Maintainer (S&T)

SYLLABUS_S&T

Ohm's law and its variables. Resistor-definition, types of resistors, their construction & specific use, color-coding, power rating.

Working principle of a Transformer, Transformer construction, cores used. Specifications transformer, Step-up, isolation transformers applications.

Semiconductor component number coding for different electronic components such as Diodes, Zeners. PN Junction, Forward and Reverse biasing of diodes, Interpretation of diode specifications Forward current and Reverse voltage, packing styles of diodes. Diode Bridge Modules. Rectifier configurations, their efficiencies, Filter components and their role in reducing ripple.

Construction, Working of a PNP and NPN Transistors. Purpose of E, B & C Terminals. Flow of currents into and out of terminals of PNP/ NPN Transistors and their relations. Significance of β of a Transistor Need for Biasing of Transistor junctions, Interpretation of main parameters of a Transistor.VBE, VCB,VCE, IC, IB, Junction Temperature, junction capacitance, Frequency of operation, Discuss a Transistor application as a switch. Discuss a Transistor application as an amplifier. Define input impedance and output impedances Transistor power ratings & packaging styles, use of different heat sinks.

Transistor (CB, CE & CC) configurations and their characteristics and applications Transistor biasing circuits and stabilization Techniques.

Working of MOSFET, Power MOSFET andIGBT-theirtypes, characteristics, switching speed, powerratings and protection.

Introduction to Digital Electronics. Difference between analog and digital signals, Logic familiesand their comparison,Logiclevelsof TTLandCMOS.Numbersystems (Decimal, binary, octal, Hexadecimal) BCD code,ASCII code and code conversions. Logic Gates and their truth tables, propagation delay, power dissipation and noise immunity

Combinational logic circuits such as Half Adder, Full adder, Parallel Binary adders, 2-bit and four bit full adders. Magnitude comparators. Half adder, full adder ICs and their applications for implementing arithmetic operations

Introduction to Flip-Flop.S-RLatch, Gated S-R Latch, D- Latch.Flip- Flop:Basic RS Flip Flop, edge triggered D Flip Flop, JK Flip Flop, T Flip Flop, Master-Slave flip flops and Timing diagrams, Basic flip flop applications like datastorage, data transfer and frequency division.

Concept of UPS, Difference between Inverters and UPS. Basic block diagram of UPS & operating principle, explanation of rectifier, battery, inverter, static transfer switch. Types of UPS : Off line UPS, On line UPS, Line interactive UPS & their comparison UPS specifications.