



Basics of Electrical Engineering

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BASICS OF ELECTRICAL ENGINEERING

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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 aeronautical 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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