ecology and evolution and diversity. Approximately one-fourth of both tests is devoted to organismal biology. This book includes a detailed review of all of the areas covered in both tests.

Does It Matter whether I Take Biology-E or Biology-M? How Do I Choose between Them?

The College Board doesn't care whether you take the Biology-E or the Biology-M test, and almost the same number of students take each test. One is not designed to be harder than the other. You don't even need to indicate which one you're going to be taking until you're actually taking the test. Your test booklet will contain both sets of questions, and instructions on how to answer either the ecology or molecular set of questions.

You should choose whichever test is geared toward your strengths in biology. If your biology course focused more on ecology or evolution, discussing food webs, predator-prey relationships, nutrient cycles, and biomes, then Biology-E is likely to be the test for you. If your biology course focused more on cellular processes and biomolecules, discussing DNA, proteins, chromosomes, mitosis and meiosis, respiration, and photosynthesis, then Biology-M is probably the better test for you.

Colleges care far more about your score on the SAT II: Biology test than which form of the exam you took—so your first consideration should be choosing the exam with which you're most comfortable. As a guide, however, you may wish to consider the type of biology you might study in the future. If you're applying for or are considering a program in biochemistry, genetics, or microbiology, then Biology-M might be a better choice; if you're applying for or considering a program in environmental studies, ecology, or evolution, then Biology-E might be more suited for you.

What if I Can't Decide between Biology-E and Biology-M?

If you're not sure whether Biology-E or Biology-M is better for you, don't worry! This book is designed to prepare students equally for both tests, and Chapter 2 includes a section on how to use this book to help you decide whether to take Biology-E or Biology-M.

Do I Still Have to Study Ecology if I Take Biology-M? Do I Still Have to Study Molecular Biology if I Take Biology-E?

The answer to both of these questions is yes, if you plan to do well. If you're taking Biology-M, you may not be required to know ecology as in-depth as someone taking Biology-E, but you will still be asked some questions on ecology. And if you're taking Biology-E, you shouldn't overlook molecular biology. While you may want to spend more of your energy preparing for the specific test you're taking, reviewing all of the material is your best bet.

TAKING THE TEST

How Do I Register for the SAT II?

You can register for the SAT II in a number of ways. The easiest and quickest way is through the College Board website, at <http://www.collegeboard.com>. Through the website, you can quickly choose which tests you wish to take, choose a date and testing center, and immediately receive a confirmation of your registration. You will need to use a credit card to register online. If you are signing up for Sunday testing for the first time, if you are younger than 13, or if you require special testing arrangements, you will need to mail in your registration.

Registering for the SAT II by mail allows you to use a check or money order. Register by mail using the registration form in the *SAT Registration Bulletin*, which should be available in the college counseling office of your high school. The cost is the same to register by mail.

If you have registered for the SAT I or SAT II before, you can reregister for the SAT II via telephone, by calling 800-SAT-SCORE (800-728-7267) or 609-771-7600 from 7 AM to midnight, Eastern time. You must pay by credit card, and there is a \$10 fee for telephone registration.

How Much Does It Cost to Register for the SAT II?

Taking the SAT II costs \$17, plus \$8 for each test that you take (\$18 for the language tests with listening). Just taking the SAT II: Biology, then, will cost \$25; adding another subject will cost \$8 more. Late registration incurs an extra fee of \$20.

May I Use a Calculator on the Test?

Although some calculations may be required, **you may not use a calculator on the SAT II: Biology E/M**. You may use a calculator only on the SAT II: Math test.

What if I Need to Take the Test Under Special Circumstances?

Students with disabilities or special needs can qualify for testing accommodations or additional time on the SAT I and SAT II through the College Board's Services for Students with Disabilities (SSD). To qualify for a special accommodation because of a physical handicap or learning disability, you will need to apply and support your application with documentation of your disability. Talk to your guidance counselor, and look on the College Board website (<http://www.collegeboard.com>) for more information on how to register.

How Is the SAT II: Biology Test Scored?

Your answers for the Biology test will be scored by a machine that reads your answer sheet. Just as in each section of the SAT I, your score for each SAT II test will range from 200 to 800. This scaled score is based on your raw score for the test. The raw score is calculated by adding one point for every correct answer, and subtracting 1/4 point for every incorrect answer. This scaled score is then reported to you, your high school, and any colleges and universities you choose.

When Will I Receive My Scores?

Scores are mailed to students approximately 3–4 weeks after the test. If you want to know your score early, you can access your scores for free online (at the College Board website, <http://www.collegeboard.com>) or for \$10 by phone (800-SAT-SCORE or 800-728-7267) about 2–3 weeks after the test.

How Do I Submit My SAT II Scores to Colleges and Universities?

Once you're ready to submit your scores to colleges and universities, there are a number of ways to do so. When you sign up for the SAT I or SAT II, your fee includes free reporting of the results to up to four colleges or universities. You can also request that your scores be reported to additional schools for \$7 per school using the College Board website (<http://www.collegeboard.com>) or, for a \$10 charge, by phone at 800-SAT-SCORE or 800-728-7267.

You should be aware that when you submit scores, all of your past scores—SAT I and SAT II—will be sent to the colleges or universities you selected. Scores for tests that have not yet taken place or have not yet been scored will not be submitted. Your scores will be sent about 3 weeks after your request; make sure you leave enough time to report your scores before the deadlines sent by the college/university of your choice. Rush reporting is available online or by phone for an additional \$24.

CHAPTER 2

HOW TO USE THIS BOOK

STUDYING SMART FOR THE SAT II

Studying hard is an important part of doing well in high school and beyond, and this book provides a comprehensive review of everything you need to know for the SAT II: Biology-E and Biology-M exams. But with a test that covers a large amount of material, as the Biology E/M test does, it's important to use your studying time wisely—a process we call “studying smart.”

Although ideally you would be able to study in depth all of the material presented in this book, we have designed this book with the understanding that you may not have enough time to review all of the material before your test date, and that you may need to spend more time reviewing certain areas of biology than others. This book is organized to allow you to study smart. It helps you:

- Identify the subject matter that need more work
- Strengthen your ability to answer the types of questions that appear on the test
- Focus your studying on the material that's most important for you
- Check your progress with questions at the end of each lesson
- Practice your test-taking skills using sample SAT IIs

This chapter explains how to use the features of this book to help you study smart and make the most of your preparation for the SAT II: Biology E/M test.

Step One: Identify Your Weaknesses

A crucial part of studying smart is knowing how much you need to study and knowing exactly what you need to study. The diagnostic test in Chapter 4 should be your first step in identifying the areas that are most important for you to review before the SAT II: Biology test. You should take the diagnostic test and score it yourself. Be honest—if you got a question right with a chance guess, then you can mark it right, but you may wish to circle it to indicate that you still might benefit from a review of the material covered in that question.

A detailed explanation of the answer to each question can be found at the end of the diagnostic test. Look for patterns in the question that you're getting wrong or that you had to guess. Are they all in one subject area, such as genetics? Is there one part of ecology that needs a brush up? The diagnostic test should tell you which sections of the book are most important for you to read before the test.

This book also contains, at the beginning of each section, a list of important vocabulary for that section. This vocabulary list provides an important way for you to gauge your ability; you should take some time to consider the words in each list, and ask yourself if you really know the definition and significance of each term. Make a list of sections that include terms with which you are unfamiliar or whose definition you struggle to remember. These sections should be on your list of sections to review before your test day.

Step Two: Strengthen Your Test-Taking Skills

One of the best ways to improve your performance on the SAT II: Biology test is to familiarize yourself with the most common types of questions asked on the test. The designers of the SAT II: Biology test don't design the exam randomly. In addition to asking questions that test your knowledge of biology, they specifically emphasize certain skills such as the ability to use collected data to form a conclusion (as one would in a biology lab), solve word problems, or use mathematical approximations such as Punnett squares or the Hardy-Weinberg equation (see Lessons 7.1 and 8.2) to answer questions.

Chapter 5 of this book teaches you how to answer types of questions that are specific to the SAT II: Biology exam. It will give you important tips on how to strengthen your test-taking skills before the test.

Step Three: Review the Material

This book provides a comprehensive review of all of the material in the five areas of biology covered on the Biology-E and Biology-M tests. Once you have identified the areas that you most need to focus on, you should review the relevant chapters or lessons.

The chapters in this book do not need to be covered in the order in which they appear. If you'd like to focus on Chapter 10 before Chapter 7, you should feel free. Each lesson stands on its own and contains a list of the relevant vocabulary that is covered and a short summary of the most important points.

You should break up your review time over a number of days, if possible. Trying to learn all of the material on the test all at once is not the best way to retain the information you are reviewing. You may wish to develop a schedule for which sections you want to cover, keeping in mind how much time you have before the test, and your preparations for other SAT IIs. Keep in mind that you'll also want to save time to do the practice tests at the end of the book before your test day.

Step Four: Check Your Progress

Each lesson in this book contains review problems that allow you to check your progress as you review the material. You should work these review problems to ensure that you have learned the material that is covered in each section and to accustom yourself to answering the types of questions that will be asked on the test.

The lists of vocabulary at the beginning of each section also provide another way of checking your progress. After reviewing a chapter, go back and look at the vocabulary in each lesson. Are there any terms that you still don't understand? If so, you may want to go back and review them before moving on.

Step Five: Practice, Practice, Practice

The practice tests at the end of this book—two sample Biology-E tests and two sample Biology-M tests—are important tools in your final preparations for the real Biology E/M test. You should take these tests as you might on test day. Sit in a quiet room and time yourself. Practicing using these tests serve a number of functions: first, they allow you to practice answering the type of questions that will appear on the exam. The practice tests have been written to mimic