EECEVAC03 - BASIC ELECTRONIC ENGINEERING

Unit I: Introduction to semiconductor diode

Intrinsic and extrinsic semiconductors, P and N type semiconductors, P-N junction, barrier potential, Forward and reverse bias, I-V characteristics, effect of temperature in a reverse biased P-N junction, Avalanche breakdown voltage, Zener diode, I-V characteristics of Zener diode.

Unit II: Introduction to Transistor and Amplifiers

Working principle of Transistor, NPN and PNP transistor, input and output characteristics of Transistors, transistor amplifiers using CE, CB and CC configurations. Comparison of their performance

Unit III: Introduction to DC Power Supplies

Unregulated and regulated DC power supply specifications: Half wave, full wave rectifiers and bridge rectifiers, filters for rectifiers, Voltage regulator using Zener diode, Application of different types of power supply, Short circuit protection, Overload protection, Fixed and variable voltage regulators, SMPS.

Unit IV: Basic Amplifier and feedback

Gain, I/O resistance, Classes of amplifier, Decibel, Amplifier bandwidth. Types of feedback, Voltage and current feedback, series and shunt feedback. Barkhausen criterion, types of oscillators.

Unit V: Linear IC's and Operation Amplifiers

Differential Amplifier, OP-Amp characteristics, Differential and Common mode gain, CMRR, Inverting and non-inverting amplifiers, Summer, differentiator and integrators using Op-amps.

References:

1. Thomas. L. Floyd, "Electronics devices", Global Edition Paperback – Pearson; 10th edition (18 January 2018.
2. Dennis L. Eggleston, "Basic Electronics for Scientists and Engineers", Cambridge University Press; Illustrated edition (28 April 2011).
3. Thomas C. Hayes, Paul Horowitz, "The Art of electronics", Cambridge University Press; 1st edition (2 March 2016).
4. J. Millman and C. C. Halkias, "Integrated Electronics: Analog and Digital Circuits and Systems", Mc Graw Hill International Student Ed. (1972).