D.B.F. Dayanand College of Arts & Science, Solapur

COURSE OUTCOME

Name of Department _____**Physics**_____

~~B.A.~~ / **B.Sc.** / ~~M.A.~~ / ~~M.Sc.~~		
NAME OF SUBJECT : **Physics**		
SEM ~~I / II / III / IV / V~~ / **VI**		
COURSE NUMBER (PAPER NUMBER) : **XIII**		
TITLE OF COURSE (NAME OF PAPER) : **Electrodynamics**		
COURSE CONTENT	OBJECTIVES	OUTCOME
1. Electrostatics and Charged particle dynamics: (8) 1.1 Coulomb's Law. 1.2 Gauss law in differential form. 1.3 Poisson's and Laplace's equations. 1.4 Applications of Poisson's and Laplace's equation to spherical systems. 1.5 Motion of charged particles in constant uniform electric (E) field. 1.6 Motion of charged particles in constant uniform magnetic (B) field. 1.7 Motion of charged particles in constant uniform crossed electric and magnetic fields.		
2. Time varying (7) 2.1 Electro force 2.2 Electromagnetic induction - Faraday's law. 2.3 Lenz's law. 2.4 Integral and differential forms of Faraday's law. 2.5 Self inductance. 2.6 Application of Self inductance to solenoid. 2.7 Mutual inductance. 2.8 Application of Mutual inductance to transformer.		
3. Maxwell's Equations(9) 3.1Magnetic Susceptibility and permeability.		

3.2 Biot-Savart's law 3.3 Derivation of $\nabla.B= 0$ 3.4 Ampere's law. 3.5 Derivation of $\nabla \times B=\mu_0 J$ OR Differential form of Ampere's law. 3.6 Equation of continuity. 3.7 Displacement Current density. 3.8 Maxwell's correction to Ampere's law. 3.9 Maxwell's equations for time dependent electric and magnetic fields in vacuum. 3.10 Maxwell's equations for time dependent electric and magnetic fields in material medium. 3.11 Physical significance (Integral form) of Maxwell's Equations		
4. Electromagnetic waves. (8) 4.1 Conservation of energy in electromagnetic fields and Poynting's theorem. 4.2 Conservation of momentum in electromagnetic fields. 4.3 Wave equations for electric and magnetic fields in vacuum 4.4 Plane wave solutions, orthogonality of E,B and propagation vector K 4.5 Plane E. M. waves in Dielectric 4.6 Plane E. M. waves in conductors Attenuation of wave in metal (skin depth)		
5. Reflection and Refraction of E. M. waves: (8) 5.1 Boundary conditions for e. m. field vectorsD,B,E & H 5.2 Reflection and refraction of e. m. waves at a boundary of two dielectrics (Normal incidence only) 5.3 Reflection from a conducting plane-normal incidence. 5.4 Total Internal Reflection		
6. Radiation from electric dipole (5) 6.1Electric dipole 6.2 Retarded time and retarded potential 6.3 Electric dipole radiation 6.4 Radiation reaction for Electric dipole		

Signature of HOD