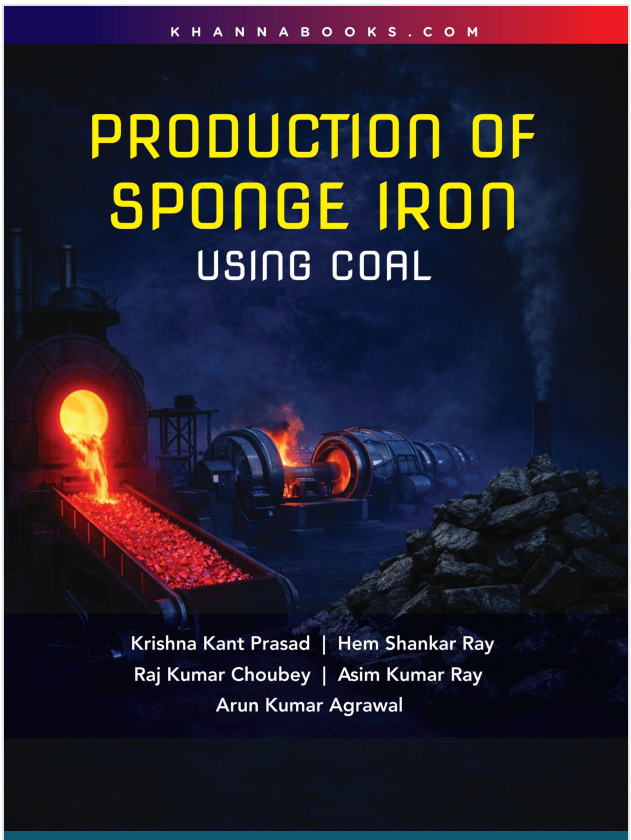

Krishna Kant Prasad, Hem Shankar Ray, Raj Kumar Choubey, Asim Kumar Ray, Arun Kumar Agarwal

Production of Sponge Iron Using COAL

Author :	Krishna Kant Prasad, Hem Shankar Ray, Raj Kumar Choubey, Asim Kumar Ray, Arun Kumar Agarwal
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Product Description

Production of Sponge Iron Using COAL

Production of Sponge Iron using Coal: Rotary Kiln, Tunnel Kiln and using Gas from Coal is a definitive technical guide that explores India's global leadership in the coal-based direct reduction of iron ore. While international markets often rely on gas-based shaft processes, this book highlights how India has pioneered and perfected the use of rotary kilns to utilize abundant, high-ash non-coking coal-resources often dismissed by foreign experts as "muck". The text provides an exhaustive analysis of the thermodynamic, kinetic, and aerodynamic principles that govern the solid-state reduction of iron oxides.

The book serves as a vital bridge between theoretical research and industrial application, documenting decades of expertise from leading metallurgists. It broadens the traditional focus on rotary kilns to include emerging commercial successes in tunnel kiln technology and coal gasification-based shaft furnaces. Beyond technical specifications, the authors connect modern engineering with India's ancient metallurgical heritage, such as the storied Iron Pillar of Delhi. This work is an essential resource for metallurgical students, researchers, industry professionals, and entrepreneurs seeking to understand the economic and technical nuances of sustainable ironmaking in coal-rich regions.

Salient Features

- Rotary Kiln Dominance: Detailed analysis of the rotary kiln's primary role in India, covering its versatility in processing lump hematite and its unique operational strengths and weaknesses.
- Scientific Process Modeling: Comprehensive chapters on mathematical modeling, CFD analysis, and reaction kinetics that allow for precise control over heat transfer and solid movement.

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- Alternative Reduction Technologies: In-depth exploration of tunnel kilns as a viable solution for reducing magnetite and iron ore fines, filling a critical gap in traditional kiln operations.
- Coal Gasification Insights: Evaluation of the economic and technical feasibility of converting coal into reducing gas (CO and H) to supplement production in shaft furnaces.
- Resource Optimization: Strategies for utilizing high-ash Indian coal and recirculating char to enhance energy efficiency and reduce the environmental footprint of ironmaking.
- Practical Engineering Focus: Guidance on plant design, refractory management, and overcoming common industrial hurdles like accretion or "ring formation" inside kilns.
- Historical Contextualization: A unique addendum on India's ancient ironmaking legacy, offering a perspective on the longevity and evolution of sponge iron technology.
- Future-Ready Strategies: Critical projections on hydrogen-based ironmaking and the integration of sponge iron into blast furnaces to reduce costly metallurgical coke consumption.

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- Uses of Sponge Iron
- Future of Sponge Iron: Reading the Crystal Ball

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- Addendum

Author

Krishna Kant Prasad

Dr. Krishna Kant Prasad (born on 24th January 1945 in Bhagalpur, Bihar), after completing B.Sc. Hons. (Chem.) from Bhagalpur University, he did his B.E., M.E. and Ph.D. in Metallurgical Engineering from the Indian Institute of Science, Bangalore. After brief teaching stints at the Banaras Hindu University and MR Engineering College, Jaipur he joined R&D Division of Tata Steel, Jamshedpur in 1972. He moved to RDCIS, SAIL, Ranchi in 1981 as in-charge of R&D activities in the Sponge Iron Pilot Plant Complex and since then he was actively involved in steering R&D activities both in Sponge Iron Making and Alternate Iron Making areas. He retired from SAIL, in January 2006. Thereafter, he served as a visiting professor in the Department of Metallurgical Engineering in IT (now IIT), BHU, Varanasi, for two and then joined NITK (National Institute of Technology Karnataka) in Surathkal, initially as the Ministry of Steel Chair Professor, and then in various capacities - all equivalent to a visiting professor - for seven and a half years. Dr. Prasad has guided four Ph.D. students. He has to his credit over 130 research papers, five registered copyrights and holds two patents on sponge iron making. He has authored four books entitled Sponge Iron Making in Rotary Kiln, Chemical and Metallurgical Thermodynamics, Advances in Rotary Kiln Sponge Iron Plant and Integrated Iron- and Steelmaking. He has also edited two books - "Trends in Beneficiation and Agglomeration of Iron Ore' and 'Steel Plant Technologies: An Overview. He is life member of the Indian Institute of Metals, Electrochemical Society of India and the Computer Society of India. E-mail: kkpmprnc@gmail.com. Professor

Hem Shankar Ray

Hem Shankar Ray (born on 19th June 1940, Jabalpur, Madhya Pradesh) unfortunately left for his heavenly abode on 28th April 2023 just as the preparation of the manuscript

started. Prof. H. S. Ray is widely regarded as one of the greatest minds of the Indian scientific community and a very well-known name in the field of Extractive Metallurgy. He obtained his B.Tech. (Hons.) in Metallurgical Engineering from the Indian Institute of Technology, Kharagpur (1962) and M.A.Sc. and Ph.D. degrees from the University of Toronto, Canada (1963, 67). He was with I.I.T. Kanpur from 1967-80 as Lecturer and Asst. Professor. In between he served as Manager/Senior Technologist - Research and Development, Pilkington Research Centre, Lathom, England (1977-1979). He then served as Professor of Metallurgical Engineering (1980-1990) and Dean of Students Affairs (1988-90) at the Indian Institute of Technology, Kharagpur. Prof. Ray served the Regional Research Laboratory, Bhubaneswar (now IMMTD) as Director from 1990-2000 (two terms). On retirement he served as an Emeritus Scientist at the Central Glass and Ceramic Research Institute, Calcutta. He holds several patents including 2 U.S. patents to his credit. His areas of interest included thermal analysis, kinetics, extractive metallurgy, energy and R&D administration. He guided about 40 Ph.D. students and 20 M.Tech. students for their thesis work. He has published about 500 papers in reviewed journals and conference proceedings and over 26 books. He also edited 15 Conference proceedings and written about 50 technical reports. He also wrote numerous other non-technical articles, editorials, etc. Prof. Ray received several awards in recognition of his work and these include the National Metallurgists Day Award, G.D. Birla Award and two Kamani Gold Medals of the Indian Institute of Metals. He received the Distinguished Alumni award from IIT Kharagpur, which, interestingly, he shared that year with the Google CEO, Sundar Pichai. He served several companies and R&D laboratories as consultant or member of Boards/Research Councils. He was associated with several Professional Bodies and served as President, Indian Institute of Mineral Engineers and Indian Thermal Analysis Society; also, as a Vice President of the Millennium Institute of Energy and Environment Management and was an Editor of a popular science magazine Everyman's Science. He also served in several other institutions in various capacities. He was deeply involved with professional bodies such as IIM (Indian Institute of Metals),

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Raj Kumar Choubey

Raj Kumar Choubey , was born on August 11, 1954 at Sikariya, Bhojpur, Bihar (unfortunately he passed away on February 19, 2024). He passed B.Sc. from the University of Burdwan in 1974 and Bachelor of Engineering from MREC (now MNIT) in Jaipur Rajasthan in the year 1980. He joined M/s Jaipur Metals and Electricals in 1980 and operated the first induction furnace of India. In 1982 he joined M/s Hindustan Motors and served till the year 2000. There he developed various grades of automobile grade steel and was a part of the team who fabricated the first Diesel Engine for automobiles in India. Thereafter he decided to be a start-up entrepreneur. His portfolio lately read: Owner -

Metcon Power Consultant & Engineers, Kolkata, having global clients base including Tata Steel and Jindal Steel. Director - Bhagwati Power & Steel Limited, Raipur, CG. Director - RNT Medicare Private Limited, Kolkata. Partner - Premier Hygienic Services, Kolkata. He involved himself in innovation and setting up commercial plants based on self developed technology for: Manufacturing DRI (Sponge Iron) from Mill Scale, DRI through Tunnel Kiln Technology, Development of Metallic Saggers for reduction of Iron Ore, Process for reduction of Chromite Ore at lower temperature, Extraction of liquid fuel from waste plastic, Recycling of Steel Plant wastes Development of Binders for agglomeration Address: Metcon House, North Bazar, Post: Andal - 713321, District: Paschim Bardhman, West Bengal. Email: choubey@metconpower.in, Website: www.metconpower.in. Dr.

Asim Kumar Ray

Dr. Asim Kumar Ray was born at Calcutta in 1952. He graduated with Honours in Chemical Engineering from Jadavpur University in 1974. He did his Masters in Chemical Engineering from IIT Kanpur and Ph. D. in Metallurgical Engineering from IIT Kharagpur. After a brief stay of about one and a half year each at Indian Iron and Steel Company, Burnpur and Indian Oil Corporation, he joined Research & Development Centre for Iron & Steel (RDCIS), SAIL, Ranchi in 1978. After a long stay at RDCIS, SAIL, Ranchi, he assumed charge of General Manager (Quality) at Durgapur Steel Plant (DSP), SAIL in 2008. Dr Ray was instrumental in commissioning Sponge Iron Pilot Plant and associated Process Research Laboratory and carried out R & D activities related to Sponge Iron & other Alternate Iron Making processes, Steelmaking and Continuous Casting. He established Computational Laboratory at RDCIS and carried out mathematical and physical simulation of different metallurgical processes. He steered several projects on process improvement and product development in all SAIL plants. Under his leadership, DSP had received several awards on Quality including prestigious Golden Peacock Award on Quality -2010 of Institution of Directors (IOD). Dr. Ray retired from SAIL in December 2012. Presently, Dr. Ray is with M/s Lechler (India) Pvt. Ltd. Dr. Ray has co-authored the Book on "Rotary

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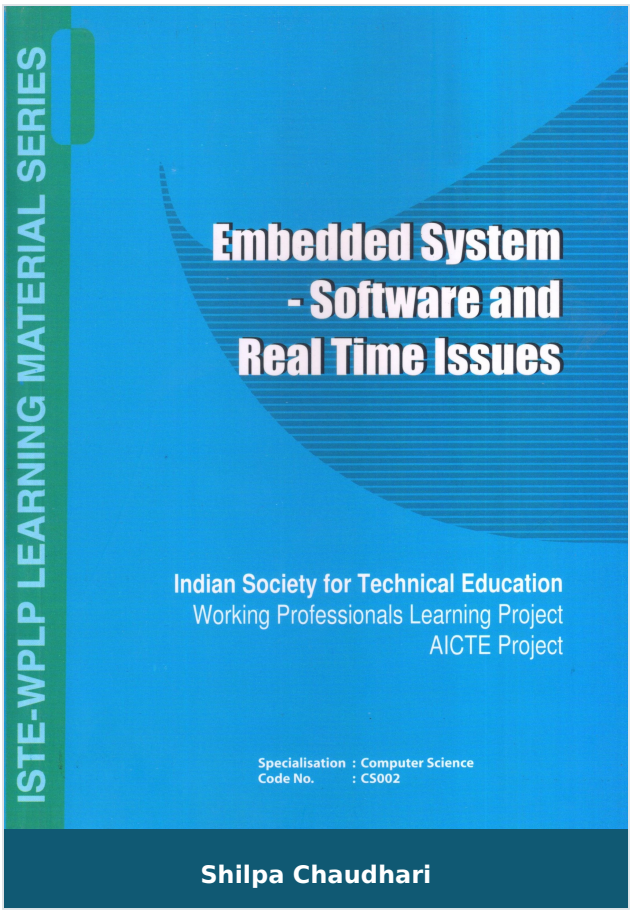

Embedded System- Software and Real Time Issues

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Product Description

This learning material is prepared to train fresh graduates and working professionals, to take up the challenges of embedded system design with special emphasis on embedded software design. Embedded system design is about designing a dedicated system, providing solution to a specific problem by implementing a specific application. Embedded system design uses all existing technologies to provide such application-oriented solution. The design begins with understanding the requirements of specifications are further implemented , using suitable technologies. The learning materials is organized to give overall view of embedded system design with special emphasis on software design.

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- Synchronization
- Mailbox, Message Queue and Memory Partitioning
- Distributed (Networked) Embedded Systems
- Network Programming
- Software Modeling
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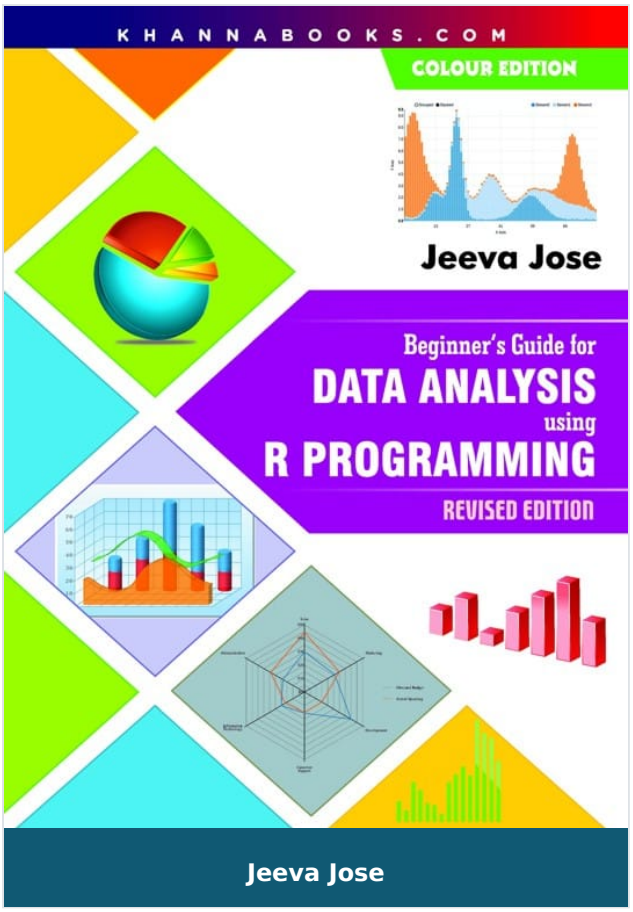

Beginner's Guide for Data Analysis using R Programming

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Product Description

R programming is an efficient tool for statistical analysis of data. Data science has become critical to each field and the popularity of R is skyrocketing. Organization as large and diverse as Google, Facebook, Microsoft, Bank of America, Ford Motor Company, Mozilla, Thomas Cook, The New York Times, The National Weather Service, Twitter, ANZ Bank, Uber, Airbnb etc. have turned to R for reporting, analyzing and visualization of data, this book is for students and professionals of Mathematics, Statistics, Physics, Chemistry, Biology, Social Science and Medicine, Business, Engineering, Software, Information Technology, Sales, Bio Informatics, Pharmacy and any one, where data needs to be analyzed and represented graphically.

Salient features of the book:

1. Explains R concept in a simple method.

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- Advanced Graphs

Author

Jeeva Jose

Dr. Jeeva Jose completed Ph. D. in Computer Science from Mahatma Gandhi University, Kerala, India and is a faculty member at BPC College, Kerala. Her passion is teaching and areas of interests include world wide web, Data Mining and Cyber laws. She has been in higher education for the last 15 years and has completed three research projects funded by UGC and KSCSTE. She has published more than twenty research papers in various refereed journals and conference proceedings. She has edited three books and has given many invited talks in various conferences. She is a recipient of ACM-W Scholarship provided by Association for Computing Machinery, New York.

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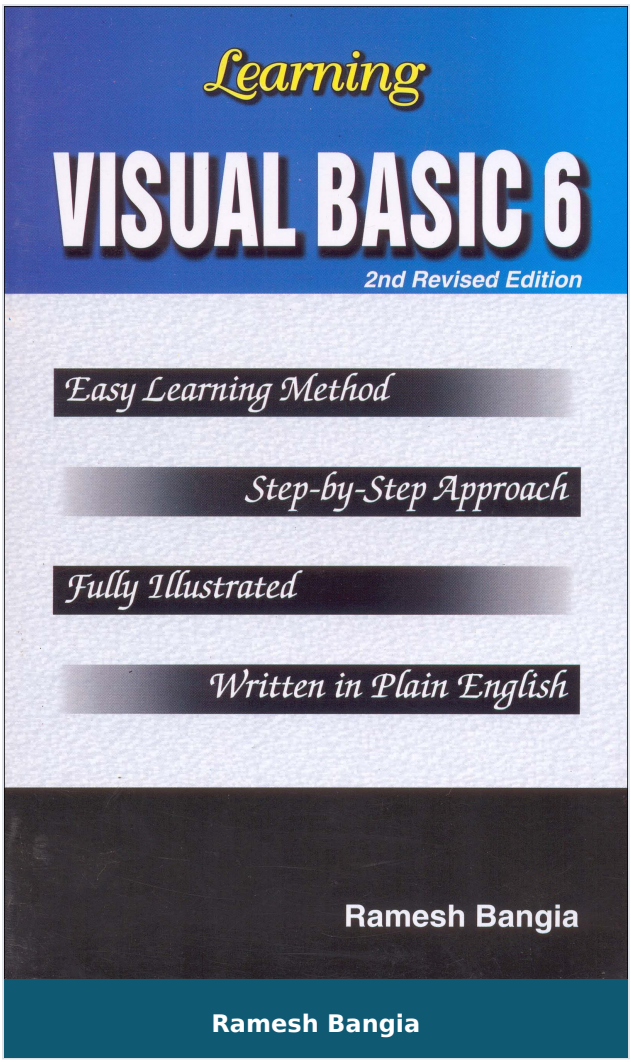

Learning Visual Basic 6

Author :	Ramesh Bangia
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ISBN 10 :	8187522879
E-ISBN 13 :	978-81-87522-87-4
Edition :	Second
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Year :	2010
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 225.00
Categories :	Computer Books - English, Book Store, Learning Series
Condition Type :	New
Country Origin :	India

Product Description

Visual basic is such a vast subject that it will take a lot of time to understanding it fully. This book has been written in mind to make you aware of the options available in the software and how they can be used. It is like telling the child about the steps and stairs. You are the one who is to climb the stair. This book will just guide you how to use the stairs.

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- Working with Events
- Creating Menus in Visual Basic
- Fundamentals of Visual Basic Programming
- Compiling and Distributing Projects in Visual Basic
- Common Dialog Control
- Command Reference of Visual Basic
- Properties Events and Methods
- Questions

Author

Ramesh Bangia

Ramesh Bangia, has been writing computer books on various topics. He has written books for Schools. Training Institutes, Technical Universities, Distance Education Programs, Colleges and General. His tally of books exceeds 500 in number. Trained both in India and Abroad and having studied at IIT Delhi, he becomes automatic choice for most of the publishers in India. Though based in Delhi, his books are popular all over India and are even exported to Middle Ease and African countries.

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B. Ankayarkanni, D. Usha Nandini, A. Mary Posonia, V. Ulagamuthalvi

Compiler Design

Author :	B. Ankayarkanni, D. Usha Nandini, A. Mary Posonia, V. Ulagamuthalvi
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E-ISBN 13 :	978-93-55385-00-0
Edition :	First
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Type of book :	Physical
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Language :	English
Publisher :	Khanna Publishing House
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Categories :	Computer Science Engineering, New Arrivals, Book Store, Sathyabama Series
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Product Description

Compiler Design offers a comprehensive and organized introduction to the foundational principles, techniques, and practical tools necessary for constructing a compiler. Serving as an essential bridge between human-readable high-level programming languages and machine instructions, this book aims to unravel the complexity of the translation process and demystify compiler construction for both students and academics.

The book systematically guides readers through the entire compiler lifecycle, detailing each major phase: Lexical Analysis, Syntax Parsing, Semantic Analysis, Intermediate Code Generation, Code Optimization, and Final Code Generation. It adopts an approachable, academic tone, striving to simplify both fundamental ideas and advanced concepts by integrating theoretical foundations with practical implementations. For enhanced comprehension, the material is reinforced with a combination of theoretical discussions and numerous solved numerical problems. Furthermore, a strong emphasis is placed on practical skill development, featuring dedicated coverage of industry-standard tools like LEX and YACC, ensuring the target audience—computer science students and professors—gains hands-on experience in building real-world compilers. This indispensable resource provides a clear pathway to mastering the art and science of transforming source code into efficient, executable programs.

Salient Features:

• Systematic Phase Coverage: Presents the compiler's structure through distinct, organized units, detailing the functionality of the analysis-synthesis model from scanning to code generation.

• Practical Tool Integration: Provides detailed sections on using LEX and YACC (Yet Another Compiler Compiler), giving students hands-on experience in generating practical Lexical Analyzers and Parsers.

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• Comprehensive Parsing Methods: Explores a full range of parsing techniques, including Top-Down (LL(1)) and sophisticated Bottom-Up (LR, SLR) parsing, complete with error handling and recovery strategies.

• Intermediate Code Representation: Dedicated unit focusing on Syntax-Directed Translation (SDT), implementing three-address code, and handling complex programming constructs like procedure calls and switch-case statements.

• Advanced Optimization Techniques: Covers crucial optimization strategies like Data Flow Analysis, Loop Optimization, and the use of Directed Acyclic Graphs (DAGs) for efficient, high-speed target code generation.

• Efficient Code Generation: Discusses critical implementation issues such as managing Run-Time Storage, optimal Register Allocation and Assignment, and the final conversion of assembly code to machine code.

• Formal Language Foundation: Clearly explains the role of Formal Languages, covering Regular Expressions and both Deterministic and Non-Deterministic Finite Automata (DFA/NFA) conversions in lexical design.

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- Code Generation

Author

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D. Usha Nandini

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A. Mary Posonia

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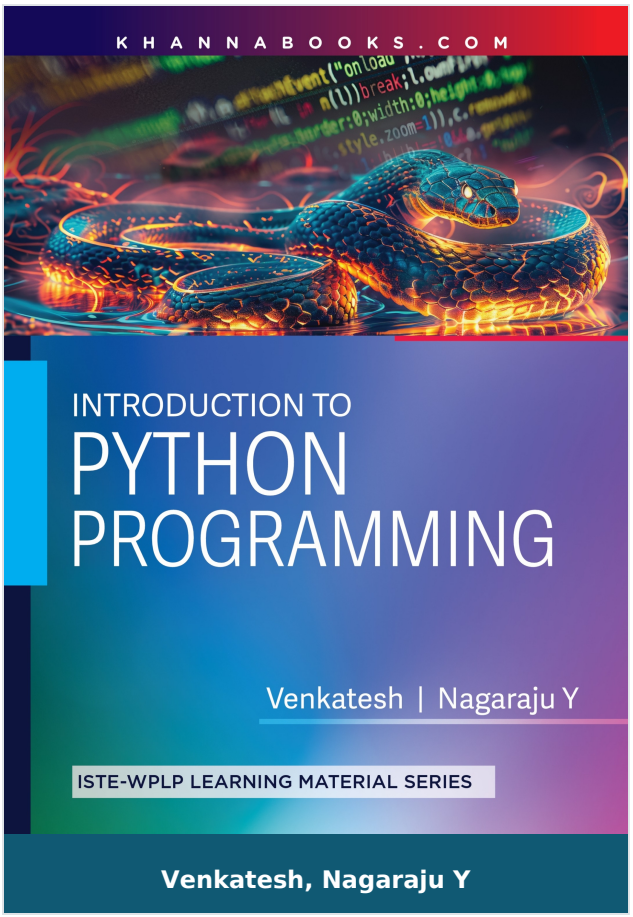

Introduction to Python Programming

Author :	Venkatesh, Nagaraju Y
ISBN 13 :	978-93-55384-45-4
ISBN 10 :	9355384459
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Categories :	Emerging Technologies, Book Store, ISTE Series, Best Sellers
Condition Type :	New
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Product Description

The educational objective of this textbook is an Introduction to Python Programming, computer application development using python. This book serves two purpose in general. First, it serves as a text book in a college-level introductory to Python Programming subject. Second, the book is a broad introduction to the python concepts, libraries and tools essential for application development. Learning python has become a prerequisite for computer science graduates because, python has powerful software libraries that make complex tasks simple. The motivation behind writing this book is for the ease of learning Python and the ease of using its libraries in application development.

The textbook's pedagogical approach is to introduce Python programming concepts, Python programming in a easy and understanding manner. The approach followed in this book is more akin to learning a mother tongue, starting from small general-purpose words and then forming sentences and paragraphs.

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- Execution Control Structures
- Container and Randomness
- Namespaces
- Object Oriented Programming in Python
- Graphical User Interfaces
- Recursion
- Web Programming Using Python
- Database and Data Processing in Python

Author

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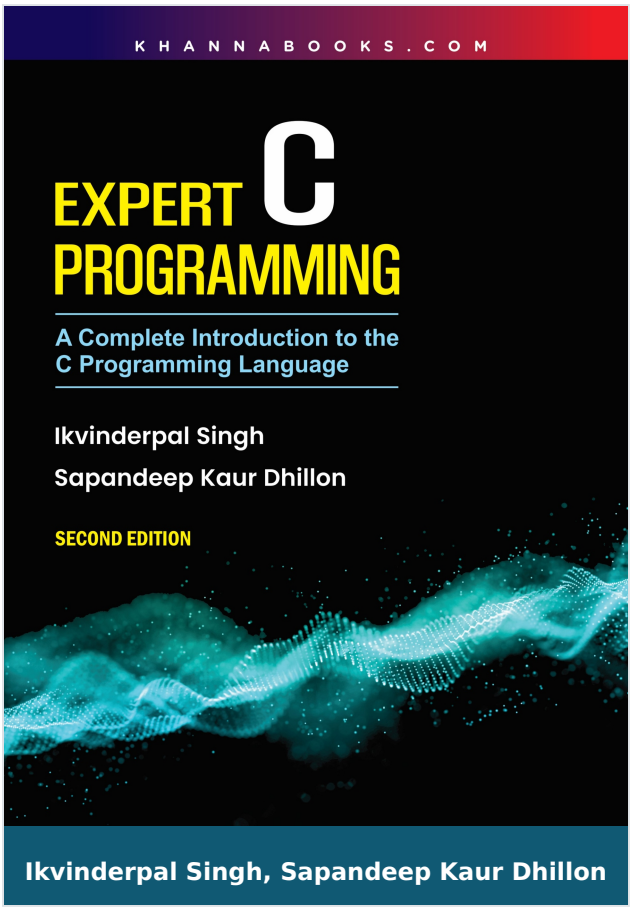

Expert C Programming

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Product Description

Written with the beginner in mind, this book provides an exceptionally clear and precise detail of c++ programming. Its approach is explanatory and language is lucid and communicable. Each and every concept described with the help of its pictorial representation, examples, and solved programming to have clear ideas. Each chapter contains programming problems, objective type questions, and exercises. This book will be useful for student of BE(Computer/Electronics), B. tech, ME(Computer/Electronics), M. Tech, MCA, BCA, M.Sc., B.Sc., and also to students pursuing A/B/C-level Course of DOEACC.

Salient Features

- Brief introduction to computer and programming languages.
- Complete introduction to C programming including basic structure is given in detail.
- Extensive coverage of constants, variables, various data types are given in detail.
- Various types of operators and expressions are described with the help of examples and simple programs.
- Demonstrates the description of console I/o statements in a lucid manner.
- Each and every control statement is described with the help of flowcharts and simple programs.
- Includes numerous illustrative examples to understand the topic easily.
- Demonstrates every program in a good programming style.
- Around 300 objective type questions are included.
- Contains numerous theory exercises at the last of each chapter.
- Gives detailed description of arrays, strings and functions in lucid manner.
- Covers all concepts of pointers like pointer and array, pointer and function, dynamic memory allocation in details.

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- Detailed analysis of each and every storage class is covered with the help of programming examples.
- Detailed description to the concept of structures and unions.
- Presents various file handling operations like open (), close (), seek (), reading and writing a file, working with streams etc.

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- Structures and Unions
- File Handling
- C Preprocessor and Characters Test Functions

Author

Ikvinderpal Singh

Dr. Ikvinderpal Singh is an Assistant Professor at Trai Shatabdi Guru Gobind Singh Khalsa college Amritsar, bringing 17+ years of academic leadership and research experience to the field of computer science. A Gold Medalist in B.Sc. IT, with an MCA (Distinction) and a Ph.D. in Neural Networks and Image Processing, he is known for blending rigorous research with practical innovation. A prolific academic creator, he has authored 37 books, published 82+ research papers, and designed 100+ industry-aligned skill-development courses. His expertise extends to doctoral evaluation, supervision, and active participation on 100+ editorial and review boards worldwide.

Sapandeep Kaur Dhillon

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Sapandeep Kaur Dhillon is an assistant professor in the department of computer science, Guru Nanak Dev University, Amritsar, bringing 12+ years of dedicated academic experience to the discipline. She has authored 4 books, published 10+ research papers across national and international journals, reflecting her steady engagement with emerging trends in computing. Her academic interests span data structures, Compiler Design, and Artificial Intelligence, where she integrates foundational theory with practical, algorithmic thinking.

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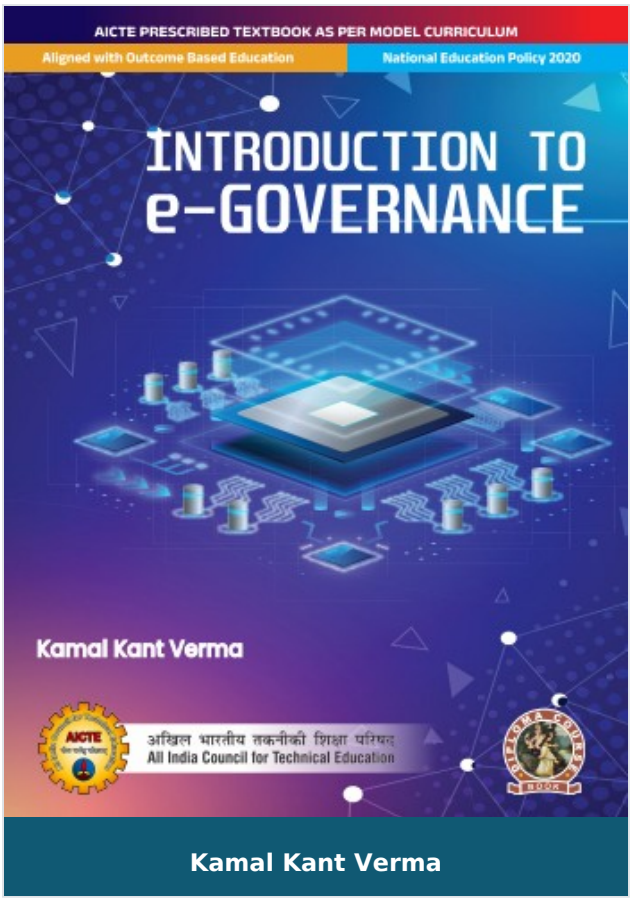

Kamal Kant Verma

Introduction to e-Governance

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Product Description

Introduction to e-Governance

This book gives detailed description about introduction to e-governance, information and communication technology trends, e-government project, e-governance life cycle, architecture of e-governance and cyber laws. Logical organization and wide variety of e-governance with their detailed explanations makes this book a perfect offering on the subject.

Salient features:

- Content of the book aligned with the mapping course outcomes, programs and Units Outcomes.
- In the beginning of each unit learning outcomes are listed to make the student understand what is expected out of him/her after completing that unit.
- Book provides lots of recent information, interesting facts, QR code for E-resources, QR code for use of ICT, projects, group discussion etc.
- Student and teacher centric subject materials included in book with balanced and chronological manner.
- Figures, tables, and software screen shots are inserted to improve clarity of the topics.
- After completion of each chapter, a summary of the unit is also provided apart from essential information.
- Short questions, objective questions and long answer exercises are given for practice of students after every chapter.
- After each chapter` references and suggested readings’ is also provided for deeper understanding of the concepts.

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Author

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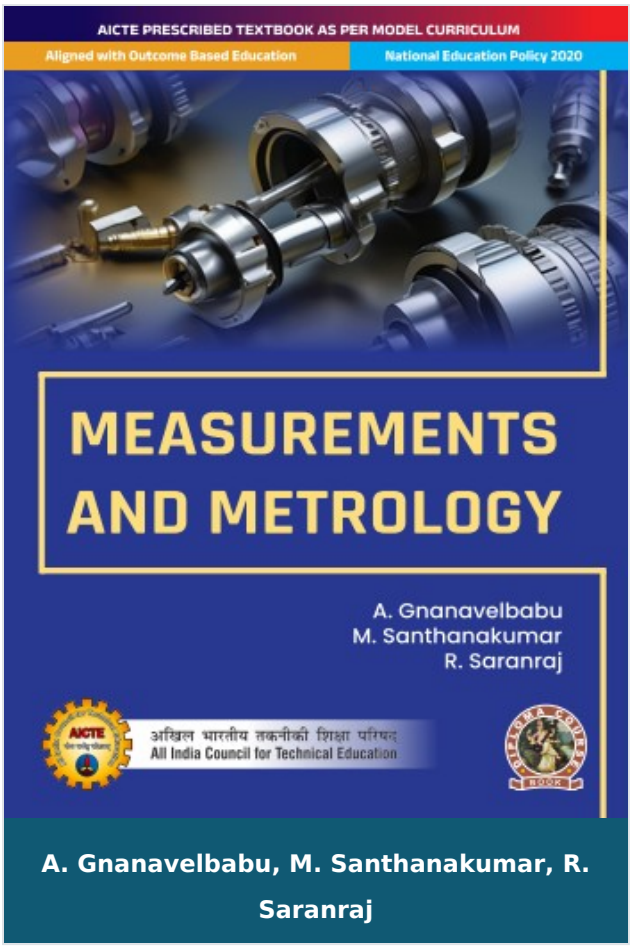

A. Gnanavelbabu, M. Santhanakumar, R. Saranraj

Measurements and Metrology

Author :	A. Gnanavelbabu, M. Santhanakumar, R. Saranraj
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Product Description

Measurements and Metrology

This book familiarizes students with the critical domains of Measurements and Metrology. It provides a comprehensive understanding of basic science for engineering students. Covering the fundamentals of measurements and metrology, and enables them to gain insight into the subject. The book covers essential topics such as dimensional measurements, calibration techniques, mechanical measurement system, and various metrology tools and their applications in engineering problems. The primary content of this book aligns with the model curriculum of AICTE and fellow the outcomes-based education concepts as per the National Education Policy (NEP)2020.

Salient features:

- Content of the book aligned with the mapping course outcomes, programs and Units Outcomes.
- In the beginning of each unit learning outcomes are listed to make the student understand what is expected out of him/her after completing that unit.
- Book provides lots of recent information, interesting facts, QR code for E-resources, QR code for use of ICT, projects, group discussion etc.
- Student and teacher centric subject materials included in book with balanced and chronological manner.
- Figures, tables, and software screen shots are inserted to improve clarity of the topics.
- Apart from essential information a ‘know more’ section is also provided in each unit to extend the learning beyond syllabus.
- Short questions, objective questions and long answer exercises are given for practice of students after every chapter.

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Author

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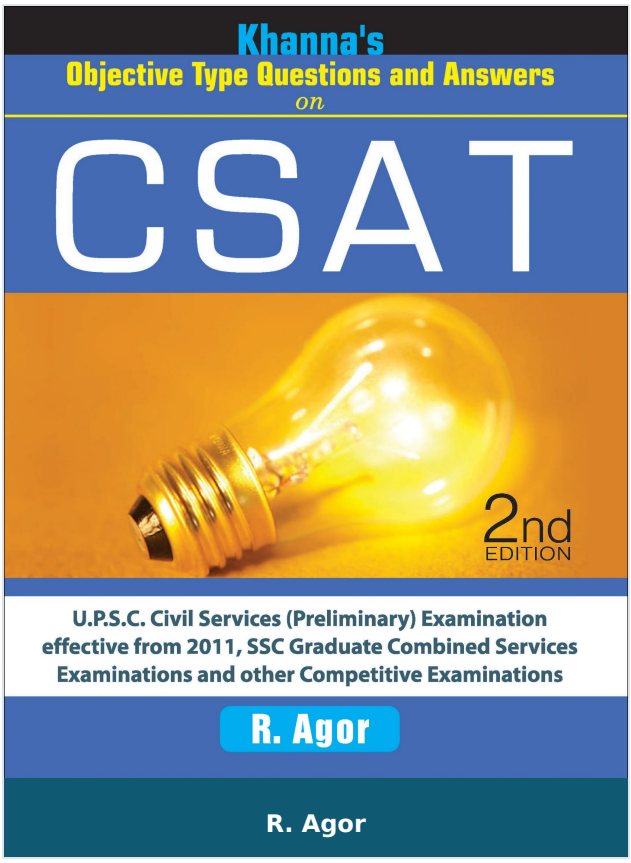

Khanna's CSAT [Objective Type Ques. & Ans.]

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Product Description

The author feels great pleasure in presenting this comprehensive treatise for the candidates aspiring for Civil Services (preliminary) Examination as per the revised syllabus and pattern effective from 2011 and all other competitive examinations. This has been an endeavor of the author to compile the necessary knowledge for the Examination through the multiple type questions and answers on various subjects and current affairs.

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- The Salient Features of India Constitution
- The Components of Government and Their Functions
- Judiciary of India
- Preventive and Social Medicine
- Functions in Human Body
- The World Oceans and their Configurations
- English Comprehension

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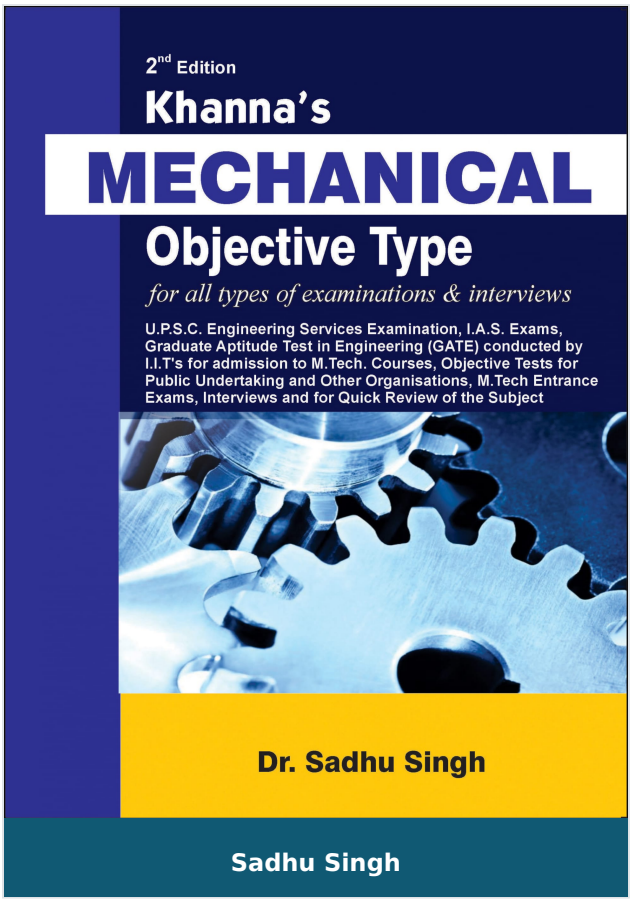

Khanna's Mechanical Objective Type

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Product Description

U.P.S.C. Engineering services examination, I.A.S. exams, Graduate aptitude test in engineering (GATE) conducted by I.I.T's for admission to M. Tech. courses, Objective tests for public undertaking and other organizations, M. Tech entrance exams, Interview and for quick review of the subject. An attempt has made by the author to present explanatory notes and answers to all the questions as correctly as possible for the question papers from 1992 to 2000 Topic wise and from 2001 to 2014 Year wise. This shall help aspiring candidates better to prepare for the ensuing IES examinations.

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- Operations Research

Author

Sadhu Singh

Dr. Sadhu Singh is a retired professor of Mechanical Engineering of Govind Ballabh Pant university of Agriculture & Technology, Pantnagar. He graduated in Mechanical Engineering with Hons, from Punjab University, Chandigarh, M.Sc. (Mechanical Design & Production Engineering) and Ph.D. from Kurukshetra University, Kurukshetra. His teaching experience spans 15 years at Regional Engineering College (now NIT), Kurukshetra and 19 years at Pantnagar University. He has been Professor & Head, Mechanical Engineering Departmentand Dean, Faculty of Engineering & Technology at Pantnagar. He has been Director (Colleges). Punjab Technical University, Jalandhar.

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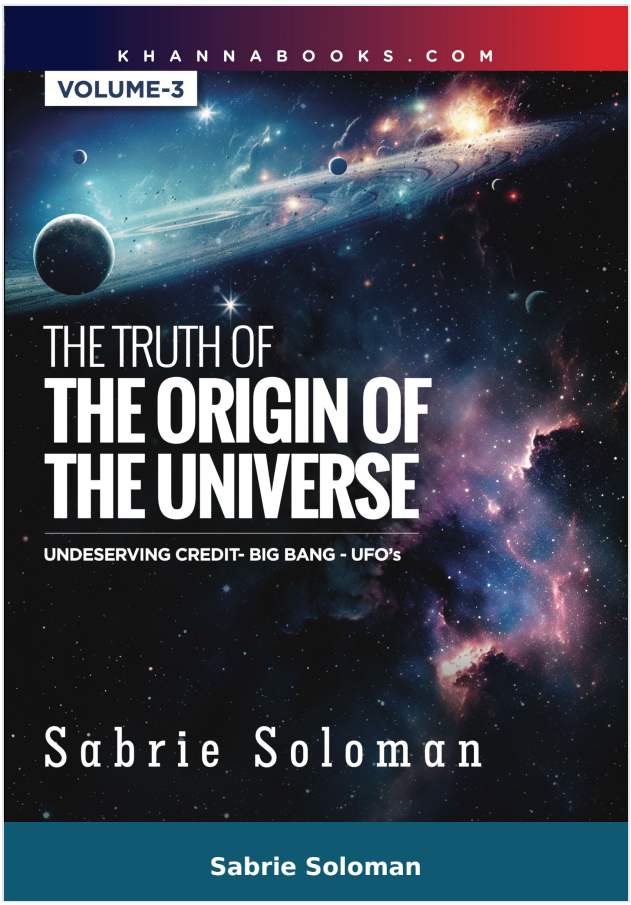

The Truth of The Origin of The Universe (Undeserving Credit-Big Bang-UFO'S) Volume-3

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Product Description

The Big Bang and UFOs: Unworthy Credit! The topic of undeserving credit given to the Big Bang and UFOs is a controversial one, with many people having strong opinions on the matter. While both the Big Bang theory and the existence of UFOs have been widely accepted, the author argues that they are given too much credit and recognition without sufficient evidence to support their claims.

The Big Bang theory is widely accepted as the most plausible explanation for the origin of the universe. Some critics argue that it is not the only possible explanation for the universe's origins. Some alternative theories, such as the steady-state theory or the oscillating universe theory, have been proposed as alternatives to the Big Bang theory.

Similarly, the existence of UFOs is a topic that has been hotly debated for decades. While there have been countless reports of UFO sightings and encounter, there is a lack of concrete evidence to support the existence of existence of extraterrestrial visitors.

While the Big Bang theory and UFOs may be popular topics in popular culture, it is important to approach them with a critical eye and to consider the evidence before giving them undeserving credit.

Chapters Covered in This Book:

1. The hypes about Big Bang Theory.
2. Understanding Time Dilation.
3. The String Theory and the Origin of the Universe.
4. Carbon Dating.
5. Blackhole – Space – Time Warp.
6. Understanding the Unidentified Flying Objects UFOs.

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7. Carbon Dating Historical Models.

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