Lesson Plan

Name of Institute : Ambala College of Engineering and Applied Research, Devsthali.

Name of the Faculty member: Mr. Ajay Singh

Discipline : Applied Sciences and Humanities

Semester : 2nd

Subject : Introduction to Electromagnetic Theory BS-119A

Electromagnetics Lab BS-121LA

Lesson Plan Duration : 15 weeks (from January 2020-April, 2020)

Work Load : L-3, T-1, P-3

Week	Theory		Practical	
	Lecture day	Topic (including assignment/ test)	Practical day	Topic
1st	1st	**Electrostatics in Vacuum:** Calculation of Electric Field: Coulomb's law	1st	1)To study the variation of magnetic field with distance and to find the radius of coil by Stewart and Gee's apparatus.
	2nd	Continuous charge distribution;		
	3rd	Divergence and Curl of Electrostatic Fields		
2nd	4th	Field lines, flux, Gauss's law	2nd	2)To find the coefficient of mutual inductance of two coils.
	5th	Applications of Gauss's law		
	6th	Electrostatic Potential: Comments on potential		
3rd	7th	Poisson's and Laplace's Equation	3rd	3)To study the dependency of magnetic field on coil diameter and number of turns
	8th	the potential of a localized charge distribution		
	9th	Electrostatic Boundary Conditions; Work and Energy in Electrostatics: the work done to move a charge		
4th	10th	the energy of a point and continuous charge distribution.	4th	4)To determine the dielectric constant of different dielectric materials
	11th	**Revision of unit 1st**		
	12th	**Electrostatics in a Linear Dielectric**		

		Medium: Polarization		
5th	**13th**	dielectrics, induced dipoles	**5th**	**Viva Voce**
	14th	alignments of polar molecules		
	15th	The field of a Polarized Object: bound charges and its physical interpretation		
6th	**16th**	The Filed Inside a Dielectric	**6th**	5)To verify Newton's formula and hence to find the focal length of the given convex lens
	17th	The Electric Displacement: Gauss's law in the presence of dielectrics		
	18th	A deceptive parallel, Boundary conditions		
7th	**19th**	Linear Dielectrics: Susceptibility, Permittivity	**7th**	6)To find the frequency of A.C. mains by using Sonometer and horse shoe magnet.
	20th	dielectric constant, Boundary value problems with linear dielectrics		
	21st	Energy in dielectric systems		
8th	**22nd**	Forces in dielectrics	**8th**	7)To find the resistance of a galvanometer by post office box
	23rd	**Revision of 2nd unit**		
	24th	**Magnetostatics:** The Lorentz Force Law		
9th	**25th**	magnetic fields, magnetic forces	**9th**	8)To convert a galvanometer into an ammeter of desired range and verify the same
	26th	Currents, Biot- Savart law		
	27th	Divergence and Curl of magnetic field		
10th	**28th**	Magnetic Vector Potential: vector potential	**10th**	**Viva Voce**
	29th	magnetostatic boundary conditions		
	30th	multiple expansion of vector potential.		
11th	**31st**	**Magnetostatics in a linear magnetic:** Magnetization	**11th**	9)To find the wavelength of monochromatic light by Newton's ring experiment
	32nd	Effect of magnetic field on atomic orbits		
	33rd	The Field of a Magnetized Object: Bound currents, Physical interpretation of bound currents		
12th	**34th**	The Auxiliary Magnetic Field: Ampere's law in magnetized materials	**12th**	10)To find the wavelength of sodium light by Michelson's

	35th	A deceptive parallel, Boundary conditions		interferometer
	36th	Linear and Nonlinear Media: magnetic susceptibility and permeability, ferromagnetism		
13th	**37th**	**Revision of unit 3rd**	**13th**	**Viva voce**
	38th	**Faraday's law:** Electromotive Force: Ohm's law, Motional emf		
	39th	Electromagnetic Induction: Faraday's law, The induced electric field, inductance		
14th	**40th**	energy in magnetic fields.	**14th**	**Internal Viva**
	41st	**Maxwell's Equations:** Electrodynamics before Maxwell, How Maxwell fixed Ampere's law		
	42nd	Maxwell's equations, Maxwell's equations in matter.		
15th	**43rd**	**Electromagnetic Waves:** Electromagnetic Waves in Vacuum: the wave equation for electric and magnetic field;	**15th**	**Doubts/Revision**
	44th	Electromagnetic Waves in Matter: propagation in linear media.		
	45th	Revision of 4th unit		

Mr.Ajay Singh

Assistant Professor

APS Department

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