Subject Code : RACSY19A

APPLIED PHYSICS – ALLIED COURSE I

Unit I – Electrostatics

Fundamentals of electrostatics – Gauss theorem and its application – Intensity due to a charged sphere – intensive at a point between two charged parallel plane conductors – Intensity at a point due to uniformly charged cylinder – Action of points – Electrostatic potential – Equipotential surface – capacity – Principles of a capacitor – Spherical and cylindrical capacitors – Capacitors in serried and a parallel – energy of a charged capacitor – Energy loss due to sharing of charges – Types of capacitors

Unit II - Magnetostatics

Magnetic field – Magnetic flux density – Magnetization – Intensity of magnetization – Permeability – Susceptibility – Relation between them – Magnetic potential – Potential due to a dipole – Relation between potential and intensity – Magnetic shell and its potential at any point – Properties of dia para and ferro magnetic materials – Hysteresis – Magneto mater method – Finding coerivity, retentivity and energy loss from hysteresis loop (PH Curve)

Unit III – Current Electricity

Laplace' law – Intensity at appoint due to a straight conductor carrying current – circular coil – Solennoid – Field due to them at pint on their axis when a current flows, Force between two parallel conductors – standard unit of current – Definition of Ampere – Units of voltage and resistance – Ohm's law – Kirchoff's law – Application to Wheatstone's bridge – Carey Foster's bridge – Potentiometer – Measurement of current and resistance – Calibration of low and high range voltmeters – Fleming's left hand rule – Theory of moving coil galvanometer – conversion of galvanometer into and ammeter and voltmeter – Ballistic galvanometer – Fleming's right hand rule

Unit IV – Electromagnetic Induction

Laes of electromagnetic induction – Relation between induced emf and mutual inductance – Eddy current – Determination of self inductance – Anderson's method coefficient of mutual induction – Determination – Absolute method – Coefficient of coupling – Transformer theory

Unit V – Alternating Current

A/C Circuits with single components – Double components – Measurement of current and voltage – Power in A/C Circuit – Power factor derivation – Wattless current – Choke-series and parallel resonance circuits – Impedance – Q factor – Selectivity and Sharpness of resonance – Oscillatory discharge of a condenser.

Books for Reference:

1. Electricity and Magnetism – Brijlal and Subramanian – Ratan Prakashan Mandir – Delhi 1995
2. Electricity and Magnetism – Narayanamurthy & Nagarathinam
3. Electricity and Magnetism – D.L. Seghal and Chopra.