

Digital Electronics Book for EC/EE

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✓ Verified Book of Digital Electronics Book for EC/EE

## Summary:

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## Contents:

### 1. Number Systems & Codes

Introduction, Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, Arithmetic Operations, Complements, Diminished Radix Complement [( $r - 1$ )<sup>r</sup> complement], Radix Complement ( $r$ <sup>r</sup> complement), Subtraction using complements, Sign Magnitude Representation, Binary Coded Decimal (BCD), Codes, Exercise.

### 2. Boolean Algebra & Logic Gates

Introduction, Boolean Algebra, Laws of Boolean Algebra, Digital Logic, Logic Gates, Boolean Function, Simplification of Boolean function using Boolean Algebra, Logic Diagram from Boolean Expression, Boolean Expression from Logic Diagram, Boolean Expression from Switching Circuit, Conversion of logic diagrams to universal logic, Exercise.

### 3. Minimization Techniques

Introduction, Normal Formulas, Minterm, Maxterm, Conversion of SOP to POS AND Vice-versa, Karnaugh Map (K-maps), Quine-Mccluskey (Tabular) Method, Multiple Output Circuits, Variable Entered K-maps OR variable mapping, Cubical Representation, Exercise.

### 4. Combinational Circuit

Introduction, Design of combinational circuit, Arithmetic Circuits, Binary Adder, Fast Adders, Serial Adder, Serial Subtractor, BCD Adder, Binary Multiplier, Multiplexer, Demultiplexer, Decoder, Encoder, Exercise.

### 5. Sequential Circuit

Introduction, Flip-flop, Triggering of Flip Flops, Edge Triggered D Flip Flop, Edge Triggered JK Flip Flop, Master Slave Flip Flop, Analysis of Clocked Sequential Circuits, Designing of Sequential Circuits, Realisation of one flip flop using other flip flop, State Reduction, State Assignment, Sequence Detector, Asynchronous Sequential Circuits, Analysis of Asynchronous Sequential Circuits, Moore Type Synchronous State Machine, Mealy Type Synchronous Mealy Machine, Exercise.

### 6. Counters and Registers

Introduction, Counters, Asynchronous Counter (Ripple Counter), Asynchronous Decade Counter (BCD Ripple Counter), Synchronous Counter, Shift Register Counters, Registers, Exercise.

### 7. Logic Family

Introduction, Digital IC Terminology, Characteristics of Digital ICs, Bipolar Junction Transistor, Resistor Transistor Logic (RTL), Direct Coupled Transistor Logic (DCTL), Resistor Capacitor Transistor Logic (RCTL), Diode Transistor Logic (DTL), High Threshold Logic (HTL), Transistor Transistor Logic (TTL), Emitter Coupled Logic (ECL), Mosfet Logic, CMOS Logic, Exercise. P. Paper.

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