

SOLUTION OF DISCRETE MATHEMATICS AND ITS

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DISCRETE MATHEMATICS AND GRAPH THEORY
DISCRETE MATHEMATICS A BEGINNER'S GUIDE TO DISCRETE MATHEMATICS
ADVANCED DISCRETE MATHEMATICS
DISCRETE MATHEMATICS WITH PROOF
DISCRETE MATHEMATICS
DISCRETE MATHEMATICS FOR COMPUTING
ESSENTIALS OF DISCRETE MATHEMATICS
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BALANCING THEORY AND RELEVANT APPLICATIONS IN ITS APPROACH THIS TEXT COVERS NONHOMOGENEOUS LINEAR RECURRENCE RELATIONS WITH CONSTANT COEFFICIENTS AND PROBABILITY THEORY

CHARTRAND AND ZHANG'S DISCRETE MATHEMATICS PRESENTS A CLEARLY WRITTEN STUDENT FRIENDLY INTRODUCTION TO DISCRETE MATHEMATICS THE AUTHORS DRAW FROM THEIR BACKGROUND AS RESEARCHERS AND EDUCATORS TO OFFER LUCID DISCUSSIONS AND DESCRIPTIONS FUNDAMENTAL TO THE SUBJECT OF DISCRETE MATHEMATICS UNIQUE AMONG DISCRETE MATHEMATICS TEXTBOOKS FOR ITS TREATMENT OF PROOF TECHNIQUES AND GRAPH THEORY TOPICS DISCUSSED ALSO INCLUDE LOGIC RELATIONS AND FUNCTIONS ESPECIALLY EQUIVALENCE RELATIONS AND BIJECTIVE FUNCTIONS ALGORITHMS AND ANALYSIS OF ALGORITHMS

INTRODUCTION TO NUMBER THEORY COMBINATORICS COUNTING THE PASCAL TRIANGLE AND THE BINOMIAL THEOREM DISCRETE PROBABILITY PARTIALLY ORDERED SETS LATTICES AND BOOLEAN ALGEBRAS CRYPTOGRAPHY AND FINITE STATE MACHINES THIS HIGHLY VERSATILE TEXT PROVIDES MATHEMATICAL BACKGROUND USED IN A WIDE VARIETY OF DISCIPLINES INCLUDING MATHEMATICS AND MATHEMATICS EDUCATION COMPUTER SCIENCE BIOLOGY CHEMISTRY ENGINEERING COMMUNICATIONS AND BUSINESS SOME OF THE MAJOR FEATURES AND STRENGTHS OF THIS TEXTBOOK NUMEROUS CAREFULLY EXPLAINED EXAMPLES AND APPLICATIONS FACILITATE LEARNING MORE THAN 1 600 EXERCISES RANGING FROM ELEMENTARY TO CHALLENGING ARE INCLUDED WITH HINTS ANSWERS TO ALL ODD NUMBERED EXERCISES DESCRIPTIONS OF PROOF TECHNIQUES ARE ACCESSIBLE AND LIVELY STUDENTS BENEFIT FROM THE HISTORICAL DISCUSSIONS THROUGHOUT THE TEXTBOOK

DISCRETE MATHEMATICS AND COMBINATORICS PROVIDES A CONCISE AND PRACTICAL INTRODUCTION TO THE CORE COMPONENTS OF DISCRETE MATHEMATICS FEATURING A BALANCED MIX OF BASIC THEORIES AND APPLICATIONS THE BOOK COVERS BOTH FUNDAMENTAL CONCEPTS SUCH AS SETS AND LOGIC AS WELL AS ADVANCED TOPICS SUCH AS GRAPH THEORY AND TURING MACHINES THE EXAMPLE DRIVEN APPROACH WILL HELP READERS IN UNDERSTANDING AND APPLYING THE CONCEPTS OTHER PEDAGOGICAL TOOLS ILLUSTRATIONS PRACTICE QUESTIONS AND SUGGESTED READING FACILITATE LEARNING AND MASTERING THE SUBJECT COVER

THIS TEXTBOOK NOW IN ITS FOURTH EDITION CONTINUES TO PROVIDE AN ACCESSIBLE INTRODUCTION TO DISCRETE MATHEMATICS AND GRAPH THEORY THE INTRODUCTORY MATERIAL ON MATHEMATICAL LOGIC IS FOLLOWED BY EXTENSIVE COVERAGE OF COMBINATORICS RECURRENCE RELATION BINARY RELATIONS CODING THEORY DISTRIBUTIVE LATTICE BIPARTITE GRAPHS TREES ALGEBRA AND POLYA'S COUNTING PRINCIPLE A NUMBER OF SELECTED RESULTS AND METHODS OF DISCRETE MATHEMATICS ARE DISCUSSED IN A LOGICALLY COHERENT FASHION FROM THE AREAS OF MATHEMATICAL LOGIC SET THEORY COMBINATORICS BINARY RELATION AND FUNCTION BOOLEAN LATTICE PLANARITY AND GROUP THEORY THERE IS AN ABUNDANCE OF EXAMPLES ILLUSTRATIONS AND EXERCISES SPREAD THROUGHOUT THE BOOK A GOOD NUMBER OF PROBLEMS IN THE EXERCISES HELP STUDENTS TEST THEIR KNOWLEDGE THE TEXT IS INTENDED FOR THE UNDERGRADUATE STUDENTS OF COMPUTER SCIENCE AND ENGINEERING AS WELL AS TO THE STUDENTS OF MATHEMATICS AND THOSE PURSUING COURSES IN THE AREAS OF COMPUTER APPLICATIONS AND INFORMATION TECHNOLOGY NEW TO THE FOURTH EDITION INTRODUCES NEW SECTION ON ARITHMETIC FUNCTION IN CHAPTER 9 ELABORATES ENUMERATION OF SPANNING TREES OF WHEEL GRAPH FAN GRAPH AND LADDER GRAPH REDISTRIBUTES MOST OF THE PROBLEMS GIVEN IN EXERCISES SECTION WISE PROVIDES MANY ADDITIONAL DEFINITIONS THEOREMS EXAMPLES AND EXERCISES GIVES ELABORATE HINTS FOR SOLVING EXERCISE PROBLEMS

THIS BOOK AIMS TO PROVIDE AN INTRODUCTION TO SELECT TOPICS IN DISCRETE MATHEMATICS AT A LEVEL APPROPRIATE FOR FIRST OR SECOND YEAR UNDERGRADUATE MATH AND COMPUTER SCIENCE MAJORS THIS COURSE SERVES BOTH AS A SURVEY OF THE TOPICS IN DISCRETE MATH AND AS THE BRIDGE COURSE FOR MATH MAJORS

WALLIS'S BOOK ON DISCRETE MATHEMATICS IS A RESOURCE FOR AN INTRODUCTORY COURSE IN A SUBJECT FUNDAMENTAL TO BOTH MATHEMATICS AND COMPUTER SCIENCE A COURSE THAT IS EXPECTED NOT ONLY TO COVER CERTAIN SPECIFIC TOPICS BUT ALSO TO INTRODUCE STUDENTS TO IMPORTANT MODES OF THOUGHT SPECIFIC TO EACH DISCIPLINE LOWER DIVISION UNDERGRADUATES THROUGH GRADUATE STUDENTS CHOICE REVIEWS REVIEW OF THE FIRST EDITION VERY APPROPRIATELY ENTITLED AS A BEGINNER'S GUIDE THIS TEXTBOOK PRESENTS ITSELF AS THE FIRST EXPOSURE TO DISCRETE MATHEMATICS AND RIGOROUS PROOF FOR

THE MATHEMATICS OR COMPUTER SCIENCE STUDENT ZENTRALBLATT MATH REVIEW OF THE FIRST EDITION THIS SECOND EDITION OF A BEGINNER S GUIDE TO DISCRETE MATHEMATICS PRESENTS A DETAILED GUIDE TO DISCRETE MATHEMATICS AND ITS RELATIONSHIP TO OTHER MATHEMATICAL SUBJECTS INCLUDING SET THEORY PROBABILITY CRYPTOGRAPHY GRAPH THEORY AND NUMBER THEORY THIS TEXTBOOK HAS A DISTINCTLY APPLIED ORIENTATION AND EXPLORES A VARIETY OF APPLICATIONS KEY FEATURES OF THE SECOND EDITION INCLUDES A NEW CHAPTER ON THE THEORY OF VOTING AS WELL AS NUMEROUS NEW EXAMPLES AND EXERCISES THROUGHOUT THE BOOK INTRODUCES FUNCTIONS VECTORS MATRICES NUMBER SYSTEMS SCIENTIFIC NOTATIONS AND THE REPRESENTATION OF NUMBERS IN COMPUTERS PROVIDES EXAMPLES WHICH THEN LEAD INTO EASY PRACTICE PROBLEMS THROUGHOUT THE TEXT AND FULL EXERCISE AT THE END OF EACH CHAPTER FULL SOLUTIONS FOR PRACTICE PROBLEMS ARE PROVIDED AT THE END OF THE BOOK THIS TEXT IS INTENDED FOR UNDERGRADUATES IN MATHEMATICS AND COMPUTER SCIENCE HOWEVER FEATURED SPECIAL TOPICS AND APPLICATIONS MAY ALSO INTEREST GRADUATE STUDENTS

WRITTEN IN AN ACCESSIBLE STYLE THIS TEXT PROVIDES A COMPLETE COVERAGE OF DISCRETE MATHEMATICS AND ITS APPLICATIONS AT AN APPROPRIATE LEVEL OF RIGOUR THE BOOK DISCUSSES ALGEBRAIC STRUCTURES MATHEMATICAL LOGIC LATTICES BOOLEAN ALGEBRA GRAPH THEORY AUTOMATA THEORY GRAMMARS AND RECURRENCE RELATIONS IT COVERS THE IMPORTANT TOPICS SUCH AS CODING THEORY DIJKSTRA S SHORTEST PATH ALGORITHM REVERSE POLISH NOTATION MARSHALL S ALGORITHM MENGER S THEOREM TURING MACHINE AND LR K PARSERS WHICH FORM A PART OF THE FUNDAMENTAL APPLICATIONS OF DISCRETE MATHEMATICS IN COMPUTER SCIENCE IN ADDITION PIGEONHOLE PRINCIPLE RING HOMOMORPHISM FIELD AND INTEGRAL DOMAIN TREES NETWORK FLOWS LANGUAGES AND RECURRENCE RELATIONS THE TEXT IS SUPPORTED WITH A LARGE NUMBER OF EXAMPLES WORKED OUT PROBLEMS AND DIAGRAMS THAT HELP STUDENTS UNDERSTAND THE THEORETICAL EXPLANATIONS THE BOOK IS INTENDED AS A TEXT FOR POSTGRADUATE STUDENTS OF MATHEMATICS COMPUTER SCIENCE AND COMPUTER APPLICATIONS IN ADDITION IT WILL BE EXTREMELY USEFUL FOR THE UNDERGRADUATE STUDENTS OF COMPUTER SCIENCE AND ENGINEERING

DISCRETE MATHEMATICS WILL BE OF USE TO ANY UNDERGRADUATE AS WELL AS POST GRADUATE COURSES IN COMPUTER SCIENCE AND MATHEMATICS THE SYLLABI OF ALL THESE COURSES HAVE BEEN STUDIED IN DEPTH AND UTMOST CARE HAS BEEN TAKEN TO ENSURE THAT ALL THE ESSENTIAL TOPICS IN DISCRETE STRUCTURES ARE ADEQUATELY EMPHASIZED THE BOOK WILL ENABLE THE STUDENTS TO DEVELOP THE REQUISITE COMPUTATIONAL SKILLS NEEDED IN SOFTWARE ENGINEERING

A TRUSTED GUIDE TO DISCRETE MATHEMATICS WITH PROOF NOW IN A NEWLY REVISED EDITION DISCRETE MATHEMATICS HAS BECOME INCREASINGLY POPULAR IN RECENT YEARS DUE TO ITS GROWING APPLICATIONS IN THE FIELD OF COMPUTER SCIENCE DISCRETE MATHEMATICS WITH PROOF SECOND EDITION CONTINUES TO FACILITATE AN UP TO DATE UNDERSTANDING OF THIS IMPORTANT TOPIC EXPOSING READERS TO A WIDE RANGE OF MODERN AND TECHNOLOGICAL APPLICATIONS THE BOOK BEGINS WITH AN INTRODUCTORY CHAPTER THAT PROVIDES AN ACCESSIBLE EXPLANATION OF DISCRETE MATHEMATICS SUBSEQUENT CHAPTERS EXPLORE ADDITIONAL RELATED TOPICS INCLUDING COUNTING FINITE PROBABILITY THEORY RECURSION FORMAL MODELS IN COMPUTER SCIENCE GRAPH THEORY TREES THE CONCEPTS OF FUNCTIONS AND RELATIONS ADDITIONAL FEATURES OF THE SECOND EDITION INCLUDE AN INTENSE FOCUS ON THE FORMAL SETTINGS OF PROOFS AND THEIR TECHNIQUES SUCH AS CONSTRUCTIVE PROOFS PROOF BY CONTRADICTION AND COMBINATORIAL PROOFS NEW SECTIONS ON APPLICATIONS OF ELEMENTARY NUMBER THEORY MULTIDIMENSIONAL INDUCTION COUNTING TULIPS AND THE BINOMIAL DISTRIBUTION IMPORTANT EXAMPLES FROM THE FIELD OF COMPUTER SCIENCE PRESENTED AS APPLICATIONS INCLUDING THE HALTING PROBLEM SHANNON S MATHEMATICAL MODEL OF INFORMATION REGULAR EXPRESSIONS XML AND NORMAL FORMS

IN RELATIONAL DATABASES NUMEROUS EXAMPLES THAT ARE NOT OFTEN FOUND IN BOOKS ON DISCRETE MATHEMATICS INCLUDING THE DEFERRED ACCEPTANCE ALGORITHM THE BOYER MOORE ALGORITHM FOR PATTERN MATCHING SIERPINSKI CURVES ADAPTIVE QUADRATURE THE JOSEPHUS PROBLEM AND THE FIVE COLOR THEOREM EXTENSIVE APPENDICES THAT OUTLINE SUPPLEMENTAL MATERIAL ON ANALYZING CLAIMS AND WRITING MATHEMATICS ALONG WITH SOLUTIONS TO SELECTED CHAPTER EXERCISES COMBINATORICS RECEIVES A FULL CHAPTER TREATMENT THAT EXTENDS BEYOND THE COMBINATIONS AND PERMUTATIONS MATERIAL BY DELVING INTO NON STANDARD TOPICS SUCH AS LATIN SQUARES FINITE PROJECTIVE PLANES BALANCED INCOMPLETE BLOCK DESIGNS CODING THEORY PARTITIONS OCCUPANCY PROBLEMS STIRLING NUMBERS RAMSEY NUMBERS AND SYSTEMS OF DISTINCT REPRESENTATIVES A RELATED SITE FEATURES ANIMATIONS AND VISUALIZATIONS OF COMBINATORIAL PROOFS THAT ASSIST READERS WITH COMPREHENSION IN ADDITION APPROXIMATELY 500 EXAMPLES AND OVER 2 800 EXERCISES ARE PRESENTED THROUGHOUT THE BOOK TO MOTIVATE IDEAS AND ILLUSTRATE THE PROOFS AND CONCLUSIONS OF THEOREMS ASSUMING ONLY A BASIC BACKGROUND IN CALCULUS DISCRETE MATHEMATICS WITH PROOF SECOND EDITION IS AN EXCELLENT BOOK FOR MATHEMATICS AND COMPUTER SCIENCE COURSES AT THE UNDERGRADUATE LEVEL IT IS ALSO A VALUABLE RESOURCE FOR PROFESSIONALS IN VARIOUS TECHNICAL FIELDS WHO WOULD LIKE AN INTRODUCTION TO DISCRETE MATHEMATICS

THE ADVENT OF FAST COMPUTERS AND THE SEARCH FOR EFFICIENT ALGORITHMS REVOLUTIONIZED COMBINATORICS AND BROUGHT ABOUT THE FIELD OF DISCRETE MATHEMATICS THIS BOOK IS AN INTRODUCTION TO THE MAIN IDEAS AND RESULTS OF DISCRETE MATHEMATICS AND WITH ITS EMPHASIS ON ALGORITHMS IT SHOULD BE INTERESTING TO MATHEMATICIANS AND COMPUTER SCIENTISTS ALIKE THE BOOK IS ORGANIZED INTO THREE PARTS ENUMERATION GRAPHS AND ALGORITHMS AND ALGEBRAIC SYSTEMS THERE ARE 600 EXERCISES WITH HINTS AND SOLUTIONS TO ABOUT HALF OF THEM THE ONLY PREREQUISITES FOR UNDERSTANDING EVERYTHING IN THE BOOK ARE LINEAR ALGEBRA AND CALCULUS AT THE UNDERGRADUATE LEVEL PRAISE FOR THE GERMAN EDITION THIS BOOK IS A WELL WRITTEN INTRODUCTION TO DISCRETE MATHEMATICS AND IS HIGHLY RECOMMENDED TO EVERY STUDENT OF MATHEMATICS AND COMPUTER SCIENCE AS WELL AS TO TEACHERS OF THESE TOPICS KONRAD ENGEL FOR MATHSCINET MARTIN AIGNER IS A PROFESSOR OF MATHEMATICS AT THE FREE UNIVERSITY OF BERLIN HE RECEIVED HIS PHD AT THE UNIVERSITY OF VIENNA AND HAS HELD A NUMBER OF POSITIONS IN THE USA AND GERMANY BEFORE MOVING TO BERLIN HE IS THE AUTHOR OF SEVERAL BOOKS ON DISCRETE MATHEMATICS GRAPH THEORY AND THE THEORY OF SEARCH THE MONTHLY ARTICLE TURAN'S GRAPH THEOREM EARNED HIM A 1995 LESTER R FORD PRIZE OF THE MAA FOR EXPOSITORY WRITING AND HIS BOOK PROOFS FROM THE BOOK WITH GUNTER M ZIEGLER HAS BEEN AN INTERNATIONAL SUCCESS WITH TRANSLATIONS INTO 12 LANGUAGES

THIS TEXT IS SUITABLE FOR AN INTRODUCTORY COURSE IN THE MATHEMATICS RELATED TO COMPUTING GENERALLY REFERRED TO AS DISCRETE MATHEMATICS TOPICS COVERED INCLUDE SET THEORY LOGIC AND METHODS OF PROOF GRAPHS DIGRAPHS AND TREES NUMBER SYSTEMS AND MATRIX ALGEBRA AND AN INTRODUCTION TO BINARY CODES THROUGHOUT THE BOOK THE INTERRELATIONS BETWEEN THE MATHEMATICAL STRUCTURES AND THEIR REPRESENTATIONS IS STRESSED AND USE IS MADE OF ACTION DIAGRAMS AS A LANGUAGE INDEPENDENT MEANS OF PRESENTING ALGORITHMIC PROCESSES READERS WHO WORK THROUGH THIS TEXT WILL ACQUIRE THE MATHEMATICAL KNOWLEDGE AND APPROACH TO PROBLEM SOLVING REQUIRED BY INTRODUCTORY COMPUTING COURSES AND A SOUND BASES FROM WHICH TO PURSUE THE SUBJECT FURTHER

WRITTEN FOR THE ONE TERM COURSE ESSENTIALS OF DISCRETE MATHEMATICS FOURTH EDITION IS DESIGNED TO SERVE COMPUTER SCIENCE AND MATHEMATICS MAJORS AS WELL AS STUDENTS FROM A WIDE RANGE OF OTHER DISCIPLINES THE MATHEMATICAL MATERIAL IS ORGANIZED AROUND FIVE TYPES OF THINKING LOGICAL RELATIONAL RECURSIVE QUANTITATIVE AND ANALYTICAL THE FINAL CHAPTER THINKING THROUGH APPLICATIONS LOOKS AT DIFFERENT WAYS THAT DISCRETE MATH THINKING CAN BE APPLIED APPLICATIONS ARE INCLUDED THROUGHOUT THE TEXT AND ARE SOURCED FROM A VARIETY OF DISCIPLINES INCLUDING BIOLOGY ECONOMICS MUSIC AND MORE

THIS COMPREHENSIVE AND SELF CONTAINED TEXT PROVIDES A THOROUGH UNDERSTANDING OF THE CONCEPTS AND APPLICATIONS OF DISCRETE MATHEMATICS AND GRAPH THEORY IT IS WRITTEN IN SUCH A MANNER THAT BEGINNERS CAN DEVELOP AN INTEREST IN THE SUBJECT BESIDES PROVIDING THE ESSENTIALS OF THEORY THE BOOK HELPS DEVELOP PROBLEM SOLVING TECHNIQUES AND SHARPENS THE SKILL OF THINKING LOGICALLY THE BOOK IS ORGANIZED IN TWO PARTS THE FIRST PART ON DISCRETE MATHEMATICS COVERS A WIDE RANGE OF TOPICS SUCH AS PREDICATE LOGIC RECURRENCES GENERATING FUNCTION COMBINATORICS PARTIALLY ORDERED SETS LATTICES BOOLEAN ALGEBRA FINITE STATE MACHINES FINITE FIELDS ELEMENTARY NUMBER THEORY AND DISCRETE PROBABILITY THE SECOND PART ON GRAPH THEORY COVERS PLANARITY COLOURING AND PARTITIONING DIRECTED AND ALGEBRAIC GRAPHS IN THE SECOND EDITION MORE EXERCISES WITH ANSWERS HAVE BEEN ADDED IN VARIOUS CHAPTERS BESIDES AN APPENDIX ON LANGUAGES HAS ALSO BEEN INCLUDED AT THE END OF THE BOOK THE BOOK IS INTENDED TO SERVE AS A TEXTBOOK FOR UNDERGRADUATE ENGINEERING STUDENTS OF COMPUTER SCIENCE AND ENGINEERING INFORMATION COMMUNICATION TECHNOLOGY ICT AND UNDERGRADUATE AND POSTGRADUATE STUDENTS OF MATHEMATICS IT WILL ALSO BE USEFUL FOR UNDERGRADUATE AND POSTGRADUATE STUDENTS OF COMPUTER APPLICATIONS KEY FEATURES PROVIDES ALGORITHMS AND FLOW CHARTS TO EXPLAIN SEVERAL CONCEPTS GIVES A LARGE NUMBER OF EXAMPLES TO ILLUSTRATE THE CONCEPTS DISCUSSED INCLUDES MANY WORKED OUT PROBLEMS TO ENHANCE THE STUDENT S GRASP OF THE SUBJECT PROVIDES EXERCISES WITH ANSWERS TO STRENGTHEN THE STUDENT S PROBLEM SOLVING ABILITY AUDIENCE UNDERGRADUATE ENGINEERING STUDENTS OF COMPUTER SCIENCE AND ENGINEERING INFORMATION COMMUNICATION TECHNOLOGY ICT UNDERGRADUATE AND POSTGRADUATE STUDENTS OF MATHEMATICS UNDERGRADUATE AND POSTGRADUATE STUDENTS OF COMPUTER APPLICATIONS

TAKING AN APPROACH TO THE SUBJECT THAT IS SUITABLE FOR A BROAD READERSHIP DISCRETE MATHEMATICS PROOFS STRUCTURES AND APPLICATIONS THIRD EDITION PROVIDES A RIGOROUS YET ACCESSIBLE EXPOSITION OF DISCRETE MATHEMATICS INCLUDING THE CORE MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE THE APPROACH IS COMPREHENSIVE YET MAINTAINS AN EASY TO FOLLOW PROG

DISCRETE MATHEMATICS AND GRAPH THEORY THE FOUNDATIONAL CONCEPTS AND ADVANCED TOPICS OF DISCRETE MATHEMATICS AND GRAPH THEORY DESIGNED FOR STUDENTS AND PROFESSIONALS IN MATHEMATICS COMPUTER SCIENCE AND ENGINEERING IT EXPLORES TOPICS LIKE LOGIC SET THEORY COMBINATORICS GRAPH ALGORITHMS AND NETWORK FLOWS THE EMPHASIZES PROBLEM SOLVING RIGOROUS PROOFS AND REAL WORLD APPLICATIONS MAKING IT AN ESSENTIAL RESOURCE FOR MASTERING DISCRETE STRUCTURES AND THEIR ROLE IN COMPUTATIONAL AND THEORETICAL DISCIPLINES WITH CLEAR EXPLANATIONS AND NUMEROUS EXAMPLES IT BRIDGES THE GAP BETWEEN THEORY AND PRACTICE EFFECTIVELY

SOME OF THE MOST BEAUTIFUL STUDIES IN MATHEMATICS ARE RELATED TO SYMMETRY AND GEOMETRY FOR THIS REASON WE SELECT HERE SOME CONTRIBUTIONS ABOUT SUCH ASPECTS AND DISCRETE GEOMETRY AS WE KNOW SYMMETRY IN A SYSTEM MEANS INVARIANCE OF ITS ELEMENTS UNDER CONDITIONS OF TRANSFORMATIONS WHEN WE CONSIDER NETWORK STRUCTURES SYMMETRY MEANS INVARIANCE OF ADJACENCY OF NODES UNDER THE PERMUTATIONS OF NODE SET THE GRAPH ISOMORPHISM IS AN EQUIVALENCE RELATION ON THE SET OF GRAPHS THEREFORE IT PARTITIONS THE CLASS OF ALL GRAPHS INTO EQUIVALENCE CLASSES THE UNDERLYING IDEA OF ISOMORPHISM IS THAT SOME OBJECTS HAVE THE SAME STRUCTURE IF WE OMIT THE INDIVIDUAL CHARACTER OF THEIR COMPONENTS A SET OF GRAPHS ISOMORPHIC TO EACH OTHER IS DENOMINATED AS AN ISOMORPHISM CLASS OF GRAPHS THE AUTOMORPHISM OF A GRAPH WILL BE AN ISOMORPHISM FROM G ONTO ITSELF THE FAMILY OF ALL AUTOMORPHISMS OF A GRAPH G IS A PERMUTATION GROUP

THE BOOK CONTAINS TOPICS AS PER THE MODEL SYLLABUS OF THE UNIVERSITY GRANTS COMMISSION UGC INDIA AND IS SUITABLE FOR UNDERGRADUATE B TECH STUDENTS OF COMPUTER SCIENCE AND ENGINEERING AND MATHEMATICS AND POSTGRADUATE STUDENTS OF COMPUTER APPLICATION MCA AND MATHEMATICS THE BOOK HAS BEEN MADE SELF CONTAINED WITH PRELIMINARY CHAPTERS ON MATHEMATICAL LOGIC AND SET THEORY WHICH ALSO FORM THE PART OF THE SYLLABUS BESIDES THESE TOPICS THE BOOK CONTAINS SUBJECTS LIKE COMBINATORICS GRAPH THEORY ALGEBRAIC STRUCTURES SUCH AS GROUPS RINGS BOOLEAN ALGEBRA AND ALSO TOPICS LIKE FINITE STATE MACHINE THEORY OF COMPUTATION AND PROBABILITY THE BOOK HAS BEEN WRITTEN IN A SIMPLE AND LUCID MANNER WITH EXAMPLES AND APPLICATIONS TO COMPUTER SCIENCE FINALLY IT CONTAINS AN ADDITIONAL CHAPTER ON FUZZY SET THEORY

THIS TEXTBOOK CAN SERVE AS A COMPREHENSIVE MANUAL OF DISCRETE MATHEMATICS AND GRAPH THEORY FOR NON COMPUTER SCIENCE MAJORS AS A REFERENCE AND STUDY AID FOR PROFESSIONALS AND RESEARCHERS WHO HAVE NOT TAKEN ANY DISCRETE MATH COURSE BEFORE IT CAN ALSO BE USED AS A REFERENCE BOOK FOR A COURSE ON DISCRETE MATHEMATICS IN COMPUTER SCIENCE OR MATHEMATICS CURRICULA THE STUDY OF DISCRETE MATHEMATICS IS ONE OF THE FIRST COURSES ON CURRICULA IN VARIOUS DISCIPLINES SUCH AS COMPUTER SCIENCE MATHEMATICS AND ENGINEERING EDUCATION PRACTICES GRAPHS ARE KEY DATA STRUCTURES USED TO REPRESENT NETWORKS CHEMICAL STRUCTURES GAMES ETC AND ARE INCREASINGLY USED MORE IN VARIOUS APPLICATIONS SUCH AS BIOINFORMATICS AND THE INTERNET GRAPH THEORY HAS GONE THROUGH AN UNPRECEDENTED GROWTH IN THE LAST FEW DECADES BOTH IN TERMS OF THEORY AND IMPLEMENTATIONS HENCE IT DESERVES A THOROUGH TREATMENT WHICH IS NOT ADEQUATELY FOUND IN ANY OTHER CONTEMPORARY BOOKS ON DISCRETE MATHEMATICS WHEREAS ABOUT 40% OF THIS TEXTBOOK IS DEVOTED TO GRAPH THEORY THE TEXT FOLLOWS AN ALGORITHMIC APPROACH FOR DISCRETE MATHEMATICS AND GRAPH PROBLEMS WHERE APPLICABLE TO REINFORCE LEARNING AND TO SHOW HOW TO IMPLEMENT THE CONCEPTS IN REAL WORLD APPLICATIONS

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TO IN THIS FLAVOR

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2. WHAT ARE THE DIFFERENT BOOK FORMATS AVAILABLE? WHICH KINDS OF BOOK FORMATS ARE CURRENTLY AVAILABLE? ARE THERE DIFFERENT BOOK FORMATS TO CHOOSE FROM? HARDCOVER: DURABLE AND LONG-LASTING, USUALLY MORE EXPENSIVE. PAPERBACK: MORE AFFORDABLE, LIGHTER, AND MORE PORTABLE THAN HARDCOVERS. E-BOOKS: DIGITAL BOOKS ACCESSIBLE FOR E-READERS LIKE KINDLE OR THROUGH PLATFORMS SUCH AS APPLE BOOKS, KINDLE, AND GOOGLE PLAY BOOKS.
3. WHAT'S THE BEST METHOD FOR CHOOSING A SOLUTION OF DISCRETE MATHEMATICS AND ITS BOOK TO READ? GENRES: CONSIDER THE GENRE YOU PREFER (FICTION, NONFICTION, MYSTERY, SCI-FI, ETC.). RECOMMENDATIONS: ASK FOR ADVICE FROM FRIENDS, JOIN BOOK CLUBS, OR EXPLORE ONLINE REVIEWS AND SUGGESTIONS. AUTHOR: IF YOU FAVOR A SPECIFIC AUTHOR, YOU MAY ENJOY MORE OF THEIR WORK.
4. HOW SHOULD I CARE FOR SOLUTION OF DISCRETE MATHEMATICS AND ITS BOOKS? STORAGE: STORE THEM AWAY FROM DIRECT SUNLIGHT AND IN A DRY SETTING. HANDLING: PREVENT FOLDING PAGES, UTILIZE BOOKMARKS, AND HANDLE THEM WITH CLEAN HANDS. CLEANING: OCCASIONALLY DUST THE COVERS AND

PAGES GENTLY.

5. CAN I BORROW BOOKS WITHOUT BUYING THEM? PUBLIC LIBRARIES: COMMUNITY LIBRARIES OFFER A WIDE RANGE OF BOOKS FOR BORROWING. BOOK SWAPS: BOOK EXCHANGE EVENTS OR ONLINE PLATFORMS WHERE PEOPLE SWAP BOOKS.
6. HOW CAN I TRACK MY READING PROGRESS OR MANAGE MY BOOK COLLECTION? BOOK TRACKING APPS: LIBRARYTHING ARE POPULAR APPS FOR TRACKING YOUR READING PROGRESS AND MANAGING BOOK COLLECTIONS. SPREADSHEETS: YOU CAN CREATE YOUR OWN SPREADSHEET TO TRACK BOOKS READ, RATINGS, AND OTHER DETAILS.
7. WHAT ARE SOLUTION OF DISCRETE MATHEMATICS AND ITS AUDIOBOOKS, AND WHERE CAN I FIND THEM? AUDIOBOOKS: AUDIO RECORDINGS OF BOOKS, PERFECT FOR LISTENING WHILE COMMUTING OR MULTITASKING. PLATFORMS: GOOGLE PLAY BOOKS OFFER A WIDE SELECTION OF AUDIOBOOKS.
8. HOW DO I SUPPORT AUTHORS OR THE BOOK INDUSTRY? BUY BOOKS: PURCHASE BOOKS FROM AUTHORS OR INDEPENDENT BOOKSTORES. REVIEWS: LEAVE REVIEWS ON PLATFORMS LIKE AMAZON. PROMOTION: SHARE YOUR FAVORITE BOOKS ON SOCIAL MEDIA OR RECOMMEND THEM TO FRIENDS.
9. ARE THERE BOOK CLUBS OR READING COMMUNITIES I CAN JOIN? LOCAL CLUBS: CHECK FOR LOCAL BOOK CLUBS IN LIBRARIES OR COMMUNITY CENTERS. ONLINE COMMUNITIES: PLATFORMS LIKE BOOKBUB HAVE VIRTUAL BOOK CLUBS AND DISCUSSION GROUPS.
10. CAN I READ SOLUTION OF DISCRETE MATHEMATICS AND ITS BOOKS FOR FREE? PUBLIC DOMAIN BOOKS: MANY CLASSIC BOOKS ARE AVAILABLE FOR FREE AS

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