

# Electronics

Passive components: Resistance, Inductance, Capacitance; lumped element model; series, parallel combinations; Kirchhoff's law: voltage, current; assumptions for the models; linearity, definition. Signaling sources: voltage and current sources; nonideal sources; representation under assumption of linearity; DC circuit analysis: node and loop analysis; Choice of nodes and branches for efficient analysis (Graph theoretic representation of circuit). Superposition theorem; Thevenin's theorem; Norton's theorem. Time domain response of RL and RC circuits. Sinusoidal steady state response; phasor; impedance; transfer function of two port networks. Frequency response: concept; amplitude and phase response. Passive filter circuits; computation of transfer function. Discrete electronic devices: Diode, Zener diode, BJT (Bipolar junction transistor), LED, Diode circuits; clipper, clamper circuits. DC power supply: rectifier- half wave, full wave (center tapped, bridge), Zener regulated power supply, regulation.