CS-3002 ELECTRONIC DEVICES & CIRCUITS

Course Contents

Semiconductor devices, theory of P-N junction, temperature dependence and break down characteristics, junction capacitances. Zener diode, Varactor diode, PIN diode, LED, Photo diode, Transistors BJT, FET, MOSFET, types, working principal, characteristics, and region of operation, load line biasing method**.** Transistor as an amplifier, gain, bandwidth, frequency response, Type of amplifier.

Feedback amplifier, negative feedback, voltage-series, voltage shunt, current series and current shunt feedback, Sinusoidal oscillators, L-C (Hartley-Colpitts) oscillators, RC phase shift, Wien bridge, and Crystal oscillators. Power amplifiers, class A, class B, class A B, C amplifiers, their efficiency and power Dissipation.

Switching characteristics of diode and transistor turn ON, OFF time, reverse recovery time, transistor as switch, Multivibrators, Bistable, Monostable, Astable multivibarators. Clippers and clampers, Differential amplifier, calculation of differential, common mode gain and CMRR using hparameters**.**

Operational amplifier characteristics, slew rate, full power bandwidth, offset voltage, bias current, application ,inverting , non inverting amplifier , summer, differentiator, integrator, differential amplifier , instrumentation amplifier, log and antilog amplifier , voltage to current and current to voltage converters , comparators Schmitt trigger .

Introduction to IC, Advantages and limitations, IC classification, production process of monolithic IC, fabrication of components on monolithic IC, IC packing, general integrated circuit technology, photolithographic process, un polar IC's, IC symbols.

References:

1. Milliman Hallkias - Integrated Electronics; TMH Pub.
2. Gayakwad; OP-amp and linear Integrated Circuits; Pearson Education
3. Salivahanan; Electronic devices and circuits; TMH
4. Robert Boylestad & Nashetsky; Electronics Devices and circuit Theory; Pearson Ed.
5. Salivahanan; Linear Integrated Circuits; TMH
6. Miliman Grabel; Micro electronics, TMH

List of Experiments:

1. Diode and Transistor characteristics
2. Transistor Applications (Amplifier and switching)
3. OP-Amp and its Applications
4. 555 timer and its Applications