Chapter 20 Numericals

Numerical Modeling in Biomedical Engineering brings together the integrative set of computational problem solving tools important to biomedical engineers. Through the use of comprehensive homework exercises, relevant examples and extensive case studies, this book integrates principles and techniques of numerical analysis. Covering biomechanical phenomena and physiologic, cell and molecular systems, this is an essential tool for students and all those studying biomedical transport, biomedical thermodynamics & kinetics and biomechanics. Supported by Whitaker Foundation Teaching Materials Program; ABET-oriented pedagogical layout Extensive hands-on homework exercises

Rock Fracture and Blasting: Theory and Applications provides the latest on stress waves, shock waves, and rock fracture, all necessary components that must be critically analyzed to maximize results in rock blasting. The positioning of charges and their capacity and sequencing are covered in this book, and must be carefully modeled to minimize impact in the surrounding environment. Through an explanation of these topics, author Professor Zhang's experience in the field, and his theoretical knowledge, users will find a thorough guide that is not only up-to-date, but complete with a unique perspective on the field. Includes a rigorous exposition of Stress Waves and Shock Waves, as well as Rock Fracture and Fragmentation Provides both Empirical and Hybrid Stress Blasting Modeling tools and techniques for designing effective blast plans Offers advanced knowledge that enables users to choose better blast techniques Includes exercises for learning and training in each chapter

Comprehensive, Rigorous Prep for MCAT Biology The MCAT Biology Book provides a comprehensive overview of MCAT biology appropriate for all pre-med students preparing for the MCAT exam. In twenty-one chapters, the basics of biology are described in easy-to-understand text. Illustrations help emphasize relevant topics and clarify difficult concepts. Each chapter concludes with a set of problems modeled after the MCAT exam, with complete explanation of the answers. Also, includes a thorough analysis of the MCAT verbal section. Authors Nancy Morvillo and Matthew Schmidt both obtained their Ph.D. in genetics from the State University of New York at Stony Brook.

Still brief - but with the chapters that you wanted - Steven Chapra's new second edition is written for engineering and science students who need to learn numerical problem solving. This text focuses on problem-solving applications rather than theory, using MATLAB throughout. Theory is introduced to inform key concepts which are framed in applications and demonstrated using MATLAB. The new second edition feature new chapters on Numerical Differentiation, Optimization, and Boundary-Value Problems (ODEs).

Problems in GeometrySpringer Science & Business Media

With an overview of the most basic parts of speech, this guide provides tips and instructions for dealing with common grammar mistakes, improving style, dealing with punctuation issues, handling split infinitives, and more.

Focusing on basic lubrication problems this book offers specific engineering applications. The book introduces methods and programs for the most important lubrication problems and their solutions. It is divided into four parts. The first part is

about the general solving methods of the Reynolds equation, including solutions of Reynolds equations with different conditions and their discrete forms, such as a steady-state incompressible slider, journal bearing, dynamic bearing, gas bearing and grease lubrication. The second part gives the ‘energy equation solution’. The third part introduces methods and programs for elasto-hydrodynamic lurbication, which links the Reynolds equation with the elastic deformation equation. The final part presents application lubrication programs used in engineering. Provides numerical solution methodologies including appropriate software for the hydrodynamic and elasto-hydrodynamic lubrication of bearings Offers a clear introduction and orientation to all major engineering lubrication problems and their solutions Presents numerical programs for specific applications in engineering, with special topics including grease-lubricated bearings and gas bearings Equips those working in tribology and those new to the topic with the fundamental tools of calculation Downloadable programs are available at the companion website With an emphasis on clear explanations, the text offers a thorough understanding of the numerical calculation of lubrication for graduate students on tribology and engineering mechanics courses, with more detailed materials suitable for engineers. This is an accessible reference for senior undergraduate students of tribology and researchers in thin-film fluid mechanics.

In a world where men and women are encouraged to reject traditional sex roles, Elisabeth Elliot candidly reminds men why the sexes are not equal and interchangeable. Written as personal advice to her nephew, The Mark of a Man reveals the glory and purpose of true masculinity. With Christ as the example of the ultimate man, this classic take on understanding a man's role in life and relationships, romantic or otherwise, helps men define their own masculinity in a positive way. This timely repackage encourages men to stand strong in their unique role established by God for all time.

The rapid rise of knowledge-based economies has revolutionized the perceptions and practices of globalized business. Recent developments in engineering, electronics, and biotechnology have expanded the very definition of entrepreneurship in today’s international market, weaving discussions of enhanced connectivity and communication, environmental sustainability, and government policy changes into a complex, multidimensional conversation. The Handbook of Research of Entrepreneurship in the Contemporary Knowledge-Based Global Economy provides a comprehensive survey of the most recent developments in the field of entrepreneurship, highlighting their effects on information technology, business networking, knowledge production, distribution, and organization. This timely publication features extensive coverage of the fast-developing entrepreneurial field, illuminating recent technological, social, and strategic innovations in language that is accessible for a worldwide audience of business educators, researchers, and students. This authoritative text showcases research-based articles on entrepreneurship for knowledge economies; academic entrepreneurship; women and entrepreneurship; entrepreneurship education; organizational learning ability; innovations in industry, agriculture, and management; and the evolution of a new, all-inclusive corporate culture.

This book is the second edition of the well-known textbook Modelling Rock

Fracturing Processes. The new and extended edition provides the theoretical background of rock fracture mechanics used for modelling of 2-D and 3-D geomechanics problems and processes. Fundamentals of rock fracture mechanics integrated with experimental studies of rock fracturing processes are highlighted. The computer programs FRACOD 2D and 3D are used to analyse fracture initiation and propagation for the three fracture modes: Mode I, II and III. Coupled fracture modelling with other continuous and distinct element codes including FLAC, PFC, RFPA, TOUGH are also described. A series of applications of fracture modelling with importance for modern society is presented and discussed by distinguished rock fracture modelling experts.

This no-nonsense guide provides students and self-learners with a clear and readable study of algebra's most important ideas. Tim Hill's distraction-free approach combines decades of tutoring experience with the proven methods of his Russian math teachers. The result: learn in a few weeks what conventional schools stretch into months. - Teaches general principles that can be applied to a wide variety of problems. - Avoids the mindless and excessive routine computations that characterize conventional textbooks. - Treats algebra as a logically coherent discipline, not as a disjointed collection of techniques. - Restores proofs to their proper place to remove doubt, convey insight, and encourage precise logical thinking. - Omits digressions, excessive formalities, and repetitive exercises. - Covers all the algebra needed to take a calculus course. - Includes problems (with all solutions) that extend your knowledge rather than merely reinforce it. Contents 1. A Few Basics 2. Exponents 3. Polynomials 4. Factoring 5. Linear & Quadratic Equations 6. Inequalities & Absolute Values 7. Coordinates in a Plane 8. Functions & Graphs 9. Straight Lines 10. Circles 11. Parabolas 12. Types of Functions 13. Logarithms 14. Dividing Polynomials 15. Systems of Linear Equations 16. Geometric Progressions & Series 17. Arithmetic Progressions 18. Permutation & Combinations 19. The Binomial Theorem 20. Mathematical Induction 21. Solutions

A comprehensive review of the Finite Element Method (FEM), this book provides the fundamentals together with a wide range of applications in civil, mechanical and aeronautical engineering. It addresses both the theoretical and numerical implementation aspects of the FEM, providing examples in several important topics such as solid mechanics, fluid mechanics and heat transfer, appealing to a wide range of engineering disciplines. Written by a renowned author and academician with the Chinese Academy of Engineering, The Finite Element Method would appeal to researchers looking to understand how the fundamentals of the FEM can be applied in other disciplines. Researchers and graduate students studying hydraulic, mechanical and civil engineering will find it a practical reference text.

After the death of Alexander the Great in 323 BC, his generals ripped apart his empire, and by 305 BC General Ptolemy had gained control of the Eastern Mediterranean, including Egypt, Judea, Cyprus, Cyrene, and coastal regions of

modern Turkey. He established the dynasty of the Ptolemies that would rule Egypt for the next three centuries. The Ptolemys built one of the great wonders of the ancient world, the Library of Alexandria, which at its height was said to house over 400,000 scrolls. The original collection that was amassed in the first century of the library, was largely Greek works, and translations of Egyptian works, however in the mid-3rd century BC, King Ptolemy II Philadelphus ordered a translation of the ancient Israelite scriptures for the library. A number of scholars were assembled, either 70 or 72 depending on the version of the story, and representing every Israelite sect. They created a translation that was later known as the Septuagint. The original version, published circa 250 BC, only included the Torah, or in Greek terms, the Pentateuch, or five books traditionally credited to Moses, circa 1500 BC: Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. This translation attempts to restore and translate the original Septuagint's Torah as it would have appeared circa 250 BC.

ENGINEERING DRAWING AND DESIGN, 5E provides your students with an easy-to-read, A-to-Z coverage of drafting and design instruction that complies with the latest (ANSI & ASME) industry standards. This fifth edition continues its twenty year tradition of excellence with a multitude of actual quality industry drawings that demonstrate content and provide problems for real world, practical application. The engineering design process featured in ENGINEERING DRAWING AND DESIGN, 5E follows an actual product design from concept through manufacturing, and provides your students with a variety of design problems for challenging applications or for use as team projects. Also included in this book is coverage of Civil Drafting, 3D CADD, solid modeling, parametric applications, and more. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Hydraulic Fracturing effectively busts the myths associated with hydraulic fracturing. It explains how to properly engineer and optimize a hydraulically fractured well by selecting the right materials, evaluating the economic benefits of the project, and ensuring the safety and success of the people, environment, and equipment. From data estimation

"Topics are organized into three parts: algebra, calculus, differential equations, and expansions in series; vectors, determinants and matrices; and numerical analysis and statistics. The extensive use of examples illustrates every important concept and method in the text, and are used to demonstrate applications of the mathematics in chemistry and several basic concepts in physics. The exercises at the end of each chapter, are an essential element of the development of the subject, and have been designed to give students a working understanding of the material in the text."--BOOK JACKET.

The only text on this subject to detail numerical methods usually used in practice to calculate electromagnetic fields, and to integrate these methods with computer simulation. Thoroughly develops the basic mathematical methods which physicists use to describe fields (e.g., density, displacement, and electrical), demonstrating each with

examples of applications to mechanical problems. Describe Maxwell's equations governing electric and magnetic fields and shows how these lead to physical phenomena such as electromagnetic waves, charged particle motion, electromagnetic induction, and other processes. Maxwell's equations are introduced in a discrete form--on a lattice--and are discussed in terms of the original definition of the polarization field rather than the more abstract ``dipole moment'' approach. Other topics covered include xerography, EMP, the magnetron oscillator, and boundary-value problems in the presence of superconductors, none of which are included in other texts at this level.

An updated and thoroughly revised third edition of the foundational text offering an introduction to physics with a comprehensive interactive website The revised and updated third edition of Understanding Physics presents a comprehensive introduction to college-level physics. Written with today's students in mind, this compact text covers the core material required within an introductory course in a clear and engaging way. The authors – noted experts on the topic – offer an understanding of the physical universe and present the mathematical tools used in physics. The book covers all the material required in an introductory physics course. Each topic is introduced from first principles so that the text is suitable for students without a prior background in physics. At the same time the book is designed to enable students to proceed easily to subsequent courses in physics and may be used to support such courses. Relativity and quantum mechanics are introduced at an earlier stage than is usually found in introductory textbooks and are integrated with the more 'classical' material from which they have evolved. Worked examples and links to problems, designed to be both illustrative and challenging, are included throughout. The links to over 600 problems and their solutions, as well as links to more advanced sections, interactive problems, simulations and videos may be made by typing in the URL’s which are noted throughout the text or by scanning the micro QR codes given alongside the URL’s, see: http://up.ucc.ie This new edition of this essential text: Offers an introduction to the principles for each topic presented Presents a comprehensive yet concise introduction to physics covering a wide range of material Features a revised treatment of electromagnetism, specifically the more detailed treatment of electric and magnetic materials Puts emphasis on the relationship between microscopic and macroscopic perspectives Is structured as a foundation course for undergraduate students in physics, materials science and engineering Has been rewritten to conform with the revised definitions of SI base units which came into force in May 2019 Written for first year physics students, the revised and updated third edition of Understanding Physics offers a foundation text and interactive website for undergraduate students in physics, materials science and engineering.

This is the essential companion to the second edition of Jeffrey Wooldridge's widely used graduate econometrics text. The text provides an intuitive but rigorous treatment of two state-of-the-art methods used in contemporary microeconomic research. The numerous end-of-chapter exercises are an important component of the book, encouraging the student to use and extend the analytic methods presented in the book. This manual contains advice for answering selected problems, new examples, and supplementary materials designed by the author, which work together to enhance the benefits of the text. Users of the textbook will find the manual a necessary adjunct to

the book.

Young’s Literal Translation of the Bible is, as the name implies, a strictly literal translation of the Hebrew and Greek texts (from the Textus Receptus and Majority Text). Compiled by Robert Young in 1862, he went on to produce a revised version in 1887 based on the Westcott-Hort text which had been completed in 1885. Young died on October 14, 1888, and the publisher released a New Revised Edition in 1898. Young used the present tense in many places where other translations used the past tense-particularly in narratives. The Preface to the Second Edition states: “If a translation gives a present tense when the original gives a past, or a past when it has a present; a perfect for a future, or a future for a perfect; an a for a the, or a the for an a; an imperative for a subjunctive, or a subjunctive for an imperative; a verb for a noun, or a noun for a verb, it is clear that verbal inspiration is as much overlooked as if it had no existence. THE WORD OF GOD IS MADE VOID BY THE TRADITIONS OF MEN. [Emphasis in original.]” For example, the YLT version of Genesis begins as follows: 1. In the beginning of God’s preparing the heavens and the earth--- 2. The earth hath existed waste and void, and darkness on the face of the deep, and the Spirit of God fluttering on the face of the waters, 3. And God saith, ‘Let light be;’ and light is. 4. And God seeth the light that it is good, and God seperateth between the light and the darkness, 5. And God alled to the light ‘Day,’ and to the darkness He hath called ‘Night;’ and there is an evening, and there is a morning---day one. Young's Literal Translation in the 1898 Edition also consistently renders the Hebrew Tetragrammaton (the four Hebrew letters usually transliterated YHWH or JHVH that form a biblical proper name of God) throughout the Old Covenant/Testament as "Jehovah", instead of the traditional practice of "LORD" in small capitals, which was used in editions prior to 1898. Young's usage of English present tense rather than past tense has been supported by scholars ranging from the medieval Jewish rabbi Rashi (who advised, "If you are going to interpret [this passage] in its plain sense, interpret it thus: At the beginning of the creation of heaven and earth, when the earth was (or the earth being) unformed and void . . . God said, ‘Let there be light.’") to Richard Elliott Friedman in his translation of the Five Books in "The Bible with Sources Revealed" (2002). There is a linked Table of Contents for each book and chapter.

The leading text for students and practicing therapists who want to learn the fundamentals of cognitive behavior therapy (CBT), this book is eminently practical and authoritative. In a highly accessible, step-by-step style, master clinician Judith S. Beck demonstrates how to engage patients, develop a sound case conceptualization, plan treatment, and structure sessions effectively. Core cognitive, behavioral, and experiential techniques are explicated and strategies are presented for troubleshooting difficulties and preventing relapse. An extended case example and many vignettes and transcripts illustrate CBT in action. Reproducible clinical tools can be downloaded and printed in a convenient 8 1/2" x 11" size. See also Dr. Beck's "Cognitive Therapy for Challenging Problems: What to Do When the Basics Don't Work," which addresses ways to solve frequently encountered problems with patients who are not making progress. New to This Edition>Reflects over 15 years of research advances and the author's ongoing experience as a clinician, teacher, and supervisor.>Chapters on the evaluation session and behavioral activation.> Increased emphasis on the therapeutic relationship, building on patients' strengths, and homework.>Now even more practical:

features reproducibles and a sample case write-up.

Python Programming and Numerical Methods: A Guide for Engineers and Scientists introduces programming tools and numerical methods to engineering and science students, with the goal of helping the students to develop good computational problem-solving techniques through the use of numerical methods and the Python programming language. Part One introduces fundamental programming concepts, using simple examples to put new concepts quickly into practice. Part Two covers the fundamentals of algorithms and numerical analysis at a level that allows students to quickly apply results in practical settings. Includes tips, warnings and "try this" features within each chapter to help the reader develop good programming practice Summaries at the end of each chapter allow for quick access to important information Includes code in Jupyter notebook format that can be directly run online

In the mid-3rd century BC, King Ptolemy II Philadelphus of Egypt ordered a translation of the ancient Hebrew scriptures for the Library of Alexandria, which resulted in the creation of the Septuagint. The original version, published circa 250 BC, only included the Torah, or in Greek terms, the Pentateuch. The Torah is the five books traditionally credited to Moses, circa 1500 BC: Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. The first edition was followed by the second, around 225 BC which added the books of Joshua, Judges, and Ruth, which was later known as the Octateuch. This version of the Septuagint was later carried south into the Kingdom of Kush by the Jews fleeing Egypt in 200 BC when Judea was in revolt and the Ptolemys attempted to exterminate the Jews in Egypt. The Octateuch later became the Torah of the Beta Israel community in Sudan and Ethiopia known as the Orit. A number of stories exist to explain the origin of the Beta Israel community, the 'Ethiopian Jews' indigenous to Ethiopia, Eritrea, and Sudan. The recorded story of the origin of the Ethiopian Jews was reported by Eldad ha-Dani in the late 800s AD. Eldad ha-Dani was a dark-skinned Jew from a country south of Kush, modern northern Sudan, who was captured by pagan Ethiopians, and ultimately sold on the coast of what might be modern Kenya or Tanzania, to a Jew from the Parthian Empire, who took him back to modern Iran. He later traveled through the Middle East and the Mediterranean Sea. He claimed that he was from a country of Jews, south of Kush, who were the descendants of the tribes of Dan, Gad, Naphtali, and Asher, who had left Israel during the civil war that split the Kingdom into Judea and Samaria. Modern secular scholars doubt there was a united kingdom of Israel, however, if the civil war did happen, it would have happened in 922 BC when Jeroboam I and Rehoboam split the kingdom of Solomon. If true, this would make the Ethiopian Jews neither Jews, nor Samaritans, but a third branch of the Judeo-Samaritan religions, and arguably, older than the others. The Christian text Kebra Nagast claims that Judaism entered into Ethiopia slightly earlier when the Ethiopian Queen of Sheba traveled to Israel and was impregnated by King Solomon. Her son Menelik I led a group of Jews to Ethiopia when he stole the Ark of the Covenant. Other than the Ethiopian Orthodox Christians, few consider the Kebra Nagast historically valid. Some members of the Beta Israel community claim the Ethiopian Jews were originally members of the Jewish tribes lead by Moses that chose not to enter into Canaan with Joshua, and instead traveled south and settled in the land of Moses' Ethiopian wife, mentioned in Numbers chapters 12. A third story of the origin of the Ethiopian Jews, took place shortly after the Greeks had taken control over Egypt

and Judea, when King Ptolemy I resettled Judeans in southern Nubia. This would have taken place between 305 and 282 BC, and later the Jews migrated south for various reasons. However they ended up in Ethiopia, they have traditionally used a variation of the Octateuch, which they call the Orit. The Octateuch is documented as being the version of the Septuagint that was published around 225 BC. Like the Ethiopian Christian Bible, the Orit appears to have had sections 'updated' from Hebrew and Arabic sources over the past two thousand years. Octateuch: The Original Orit is a 21st-century translation aimed at restoring the original Orit.

This work is about inequalities which play an important role in mathematical Olympiads. It contains 175 solved problems in the form of exercises and, in addition, 310 solved problems. The book also covers the theoretical background of the most important theorems and techniques required for solving inequalities. It is written for all middle and high-school students, as well as for graduate and undergraduate students. School teachers and trainers for mathematical competitions will also gain benefit from this book.

The second edition of this popular introduction to numerical geodynamic modelling theory and applications features four new chapters. Based on the author's experience of teaching the material, and including practical exercises and MATLAB® examples, this user-friendly resource encourages students and researchers to experiment with geodynamic models.

Engineering Mathematics with Examples and Applications provides a compact and concise primer in the field, starting with the foundations, and then gradually developing to the advanced level of mathematics that is necessary for all engineering disciplines. Therefore, this book's aim is to help undergraduates rapidly develop the fundamental knowledge of engineering mathematics. The book can also be used by graduates to review and refresh their mathematical skills. Step-by-step worked examples will help the students gain more insights and build sufficient confidence in engineering mathematics and problem-solving. The main approach and style of this book is informal, theorem-free, and practical. By using an informal and theorem-free approach, all fundamental mathematics topics required for engineering are covered, and readers can gain such basic knowledge of all important topics without worrying about rigorous (often boring) proofs. Certain rigorous proof and derivatives are presented in an informal way by direct, straightforward mathematical operations and calculations, giving students the same level of fundamental knowledge without any tedious steps. In addition, this practical approach provides over 100 worked examples so that students can see how each step of mathematical problems can be derived without any gap or jump in steps. Thus, readers can build their understanding and mathematical confidence gradually and in a step-by-step manner. Covers fundamental engineering topics that are presented at the right level, without worry of rigorous proofs Includes step-by-step worked examples (of which 100+ feature in the work) Provides an emphasis on numerical methods, such as root-finding algorithms, numerical integration, and numerical methods of differential equations Balances theory and practice to aid in practical problem-solving in various contexts and applications

The Catholic Bible includes the Old Testament and New Testament. This Douay-Rheims Bible is authorized by the Catholic Church and is perfectly formatted for your eReader device.

Verse by verse exposition of the Old Testament book of Numbers, part of the New European Christadelphian Commentary series by Duncan Heaster.

Written as a supplement to Marcel Berger’s popular two-volume set, Geometry I and II (Universitext), this book offers a comprehensive range of exercises, problems, and full solutions. Each chapter corresponds directly to one in the relevant volume, from which it also provides a summary of key ideas. Where the original Geometry volumes tend toward challenging problems without hints, this book offers a wide range of material that begins at an

accessible level, and includes suggestions for nearly every problem. Bountiful in illustrations and complete in its coverage of topics from affine and projective spaces, to spheres and conics, Problems in Geometry is a valuable addition to studies in geometry at many levels.
Succeed in the course with this student-friendly, proven text. Designed throughout to help you master key concepts and improve your problem-solving skills, CHEMISTRY, Seventh Edition includes a running margin glossary, end-of-chapter in-text mini study guides, a focus on how to skills, and more in-chapter examples and problems than any text on the market. To help you understand reaction mechanisms, the authors offset them in a stepwise fashion and emphasize similarities between related mechanisms using just four different characteristics: breaking a bond, making a new bond, adding a proton, and taking a proton away. Thoroughly updated throughout, the book offers numerous biological examples for premed students, unique roadmap problems, a wide range of in-text learning tools, and integration with an online homework and tutorial system, which now includes an interactive multimedia eBook. Available with InfoTrac Student Collections http://gocengage.com/infotrac. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.
Although there are many textbooks that deal with the formal apparatus of quantum mechanics (QM) and its application to standard problems, none take into account the developments in the foundations of the subject which have taken place in the last few decades. There are specialized treatises on various aspects of the foundations of QM, but none that integrate those topics with the standard material. This book aims to remove that unfortunate dichotomy, which has divorced the practical aspects of the subject from the interpretation and broader implications of the theory.The book is intended primarily as a graduate level textbook, but it will also be of interest to physicists and philosophers who study the foundations of QM. Parts of it could be used by senior undergraduates too.
New and extensively updated for SAS 9 and later, this work provides cutting-edge methods, specialized macros, and proven best bet procedures. The book also discusses the pitfalls and advantages of various methods, thereby helping readers to decide which is the most appropriate for their purposes. 644 pp. Pub. 7/11.
Computational science is one of the rapidly growing multidisciplinary fields. The high-performance computing capabilities are utilized to solve and understand complex problems. This book offers a detailed exposition of the numerical methods that are used in engineering and science. The chapters are arranged in such a way that the readers will be able to select the topics appropriate to their interest and need. The text features a broad array of applications of computational methods to science and technology. This book would be an interesting supplement for the practicing engineers, scientists, and graduate students.
The book that follows is an experiment in the teaching of population theory and analysis. A sequence of problems where each is a self-contained puzzle, and the successful solution of each which puts the student in a position to tackle the next, is a means of securing the active participation of the learner and so the mastery of a technical subject. How far our questions are the exciting puzzles at which we aimed, and how far the sequence constitutes a rounded course in demography, must be left to the user to judge. One test of a good problem is whether a solution, that may take hours of cogitation, is immediately recognizable once it comes to mind. While algebraic manipulation is required throughout, we have tried to emphasize problems in which there is some substantive point-a conclusion regarding population that can be put into words. Our title, Demography Through Problems, reflects our intention of leading the reader who will actively commit him-or herself through a sequence that will not only teach definitions-in itself a trivial matter-but sharpen intuition on the way that populations behave.
The book containing 18 chapters is divided into three parts: Part 1: Fundamentals of Ice Formation and Ice Characteristics; Part 2: Ice Adhesion and Its Measurement; and Part 3:

Methods to Mitigate Ice Adhesion. The topics covered Include: Factors influencing the formation, adhesion and friction of ice; ice nucleation on solid surfaces; physics of ice nucleation and growth on a surface; condensation frosting; defrosting properties of structured surfaces; relationship between surface free energy and ice adhesion to surfaces; metrology of ice adhesion; test methods for quantifying ice adhesion strength to surfaces; interlaboratory studies of ice adhesion strength; mechanisms of surface icing and deicing technologies; anti-icing using microstructured surfaces; durability assessment of icephobic coatings; bio-inspired icephobic coatings; challenges in rational fabrication of icephobic surfaces; protection from ice accretion on aircraft; and numerical modeling and its application to inflight icing.

This student friendly workbook addresses mathematical topics using SONG - a combination of Symbolic, Oral, Numerical and Graphical approaches. The text helps to develop key skills, communication both written and oral, the use of information technology, problem solving and mathematical modelling. The overall structure aims to help students take responsibility for their own learning, by emphasizing the use of self-assessment, thereby enabling them to become critical, reflective and continuing learners – an essential skill in this fast-changing world. The material in this book has been successfully used by the authors over many years of teaching the subject at Sheffield Hallam University. Their SONG approach is somewhat broader than the traditionally symbolic based approach and readers will find it more in the same vein as the Calculus Reform movement in the USA. Addresses mathematical topics using SONG - a combination of Symbolic, Oral, Numerical and Graphical approaches Helps to develop key skills, communication both written and oral, the use of information technology, problem solving and mathematical modelling Encourages students to take responsibility for their own learning by emphasizing the use of self-assessment

This book is a companion to logical thought and logical thinking in China with a comparative and interdisciplinary perspective. It introduces the basic ideas and theories of Chinese thought in a comprehensive and analytical way. It covers thoughts in ancient, pre-modern and modern China from a historical point of view. It deals with topics in logical (including logico-philosophical) concepts and theories rooted in China, Indian and Western Logic transplanted to China, and the development of logical studies in contemporary China and other Chinese communities. The term “philosophy of logic” or “logico-philosophical thought” is used in this book to represent “logical thought” in a broad sense which includes thinking on logical concepts, modes of reasoning, and linguistic ideas related to logic and philosophical logic. Unique in its approach, the book uses Western logical theories and philosophy of language, Chinese philology, and history of ideas to deal with the basic ideas and major problems in logical thought and logical thinking in China. In doing so, it advances the understanding of the lost tradition in Chinese philosophical studies.