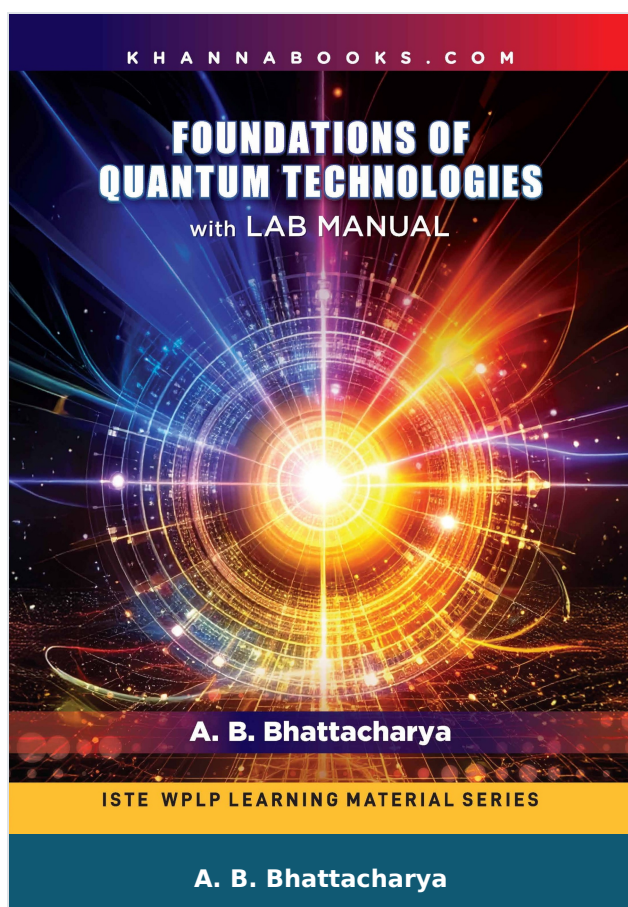




Foundations of Quantum Technology with Lab Manual

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Product Description

Foundations of Quantum Technology with Lab Manual

Explore the Future — Learn the Fundamentals — Master the Tools

Step into the next revolution in science and technology with Foundations of Quantum Technologies (with Lab Manual) — an all-encompassing guide designed for students, educators, and researchers aiming to understand and work with the principles and real-world applications of quantum mechanics.

WHAT'S INSIDE

Part I: Fundamentals of Quantum Mechanics

Begin your journey with a deep dive into the origin and evolution of quantum theory. Understand wave-particle duality, measurement postulates, and the ground-breaking concept of quantum entanglement. Enrich your learning with multiple-choice questions, solved numerical problems, and project ideas at the end of each chapter.

Part II: Core Quantum Technologies

From quantum computing and cryptography to teleportation and metrology, discover how abstract quantum principles power the innovations shaping tomorrow. Learn algorithms like Shor's and Grover's, and explore secure communication via the BB84 Protocol.

Part III: Experimental and Practical Aspects

Get hands-on with quantum hardware platforms like superconducting qubits, trapped ions, and photonic systems. Study experimental realizations from IBM Q, Google Sycamore, and more. It includes detailed insights into quantum gate implementation and optical elements in labs.

Part IV: Lab Manual

Bridge theory with practice in your own quantum lab. Conduct real-world experiments on polarization, entanglement, BB84 protocol, and quantum algorithms using cloud platforms. Learn essential tools like QuTiP, Qiskit, and Cirq for simulating and analyzing quantum systems.

Also Includes

- Conceptual short Q&A
- MCQs and numerical problems with solutions
- Design-driven project tasks
- Oral questions for viva preparation
- Reference tables for quick access

Whether you're a curious beginner or an aspiring quantum researcher, this book offers a robust, intuitive, and experimentally rich learning experience to help you navigate the quantum frontier.

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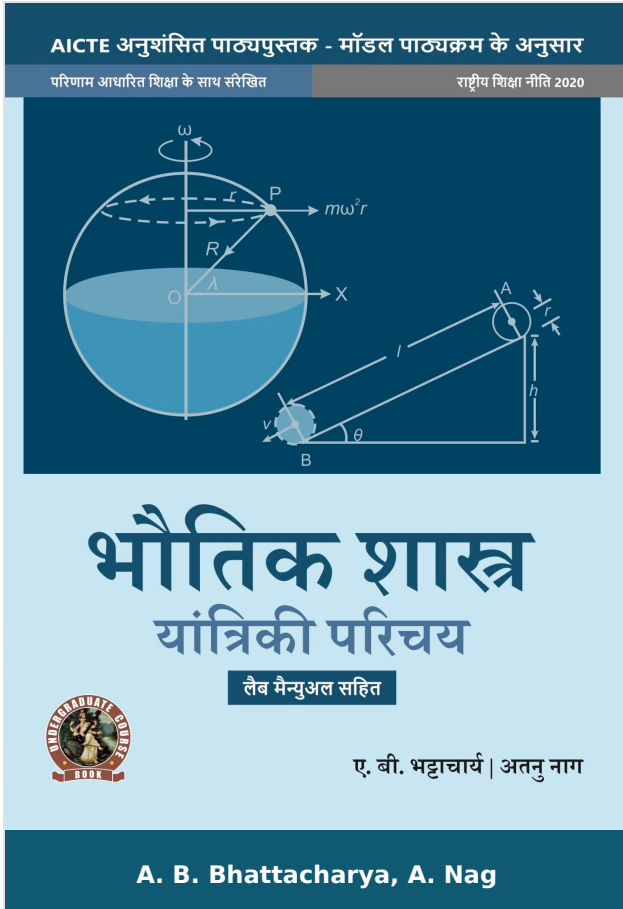
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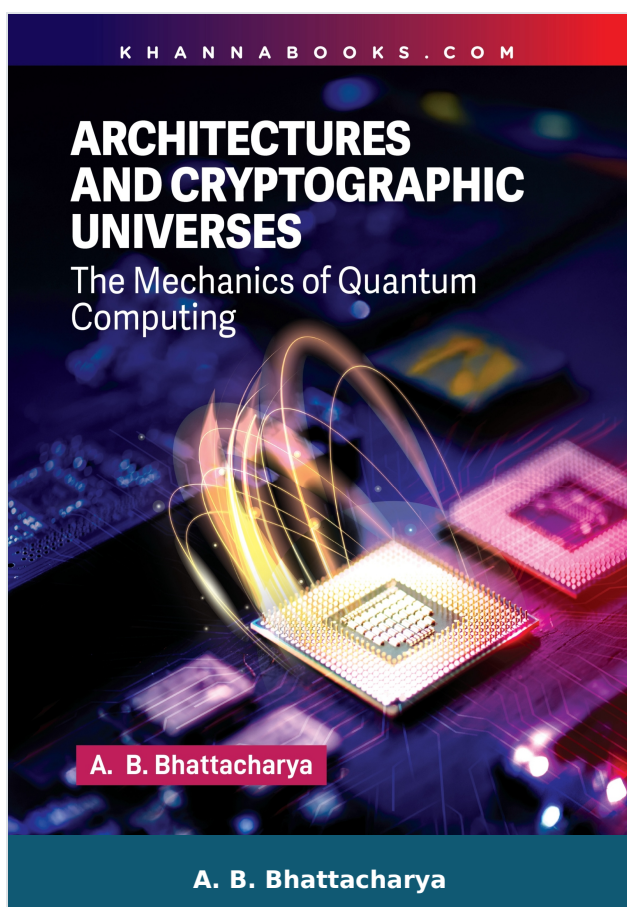
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Architectures And Cryptographic Universes (The Mechanics of Quantum Computing)

Author : A. B. Bhattacharya

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Architectures And Cryptographic Universes (The Mechanics of Quantum Computing)

From the basic designs of quantum computers to the latest advances in quantum security. "Architectures and Cryptographic Universes: The Mechanics of Quantum Computing" takes you on a complete journey through the world of quantum technology.

Whether you are a student, researcher, or professional in computing or physics, this book will help you understand and make the most of the exciting quantum revolution.

Salient Features:

Learn Ahead to the Future – Quantum Computing Survey

- **Learn the Hardware:** Discover how quantum computers actually work – from superconducting qubits and trapped ions to quantum dots and light-based systems – and understand the big challenges of stability and scalability.
- **Learn the Security revolution:** Step into Quantum Cryptography – explore real protocols like BB84, understand the No-Cloning Theorem, and see how quantum tech will change data protection forever.
- **Learn the Science in Action:** Experience how Quantum Simulation helps, design new materials and chemicals, and explore the future of Quantum Machine Learning, adiabatic, and topological computing.
- **Learn by Doing:** Get practical with tools like Google cirq, Microsoft QDK, and open-source simulators. Build your own circuits, run guided exercises, and even test on real quantum devices.
- **Learn the Challenges:** Understand the ongoing research in quantum error correction, cryogenic cooling, and scalable architectures – key steps toward powerful

quantum machines.

- **Learn the future:** Imagine what's next – Quantum Networks, the Quantum Internet, and hybrid systems where classical and quantum computing work hand in hand.

Each chapter Includes:

- Conceptual Breakdown
- Short Questions and MCQs
- Numerical Problems with Solutions
- Project Ideas with Guidance

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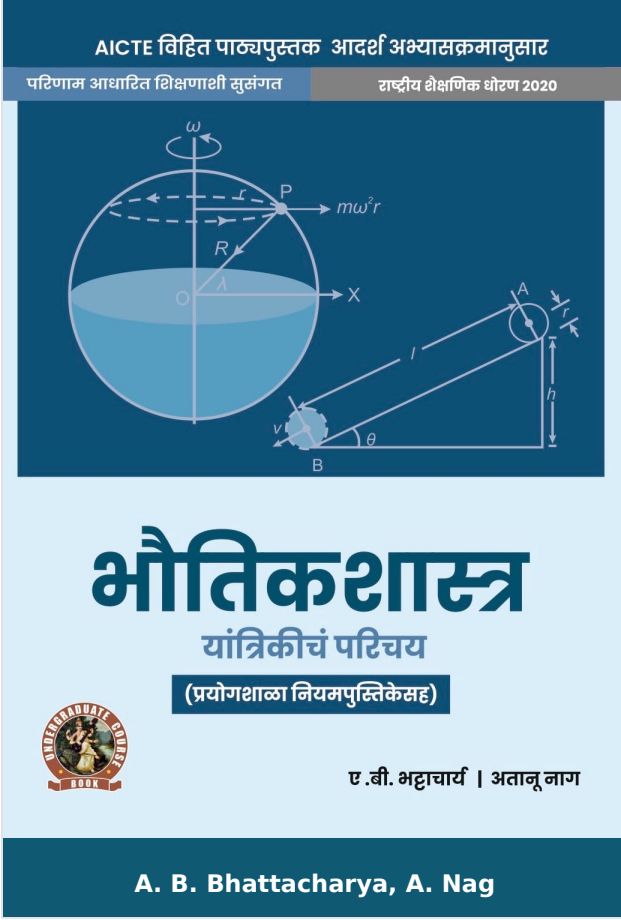
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Physics (Introduction Mechanics)

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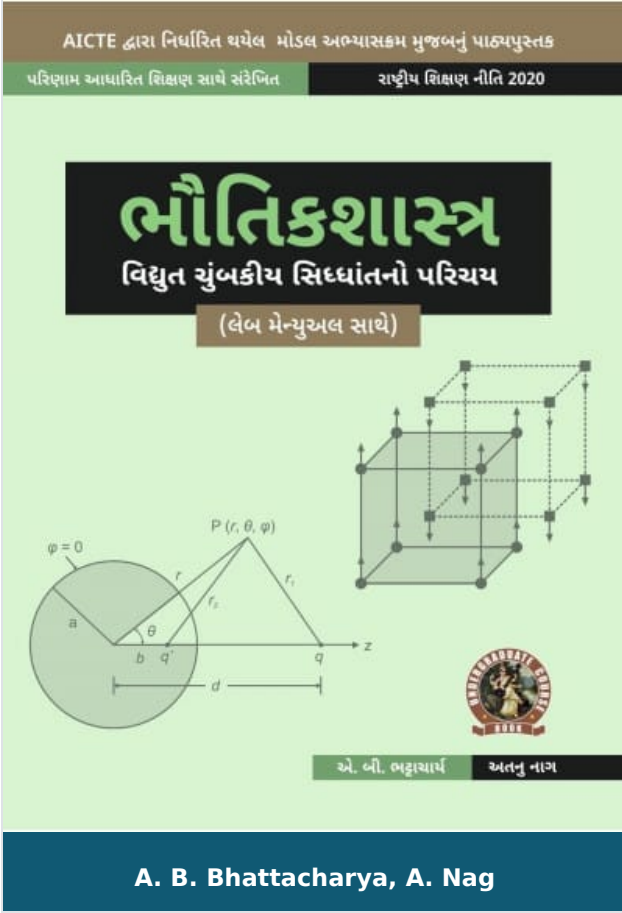
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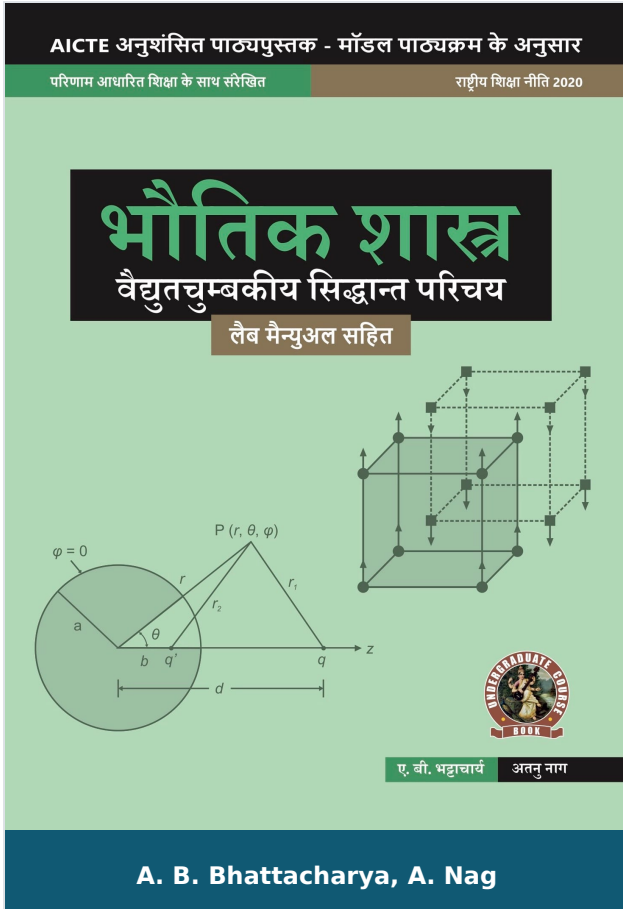
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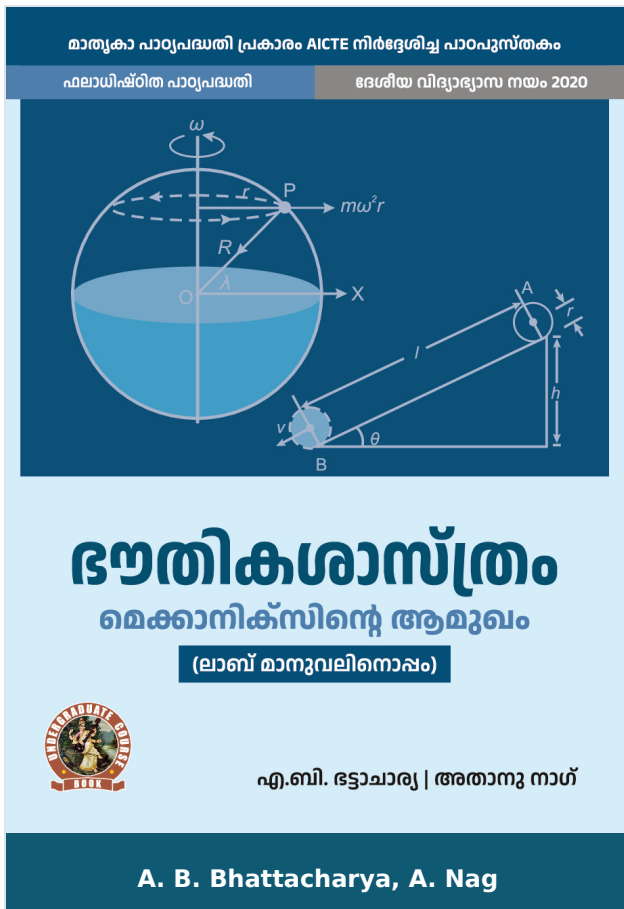
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- Expose basic science to the engineering students to the fundamentals of physics and to enable them to get an insight of the subject.
- To develop knowledge on critical questions solved and supplementary problems covering all type of medium and advanced level
- Under problems in a very logical and systematic manner.
- Some essential information for the user the heading "Know more" for clarifying some basic information as well as comprehensive synopsis of formulae for a quick revision of the basic principles.
- Constructive manner of presentation so that an Engineering degree students can prepare to work in different sectors or in national laboratories at the very forefront of technology.

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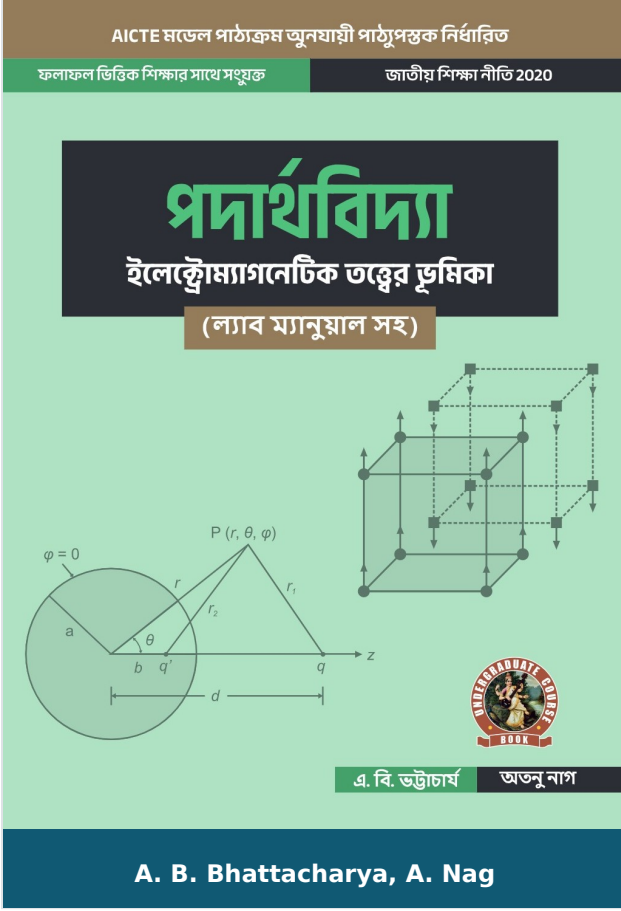
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