

Paper – I Electronics Fundamentals

Unit 1

Definition of terms like potential difference, current, charge, direct and alternating current, conventional current, conductance, resistance, conductor, insulator, electronic circuits, Resistors: Types, values, power rating, series and parallel combination, resistance value coding, voltage divider and current divider resistive circuit.

Unit 2

Ohms law, Kirchoffs law KVL and KCL, ideal and real voltage and current source, Network theorems: Superposition, Thevenin's, Norton's, Millmans theorems, simple Examples

Unit 3

Capacitor and Inductor: Types, values coding, series, parallel combination, applications. DC and AC response in RC, LR and LCR circuit and their impedance.

Unit 4

Electronic instruments: moving coil meters, conversion into voltmeters and ammeters of higher range, loading effect in analog voltmeters. Digital multimeter, voltage, current and resistance range circuit in digital multimeter.

CRO: internal block diagram and function of each block. Voltage, frequency and phase measurement using CRO. ECG, .

Reference Books

1. Basic Electronics: Grob
2. Basic Electronics: Mitchel E. Schultz
3. Basic Electronics: B. L. Theraja
4. Monograph of Electronic Design Principle: Goel, Khaitan
5. Network Analysis: Van Valkenburg
6. Textbook of Electronic Circuit: R. S. Sedha
7. Electronics Devices and Circuit: J Jimmi, Schaum Series
8. Circuit Fundamental and Basic Electronics: J. P Agrawal

Paper – II Electronics Materials Devices and Application

Unit 1

Semiconductor, conductor, Insulator and their Band Diagram, Semiconductor materials, Intrinsic and extrinsic semiconductor, P and N type semiconductor, elemental and compound semiconductor material for electronic devices like , LED and LCD solar cells laser diode photodiode

Envirmental impact of electronic waste and waste disposal

Unit 2

P-N junction, depletion region, forward and reverse diode, diode characteristics ,Bipolar junction transistor, pnp and npn, construction, transistor action, transistor as amplifier, transistor as switch concept and application of JFET, MOSFET , SCR, Triac, Diac, UJT

Unit 3

Introduction to Digital Electronics: Number System, Digital Codes: BCD ASCII, Digital gates: Truth table and symbols AND, OR, Inverter, NAND, NOR, ExOR, XNOR, combinational and sequential logic circuits ADDER , SUBTRACTOR, Flip-Flop

Unit 4

Computer fundamentals- Block Diagram of Computer, Computer Generations, Micro, Mini, and Mainframe Computer ,Memory and Memory Types. Input and output, Printers ,keyboard, display Unit, mouse application of Computers.

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Books

1. Principles Of Electronics: V. K. Metha, Rohit Metha
2. Solid State Devices And Electronics: Kamal Singh S. P. Singh
3. Basic Electronics: Grob
4. Basic Electronics: Mitchel E. Schultz
5. Basic Electronics: B. L. Theraja
6. Monograph Of Electronic Design Principle: Goel, Khaitan
7. Textbook Of Electronic Circuit: R. S. Sedha
8. Circuit Fundamental And Basic Electronics: J. P Agrawal
9. Digital Principles And Applications: A. P. Malvino
10. Modern Digital Electronics: R. P. Jain
11. Electronic Principle: Malvino Bates
12. Electronic Devices: Floyd
13. Circuit Fundamentals And Basic Electronics: J. P. Agrawal