

<<离散及组合数学>>

图书基本信息

书名：<<离散及组合数学>>

13位ISBN编号：9787030349569

10位ISBN编号：7030349563

出版时间：2012-7

出版时间：科学出版社

作者：Ralph P. Grimaldi

页数：962

字数：961250

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## <<离散及组合数学>>

### 内容概要

离散及组合数学（第五版）（英文影印版）内容主要由四部分组成：（1）基本离散结构，包括集合论与逻辑、函数与关系、语言与有限状态自动机；（2）组合数学，包括排列组合、容斥原理、生成函数、递推关系、鸽巢原理；（3）图论及其应用，包括图论基本知识、树、最优化与匹配；（4）现代应用代数，包括环论与模算术、布尔代数与交换函数、群、编码理论、波利亚计数方法、有限域与组合设计。

离散及组合数学（第五版）（英文影印版）可作为计算机、软件工程和电子类相关专业的本科生或研究生教材，也可供工程技术人员参考。

<<离散及组合数学>>

作者简介

作者:(美)Ralph P. Grimaldi

## 书籍目录

PART 1 Fundamentals of Discrete Mathematics

1 Fundamental Principles of Counting

1.1 The Rules of Sum and Product

1.2 Permutations

1.3 Combinations: The Binomial Theorem

1.4 Combinations with Repetition

1.5 The Catalan Numbers (Optional)

1.6 Summary and Historical Review

2 Fundamentals of Logic

2.1 Basic Connectives and Truth Tables

2.2 Logical Equivalence: The Laws of Logic

2.3 Logical Implication: Rules of Inference

2.4 The Use of Quantifiers

2.5 Quantifiers, Definitions, and the Proofs of Theorems

2.6 Summary and Historical Review

3 Set Theory

3.1 Sets and Subsets

3.2 Set Operations and the Laws of Set Theory

3.3 Counting and Venn Diagrams

3.4 A First Word on Probability

3.5 The Axioms of Probability (Optional)

3.6 Conditional Probability: Independence (Optional)

3.7 Discrete Random Variables (Optional)

3.8 Summary and Historical Review

4 Properties of the Integers: Mathematical Induction

4.1 The Well-Ordering Principle: Mathematical Induction

4.2 Recursive Definitions

4.3 The Division Algorithm: Prime Numbers

4.4 The Greatest Common Divisor: The Euclidean Algorithm

4.5 The Fundamental Theorem of Arithmetic

4.6 Summary and Historical Review

5 Relations and Functions

5.1 Cartesian Products and Relations

5.2 Functions: Plain and One-to-One

5.3 Onto Functions: Stirling Numbers of the Second Kind

5.4 Special Functions

5.5 The Pigeonhole Principle

5.6 Function Composition and Inverse Functions

5.7 Computational Complexity

5.8 Analysis of Algorithms

5.9 Summary and Historical Review

6 Languages: Finite State Machines

6.1 Language: The Set Theory of Strings

6.2 Finite State Machines: A First Encounter

6.3 Finite State Machines: A Second Encounter

6.4 Summary and Historical Review

7 Relations: The Second Time Around

7.1 Relations Revisited: Properties of Relations

7.2 Computer Recognition: Zero-One Matrices and Directed Graphs

7.3 Partial Orders: Hasse Diagrams

7.4 Equivalence Relations and Partitions

7.5 Finite State Machines: The Minimization Process

7.6 Summary and Historical Review

PART 2 Further Topics in Enumeration

8 The Principle of Inclusion and Exclusion

8.1 The Principle of Inclusion and Exclusion

8.2 Generalizations of the Principle

8.3 Derangements: Nothing Is in Its Right Place

8.4 Rook Polynomials

8.5 Arrangements with Forbidden Positions

8.6 Summary and Historical Review

9 Generating Functions

9.1 Introductory Examples

9.2 Definition and Examples: Computational Techniques

9.3 Partitions of Integers

9.4 The Exponential Generating Function

9.5 The Summation Operator

9.6 Summary and Historical Review

10 Recurrence Relations

10.1 The First-Order Linear Recurrence Relation

10.2 The Second-Order Linear Homogeneous Recurrence Relation with Constant

10.3 The Nonhomogeneous Recurrence Relation

10.4 The Method of Generating Functions

10.5 A Special Kind of Nonlinear Recurrence Relation (Optional)

10.6 Divide-and-Conquer Algorithms (Optional)

10.7 Summary and Historical Review

PART 3 Graph Theory and Applications

11 An Introduction to Graph Theory

11.1 Definitions and Examples

11.2 Subgraphs, Complements, and Graph Isomorphism

11.3 Vertex Degree: Euler Trails and Circuits

11.4 Planar Graphs

11.5 Hamilton Paths and Cycles

11.6 Graph Coloring and Chromatic Polynomials

11.7 Summary and Historical Review

12 Trees

12.1 Definitions, Properties, and Examples

12.2 Rooted Trees

12.3 Trees and Sorting

12.4 Weighted Trees and Prefix Codes

12.5 Biconnected Components and Articulation Points

12.6 Summary and Historical Review

13 Optimization and Matching

13.1 Dijkstra's Shortest-Path Algorithm

13.2 Minimal Spanning Trees: The Algorithms of Kruskal and Prim

13.3 Transport Networks: The Max-Flow Min-Cut Theorem

13.4 Matching Theory

13.5 Summary and Historical Review

PART 4 Modern Applied Algebra

14 Rings and Modular Arithmetic

14.1 The Ring Structure: Definition and Examples

14.2 Ring Properties and Substructures

14.3 The Integers Modulo  $n$

14.4 Ring Homomorphisms and Isomorphisms

14.5 Summary and Historical Review

15 Boolean Algebra and Switching Functions

15.1 Switching Functions: Disjunctive and Conjunctive Normal Forms

15.2 Gating Networks: Minimal Sums of Products: Karnaugh Maps

15.3 Further Applications: Don't-Care Conditions

15.4 The Structure of a Boolean Algebra (Optional)

15.5 Summary and Historical Review

16 Groups, Coding Theory, and Polya's Method of Enumeration

16.1 Definition, Examples, and Elementary Properties

16.2 Homomorphisms, Isomorphisms, and Cyclic Groups

16.3 Cosets and Lagrange's Theorem

16.4 The RSA Cryptosystem (Optional)

16.5 Elements of Coding Theory

16.6 The Hamming Metric

16.7 The Parity-Check and Generator Matrices

16.8 Group Codes: Decoding with Coset Leaders

16.9 Hamming Matrices

16.10 Counting and

<<离散及组合数学>>

Equivalence:Burnside's Theorem 16.11 The Cycle Index 16.12 The Pattern Inventory:Polya's Method of Enumeration 16.13 Summary and Historical Review 17 Finite Fields and Combinatorial Designs 17.1 Polynomial Rings 17.2 Irreducible Polynomials:Finite Fields 17.3 Latin Squares 17.4 Finite Geometries and Affine Planes 17.5 Block Designs and Projective Planes 17.6 Summary and Historical Review Appendix 1 Exponential and Logarithmic Functions A-1 Appendix 2 Matrices, Matrix Operations, and Determinants A-11 Appendix 3 Countable and Uncountable Sets A-23 Solutions S-1



<<离散及组合数学>>

编辑推荐

《离散及组合数学(第5版英文影印版)》由Ralph P. Grimaldi著，主要内容是：The major purpose of this new edition is to continue to provide an introductory survey in both discrete and combinatorial mathematics. The coverage is intended for the beginning student, so there are a great number of examples with detailed explanations. (The examples are numbered separately and a thick line is used to denote the end of each example.) In addition, wherever proofs are given, they too are presented with sufficient detail (with the novice in mind).

<<离散及组合数学>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介, 请支持正版图书。

更多资源请访问:<http://www.tushu007.com>