BASIC ELECTRONICS (EC-101/EC-201)

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UNIT-I
Semiconductor Diode
Mechanism of Conduction in Semiconductors: Mobility and Conductivity, Electrons and holes in an intrinsic semiconductors, Donor and acceptor impurities, Fermi level, Carrier densities in semiconductor, Hall effect, Diffusion, Recombination
Junction Diode
PN junction characteristic and its equation, Effect of Temperature, Depletion Layer, Piecewise linear diode model, Breakdown Mechanism, Zener and Avalanche Breakdown characteristics
Diode as circuit element
Half wave and full wave rectifiers, capacitive filters, Zener diode as a regulator, clamper, clipper and voltage doubler, **special diode**- LED, Schottkey diodes

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UNIT-II
BJT characteristics and circuits
Transistor Operation, CE, CB, CC configuration and their characteristics, transistor biasing circuits, stability factor, h- parameter model (low frequency), computation of Ai, Av, Ri, Ro of single transistor CE amplifier configuration.

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UNIT-III
Field Effect Transistors
JFET: Construction and principle of working,
Drain / Transfer characteristics, basic amplifier circuits, Biasing of JFET
MOSFET: Enhancement and depletion type N-channel, P-channel, Drain / Transfer Characteristics.

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UNIT-IV
Switching theory & Logic gates
Number system, Conversion, Compliments, Addition and Subtraction, BCD numbers,
Boolean algebra, Canonical form, Logic gates, Minimization of logical function using Karnaugh map

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UNIT-V
Operational Amplifier
Concept of ideal operational amplifier (inverting and non-inverting) and its applications,
Inverter, integrator, differentiator, voltage follower, summing and differential amplifier
Electronic Instruments: Digital Multimeter (block diagram approach), CRO (block diagram and its working),Measurement of voltage, phase, frequency. Double beam CRO (block diagram & its working).

8

Text Books
1. Bolyested& Nashekey / Electronic Devices and Circuit Theory, PHI
2. Milliman & Halkias: Integrated Electronics , Mc Graw Hill
3. J. S. Katre: Electronics Engineering, Tech-Max Publication