

Elements of Electrical Engineering

I D.C. Circuits:- Effect Of Temperature Upon Resistance, Solutions Of series, parallel in brief, star-delta combination of Resistances, KVL & KCL.

II Electrostatics & Capacitance:-

Definitions of Electrostatic, types of capacitors, series, parallel combinations & related circuit calculations in brief charging & discharging of capacitor. Energy stored in capacitor.

III Electromagnetics:-

Magnetic Circuit , Comparison Between Electric And Magnetic Circuits , Series/Parallel Magnetic Circuit Calculations, Magnetic Hysteresis, Hysteresis And Eddy Current Loss, Magnetic Materials, Electromagnetic induction, Statically And Dynamically Induced E.M.F.S in brief, Fleming's Right hand rule-Left hand rule, Coefficients Of Self And Mutual Inductances , Coefficient Of Coupling, Series/Parallel Combinations Of Inductances, Rise And Decay Of Current In Inductive Circuits , Force Experienced By Current Carrying Conductor Placed In Magnetic Field.

IV Single Phase A.C. Circuits:-

Generation Of Alternating Voltages & Currents, Their Equations, Definitions, R.M.S. And Average Values , Vector Representation Of Alternating Quantities , Addition And Subtraction Of Vectors Complex Algebra., Phasor Relations Between Voltage And Current In Each Of Resistance, Inductance And Capacitance , A.C. Series And Parallel Circuits , Power And Power Factor , Methods Of Circuit Solution (Analytically & Vectorially), Resonance In Series And Parallel Circuits.

V Polyphase Circuits:-

Generation Of Polyphase Voltages , 3,Phase System , Phase Sequence, Inter Connection Of 3 Phases , Voltage, Current And Power Relationships In Balanced Three Phase Circuits , Power Measurement In Single Phase And 3 Phase Circuits.

VI Batteries, Cables:-

Battery, life of batteries, charging & discharging of battery. Cables, 2, 2 1/2, 3 and 4 core armored & unarmored cables.

VII Electrical Wiring:-

Connectors & switches, system of wiring, domestic wiring installation, sub circuits in domestic wiring, simple control circuit in domestic installation, industrial electrification.

VIII Illumination:-

Types of lamps, fixtures & reflectors, illumination schemes for domestic, industrial & commercial premises, Lumen requirements for different categories.

IX Safety & protection:-

Safety, electric shock, first aid for electric shock other hazards of electrical laboratories & safety rules, use of multimeters, grounding, importance of grounding, equipment of grounding for safety. Circuit protection devices, fuses, MCB, ELCB & relays.

Reference Books:

I Electrical Technology Vol.1 By B.L.Theraja

II Basic Electrical Engineering By V.N.Mittal

III Electrical Estimating & costing by Surjitsingh (Dhanpat Rai & Co.)