FPYE 206PHYSICS (3-0-0)(Pass)

FPYE-206 Electricity, Magnetism and Electronics

Unit-I

Scalar and vector triple product. Differentiation of a vector with respect to a scalar. The gradient operator. The divergence and curl of vector. Gauss divergence theorem, Strokes theorem. Gauss law in electrostatics and application, Computation of fiel due to linear spherical and plane charge distribution, Differential form of Gauss law, the energy of a point charge, discrete and continuous distribution,

Unit-II

energydensity,dielectrics,Susceptibility,permeability,dielectric constant.Magnetic field B,Lorentz force law,TheBiot savart law B due to a straight, circular, and solenoidal currents. The vector potential, Ampere ' circuital law & its differential form. Differential form of electromagnetic induction. (12)

UNIT-III

Maxwell equation and physical significance. Wave equation, Electromagnetic waves.waveproperties,speed,growth and decay current in RC and LR circuits. Phase diagram,impedance,Power in ac circuit,power factor, series and parallel resonant circuits, Sharpness of resonance, Bandwidth and Q-factor. (8)

UNIT-IV

Rectifier:Haif wave & full wave rectifier(semiconductor devices)Principle,circuit,operation&theory.Use of L & π filters in rectifier circuits(qualitative idea)Amplifier: Classification of amplifier,compairsion,Voltage& power gain inCB,CE&CCconfiguration.RC coupled amplifier, Class B Push/pull amplifier(principle of amplification circuit description operation, theory and frequency response curve)Necessary of feed back ,positive & negative feedback, criteria for sustained oscilation,Hartly and colpitt's oscillator(principle,circuit,operation,theory and use),feedback Amplifier: Basic circuit,operation,advantage of negative feedback, Modulation &demodulation:Princple of modulation.A.m&F.M(Theory and differences between them).Principle of demodulation Function & basic theory of linear diode detectors. (10)

Books:

1. Introduction to Electrodynamics- D. J Griffiths (PHI)
2. Foundation of electromagnetic theory- Ritz and Milford (Narosa)
3. Electricity and magnetism- E. Purcell (Berkely Physics Course) TMH
4. Electronics- Chattopadhyay&Rakshit (New Age)
5. Electronics- B. B Swain
6. Electricity and magnetism- D. C Tayal
7. Electricity and magnetism- Satyaprakash