SUBJECT NO-EC21107, SUBJECT NAME- SEMICONDUCTOR DEVICES

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Pre-requisites: NoneSemiconductor fundamentals, crystal structure, Fermi level, energy-band diagram, intrinsic and extrinsic semiconductor, carrier concentration, scattering and drift of electrons and holes, drift current , diffusion mechanism, generation and recombination and injection of carriers, transient response, basic governing equations in semiconductor, physical description of p-n junction, transport equations, current Ã¢ÂÂ voltage characteristics and temperature dependence, tunneling current, small signal ac analysis.BJT equivalent circuits and modeling frequency response of transistors, pnpn diode, SCR, MOS structure, flat-band threshold voltages, MOS static characteristics, small signal parameters and equivalent circuit, charge Ã¢ÂÂ sheet model, strong, moderate and weak inversion, short channel effects, scaling laws of MOS transistors, LDD MOSFET, NMOS and CMOS IC technology, CMOS latch Ã¢ÂÂup phenomenon, ideal Schottky barrier, current voltage characteristics, MIS diode heterojunctions devices, optical absorption in a semiconductor, photovoltaic effect, solar cell, photoconductors, PIN photodiode, avalanche photodiode, LED, semiconductor lasers; negative conductance in semiconductors, transit time devices, IMPATT, Gunn device, BiCMOS devices.