3RD INTERNALS SYLLABI

3110016 Basic Electronics

**2. Bipolar junction transistors and its biasing**

Thermal stability, biasing BJT switching circuits, transistor power dissipation and switching time, Testing of bipolar junction transistor with multi-meter, Reading datasheet of BJT.

**3. Special purpose diodes and transistors**

Photo diode, Solar cell, PIN diode, Varactor, Schottky diode, Varistors, Tunnel diode, Photo transistor, Opto-coupler, Reading datasheet of optoelectronics devices.

**4. Field effect transistors (FET) and its biasing Junction**

field effect transistors(JFET), Comparison of BJT and FET, JFET characteristics, FET, Biasing in ohmic region and active region, Transconductance, amplification and switching

**6. Digital Circuits**

Basic gates AND, OR,NOT, NAND, NOR, EX-OR, EX-NOR.

3110018 Physics

**2. Semiconductors**

• Intrinsic and extrinsic semiconductors

• Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics)

• Carrier generation and recombination, Carrier transport: diffusion and drift, p-n junction,

• Metal-semiconductor junction (Ohmic and Schottky), Semiconductor materials of interest for optoelectronic devices

3110014 Mathematics – 1

**4. Multiple Integrals**

* Double Integrals as volumes
* Change of order of integration
* Double Integration in polar coordinates
* Change of Variables
* Area by Double Integration
* Triple Integral
* Volume as Triple Integral (Cylindrical and Spherical Coordinates)
* Indeterminate Forms

3110005 Basic Electrical Engineering

**2. DC Circuits**

Complex Algebra Operations, R-L Series Circuit, R-C Series Circuit, Power Triangle, Impedance Triangle, R-L-C Series Circuit, R-L-C Resonance

**3. Transformers**

Magnetic Materials, BH Characteristics, Construction and working principle of single phase and three phase transformers

3110013 Engineering Graphics & Design

1. Loci of Points
2. Projections of Planes
3. Orthographic Projections
4. Isometric Projections