

# SARASWATI MAHILA MAHAVIDHYALAYA, PALWAL

## LESSON-PLAN

Class: B.Sc-I<sup>st</sup> Year (NM2CS) : Physics  
 Subject: Electricity & Magnetism

Semester: ODD/EVEN  
 Session: 2020-21

Lecture Number	Topic
1.	Introduction of Scalars & Vectors ; Dot & Cross products their laws and limitations
2.	Triple vector product ; Scalar & Vector fields and some numericals
3.	Differentiation of a vector and Gradient of a Scalar. and their Significance
4.	Line Integration of a vector. and its Significance.
5.	Surface Integration of a vector and its Significance
6.	Volume Integral of a vector and its Significance
7.	Gauss's Divergence theorem.
8.	Stokes theorem.
9.	Numericals Revision of above topics.
10.	Derivation of field $E$ from potential as gradient.
11.	Derivation of Laplace and Poisson equations
12.	Numericals of above topic.
13.	Introduction to Electric flux.
14.	Derivation of Gauss's law and its applications
15.	Derivation of spherical shell.
16.	Electric field at a point due to an infinite plane sheet of charge
17.	Electric field at a point due to a uniformly charged wire

Ashu Dagar  
 Signature:

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Class: B.Sc - I<sup>st</sup> year (Nm2cs) Physics

Subject: Electricity & Magnetism

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Session: 2020-21

Lecture Number	Topic
18	Electric field intensity at a point due to spherically symmetric charge distribution.
19	Mechanical force per unit area of a charged conducting surface
20	Energy stored per unit volume in an electric field.
21	Revision of electrostatics portion.
22	Introduction of Magnetic field, flux, induction; <u>Unit II</u>
23	Biot-Savart law; Ampere's Circular law.
24	Solenoidal Nature of vector field of Induction; Properties of magnetic Induction
25	Comparison of Electrostatic & magnetic field. Revision of above magnetic portion.
26	<u>constant</u> Introduction of magnetising field; magnetic intensity; magnetic induction; intensity of magnetization; magnetic permeability; magnetic susceptibility
27	Current loop as a magnetic Dipole; Atom as magnetic dipole
28	Langevin's theory of Diamagnetism and properties of diamagnetic substances
29	Langevin's theory of Paramagnetism and properties of it.
30	Domain theory of ferromagnetism and properties of ferromagnetic substance
31	Hysteresis; Energy dissipation due to hysteresis; Energy loss
32	Difference between hard & soft magnetic materials; Importance of hysteresis curve
33	Revision of Unit 2.
34	Unit-III → Equation of Continuity; Displacement Current.

*Anshu Dagar*  
Signature:

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## LESSON-PLAN

class: B.Sc-I<sup>st</sup> year (Nim 2 (S)) : PHYSICS  
 subject: Electricity and magnetism

Semester: ODD/EVEN ✓  
 Session: 2020-21

Lecture Number	Topic
35	Maxwell's equations and their derivations in differential form
36	Maxwell's equation in Integral form and their derivation
37	Vector & Scalar potential.
38	Boundary Conditions at interface between different media ① Boundary Condition of $\vec{B}$
39	② Boundary Condition of $\vec{E}$ & Electric displacement.
40	③ Boundary Condition for $\vec{H}$
41	Electromagnetic waves Introduction & its characteristics
42	Propagation of EM waves in free space
43	Propagation of EM waves in Dielectric medium
44	Plane polarized EM waves
45	Transverse nature of EM waves
46	Poynting vector & its illustration
47	Unit, Dimension & theorem of Poynting vector
48	Equation of Continuity from Poynting theorem
49	Revision of Unit - III
50	Numericals of Unit - III ; Assignment ; Discussion

*Nisha Dagar*

Signature: