Basics of Electrical Engineering

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BASICS OF ELECTRICAL ENGINEERING

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Book Title: **Basics of Electrical Engineering**

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Price: ₹999

1st Edition

ISBN: **978-81-19149-65-0**

Published: **Dec 2023**

Publisher:

Kripa-Drishti Publications

A/ 503, Poorva Height, SNO 148/1A/1/1A,
Sus Road, Pashan- 411021, Pune, Maharashtra, India.
Mob: +91-8007068686
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Web: https://www.kdpublications.in

PREFACE

Basic Electrical Engineering covers practically all topics in fundamental electrical engineering, including circuits, machines, measurements, and power systems. A basic electronics introduction has also been offered to prepare pupils for a more in-depth study later on. The chapters were written with the basic principles of learning and motivation in mind. The main elements of this book are easy explanations of concepts, plenty of examples and pictures, practise problems and multiple-choice questions with solutions, and short answer type review questions.

Electrical and electronic gadgets and instruments have had an impact on every element of engineering practise, and even ordinary life. Perhaps the most visible indications of this presence are computers. Many other areas of electrical engineering, from mechanical and industrial engineering to chemical, nuclear, and materials engineering, to aerospace and astronautical disciplines, to civil and the burgeoning subject of biomedical engineering, are equally vital to the practising engineer. Engineers nowadays must be able to successfully communicate within the interdisciplinary teams with which they work.

Abbreviations

Alternating Current (AC)
Amperes(A)
Arc-Fault Circuit Interrupter (AFCI)
Capacitive Potential Transformer (CPT)
Capacitor (C)
Cardiopulmonary Resuscitation (CPR)
Circuit Protecting Conductor (CPC)
Controlling Torque/Force (TC)
Coulombs(C)
Damping Torque/Force (TD)
Direct Current (DC)
Distribution Business (DISCOM)
Double Pole (DP)
Earth Leakage Circuit Breaker (ELCB)
Electromotive Force (EMF)
Energy Charge (EC)
Fill Factor (FF)
Fixed Charge (FC)
Four Pole(4P)
Fuel Cost Adjustment Charge (FAC)
Ground-Fault Circuit-Interrupter (GFCI)
Henries (H)
High Voltage (HV)
Inductor (L)
Infrared (IR)
Kilo-Volt Amperes (kVA)
Kilo-Volt Amperes Reactive (kVA R)
Kilowatt-Hour (kWh)
Kilo-Watts (kW)
Low Voltage (LV)
Magneto-Motive Force (MMF)
Meter Constant (MC)
Milliamperes (mA)
Miniature Circuit Breaker (MCB)
Ministry of New and Renewable Energy (MNRE)
National Electric Code (NEC)
National Fire Protection Association (NFPA)

Operating and Maintenance (O&M)
Partial Differential Equations (PDEs)
Permanent Magnet Moving Coil (PMMC)
Potential Transformer (PT)
Power Factor (PF)
Primary Coil (P)
Residual Current Circuit Breaker (RCCB)
Residual Current Device (RCD)
Resistor (R)
Revenue Registration (RR)
Root Mean Square (RMS)
Secondary Coil (S)
Single Pole (SP)
Single Pole Double Throw (SPDT)
State Electricity Regulation Commissions (SERCs)
Tamper-Resistant (TR)
Triple Pole (TP)
Ultraviolet (UV)
Voltage (V)
Voltage Ampere Reactive (VAR)
Voltage Transformer (VT)
Volts(V)
Watts(W)

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Dr. Nagabhushan currently working as Professor, Faculty of Engineering and Technology (Co-Ed), Department of Electrical and Electronics Engineering, Sharnbasva University. Kalaburgi, Karnataka. Graduated from P. D. A. College of Engineering, Kalaburgi in 1986, M.Tech from IIT Madras, Chennai in 1992 and Ph.D from Jawaharlal Nehru Technological University, Hyderabad in 2017. Worked in various capacities in different universities with a teaching experience of 35 years. He has guided 30 M.Tech students and 02 Research Scholars. His area of research includes Power system and High Voltage Engineering.

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Price: ₹999

Kripa-Drishti Publications
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Pune – 411021, Maharashtra, India.
Mob: +91 8007068686
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ISBN: 978-81-19149-65-0

9 788119 149650