Detailed Syllabus

Sr. N0	Topic
1	**An introduction to D.C. Circuits:-** Introduction, Modern electron theory, Electric Potential and Potential difference, Resistance, Computation of Resistance, Conductance, Effect Of Temperature upon Resistance, Computation of resistance at different temperatures, Computation of α at different temperature, Ohm's law, Solutions Of series, parallel in brief, star-delta combination of Resistances, KVL & KCL for Resistive circuit.
2	**Work, Power, Energy : -** Heating Effect of Electric Current and Joule's law – Thermal Efficiency- Electrical Units of Power and Energy - Mechanical Units of Force- Torque & Power - Calculation of Power & Energy – Energy Bill.
3	**Electrostatics & Capacitance:-** Definitions of Electrostatic, Coulomb's law, types of capacitors, series, parallel combinations & related circuit calculations in brief charging & discharging of capacitor. Energy stored in capacitor.
4	**Electromagnetic:-** Faraday's law, lenz's law, 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.

5	**AC Fundamentals:-** Introduction, Definitions, generation of Alternating emf, equation of alternating voltage (emf), different forms of emf equation, Avg. value, RMS value, form factor, crest factor, phase and phase difference, Vector representation of alternating quantity.
6	**Analysis of A.C. Circuit:-** Purely resistive, Inductive and capacitive circuits. R-L series circuits, Power in a.c. circuits, R-C series circuits, R-L-C series circuits, resonance in R-L-C series circuits, solution of parallel circuits. Resonance in parallel a.c. circuits.
7	**Polyphase Circuits:-** Generation of Poly phase 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.
8	**Basics of Electronics:-** Electronic Systems: Introduction, Modern Electron Theory, Forward and reverse bias of PN junction diode, zener diode as voltage regulator, Rectifiers: Half wave, full wave – bridge and centre tap, L and C filters for smoothing, Transistor: Bipolar junction transistor, construction and biasing, configuration, transistor as a switch and amplifier. CRO and its application.