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Approved by **DGHE** (Govt. of Haryana) & Affiliated to **I.G. University,** Meerpur, Rewari

Lesson plan

B.Sc.(H) Physics-V

Mathematical Physics-V (Phy-501)

A.P. Sandeep Singh

Lectures	Particular
1.	**Unit I: Idea of LVSs and Matrices**
2.	Introduction to Abstract algebraic systems
3.	Groups
4.	--continue--
5.	--continue--
6.	Rings
7.	--continue--
8.	--continue--
9.	Fields
10.	--continue--
11.	Vector spaces
12.	--Continue--
13.	Subspaces
14.	--continue--
15.	Linear dependence and Independence
16.	Basis and Dimensions
17.	--continue--
18.	--continue--
19.	Discussion what we have studied till the time
20.	Class test-1
21.	Linear Transformations
22.	--continue--
23.	Non-Linear Transformations
24.	--continue--
25.	Isomorphism
26.	--continue--
27.	Representation of linear transformations by matrices
28.	--continue--
29.	**First Assignment**
30.	**Unit-II:** Matrix Algebra
31.	--continue--
32.	--continue--
33.	Singular and Non-singular matrices
34.	--continue--
35.	--continue--
36.	Eigen values and Eigen vectors
37.	--continue--
38.	--continue--
39.	--continue--
40.	Solution of CLODEs using matrix algebra

41.	--continue--
42.	--continue--
43.	--continue--
44.	**Class test -II**
45.	Class test solved and distributed
46.	**Special matrices:**Symmetric and antisymmetric
47.	Orthogonal matrices
48.	Hermitian and Skew-Hermitian matrices
49.	Problems solved
50.	--continue--
51.	Similarity transformations
52.	--continue--
53.	--continue--
54.	**Second Assignment**
55.	Bilinear and Quadratic forms
56.	--continue--
57.	--continue--
58.	Trace of a matrix.
59.	Cayley-Hamilton theorem
60.	Function of a matrix
61.	**Metric Spaces:** Inner product and metric concept
62.	--continue--
63.	**Class Test: III**
64.	revision
65.	--continue--
66.	--continue--
67.	Class test-III solved and distributed
68.	revision
69.	--continue--
70.	solution of previous year question papers
71.	--continue--
72.	

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Lesson plan

Class: B.Sc. (H) Physics-V

Subject: Electro-magnetic theory-1(Phy-502)

Teacher Name: Mr. Uttam Nain

Lectures	Particular
1.	**Unit I: Introduction about the syllabus and books**
2.	Introduction of Maxwell Equation
3.	Gauss Law
4.	Gauss law for magnetic field
5.	Continue
6.	Ampere's law
7.	Faraday's law
8.	Equation of Continuity
9.	Modified Ampere's law
10.	Continue
11.	Displacement Current
12.	Vector & Scalar Potential
13.	Capacitor problem and Maxwell's Equation
14.	Continue
15.	Maxwell's Equation in Matter
16.	Scalar and Vector Potential of Maxwell's Equation in Matter
17.	Continue
18.	Test
19.	Discussion of Test problem
20.	Gauge Transformation
21.	Coulomb's Gauge
22.	Gauge Condition
23.	Continue
24.	Continue
25.	Retarded Potentials
26.	Continue
27.	Boundary conditions on Displacement field vector D
28.	Continue
29.	**First Assignment**
30.	**First Class Test**
31.	Test solve
32.	Boundary condition on B vector and E vector
33.	Continue
34.	Boundary condition on H vector and D vector
35.	Continue
36.	Continue
37.	Problems based on Boundary Condition
38.	Continue
39.	Poynting vector and Theorem
40.	Wave Equation

41.	Continue
42.	Plane Wave in Dielectric medium
43.	**Class test –II**
44.	Reflection of Wave at an interface
45.	Continue
46.	Refraction of Wave at an interface
47.	Continue
48.	Fresnel Formula
49.	Total internal reflection
50.	Brewster's law
51.	Wave in conducting media
52.	Normal incidence at metallic interface
53.	Skin depth
54.	Maxwell equation in Plasma
55.	**Second Assignment**
56.	Characteristic Plasma frequency
57.	Refractive index
58.	Conductivity of an ionized gas
59.	Propagation of em waves in ionosphere
60.	continue
61.	Numerical problem
62.	Continue
63.	Revision
64.	Revision
65.	Revision
66.	**Class Test:III**
67.	Discussion of Test
68.	Distribution of test

Lesson Plan Odd Sem. 2020-21

Class: B.Sc. Honors Physics 5th Sem.

Subject: Statistical Physics-I
Teacher Name: Somveer **Paper Code: Phy-503**

Lectures	Particular
1	Introduction to syllabus
2	Entropy and thermodynamic probability
3	Continue
4	Continue
5	Maxwell Boltzmann distribution law
6	Continue
7	Partition function
8	Continue
9	Thermodynamic functions of finite number of energy levels
10	Continue
11	Continue
12	Continue
13	Thermodynamic functions of an ideal gas
14	Continue
15	Numericals
16	Numericals
17	Classical entropy expression
18	Continue
19	Gibbs paradox
20	Continue
21	Continue
22	1st Class Test
23	Law of equipartition of Energy
24	Continue
25	Continue
26	applications to specific heat and its limitations
27	Continue
28	Continue
29	Continue
30	Numericals
31	Numericals
32	Class Test
33	Properties of thermal radiation
34	Continue
35	Kirchhoff's law
36	Stefan-Boltzmann law

37	Continue
38	Wien's displacement law
39	Continue
40	Quantum Theory of Radiation
41	Continue
42	Revision of above Laws
43	Planck's law of black-body radiation
44	Continue
46	Deduction of Wien's radiation formula
47	Continue
48	Rayleigh-Jeans law
49	Continue
50	Stefan-Boltzmann law
51	Continue
52	Stefan-Boltzmann law and Wien's displacement law from Planck's law
53	Continue
54	Revision of above Laws
55	Laser: working principle
56	thermal equilibrium of radiation
57	principle of detailed balance
58	Revision of above Lectures
59	Numericals
60	Numericals
61	Einstein's A and B coefficients
62	Continue
63	population inversion
64	Two-level and three-level systems
65	Numericals
66	Numericals
67	Class Test
68	Revision
69	Revision
70	Revision
71	Assignment
72	Test

Lesson plan

Name of the Assistant/ Associate Professor: **Dr. Davender Singh**

Class and Section: **B. Sc. (Hons.) Physics, Semester 5th**

Subject: **Physics of Material -1 (Phy-504)**

Lectures	Particular
1.	Introduction to syllabus
2.	Unit 1st basics idea
3.	Amorphous and crystalline materials.
4.	Lattice translation vectors
5.	Continue
6.	Lattice with a basis-central and non-central elements
7.	Lattice with a basis-central and non-central elements
8.	Unitcell, reciprocal lattice
9.	Continue
10.	Types of lattices. Crystal diffraction : Bragg's law
11.	Continue
12.	diffraction of X-rays
13.	atoms and geometrical structure factor
14.	Continue
15.	Problems
16.	S-ray diffraction methods – measurement of lattice parameter for cubic lattices
17.	Continue
18.	Continue
19.	Continue
20.	1st Assignment
21.	1st class test
22.	Revision of Class Test
23.	Unit 2nd basics idea
24.	Lattice vibrations
25.	Linear monoatomic and diatomic chains
26.	Continue
27.	Acoustical and optical phonons
28.	Problems
29.	Qualitative description of the phonon spectrum in solid Brillouin zones
30.	Continue
31.	Einstein and Debye theories of specific heat of solids T_3 law
32.	Continue
33.	Continue
34.	Magnetic Properties of Matter
35.	Response of substances of magnetic field Dia, para and ferri and ferromagnetic materials

36.	Continue
37.	Continue
38.	Classical Langevin theory of dia and paramagnetic domains
39.	Continue
40.	Quantum mechanical treatment of paramagnetism
41.	Continue
42.	2nd Assignment
43.	2nd class test
44.	Revision of class test
45.	Curle's law
46.	Weiss's theory of ferromagnetism and ferromagnetic domains and discussionof B.H hysteresis
47.	Continue
48.	Continue
49.	Qualitative discussion of ferrimagnets and ferrites
50.	Continue
51.	Continue
52.	Problems
53.	Problems
54.	Revision
55.	Revision
56.	Revision
57.	3rd Assignment
58.	Revisions
59.	Revision & previous year paper solved
60.	Previous year paper solved

Lesson Plan Odd Sem. 2020-21

Class: B.Sc. Honors Physics 5th Sem.

Subject: Electronics Devices: Physics and Application -I

Teacher Name: Manjeet Kumar **Paper Code: Phy-505**

Lectures	Particular
1	Introduction to syllabus
2	Definition of electronics, electronics components
3	Brief introduction about Resistance
4	Brief introduction about Capacitance
5	Brief introduction about Inductance
6	Combinations of resistance in series and parallel
7	Combinations of Capacitance in series and parallel
8	Combinations of Inductance in series and parallel
9	Ohms law, KCL and KVL
10	Noda Analysis
11	Examples of Nodal Analysis
12	Mesh Analysis
13	Examples of Mesh Analysis
14	Examples of Nodal and Mesh Analysis
15	Revisions of above Lectures
16	Introduction of Network Theorems
17	Thevenin Theorems
18	Examples of Thevenin theorems
19	Norton Theorem
20	Examples of Norton Theorem
21	Maximum Power Transfer Theorem
22	Examples of Maximum Power Transfer Theorem
23	Superposition theorem
24	Examples of Superposition theorems
25	Reciprocity Theorem
26	Examples of Reciprocity Theorem
27	Revisions of above Lectures
28	Introduction about Ports, Two-Port Network
29	Z Parameters
30	Examples of Z Parameters
31	Y Parameters
32	Examples of Y Parameters
33	Conversions of Z to Y and Y to Z Parameters
34	Examples of Z and Y Parameters
35	H Parameters
36	Examples of H Parameters

37	Conversion of Z to H, H to Z parameters
38	Conversion of Y to H , H to Y Parameters
39	Examples on above Lectures
40	1st Class Test
41	Structure of Atom, Energy levels, Energy Bands
42	Energy Band Diagram of Solids, Conductor, Insulator and Semiconductor
43	Semiconductor: - Bonds in Semiconductor, Commonly used Semiconductors, Effect of Temp.
44	Types of Semiconductor
46	2nd Class Test
47	Active and passive components
48	discrete component circuits
49	water, chip, advantages of integrate circuits
50	Types of IC's
51	MSI, LSI and VLSI (basic idea and definitions only)
52	Operational Amplifiers (Op-Amp)
53	Basic characteristics without detailed internal circuit of IC: Requirement of ideal voltage amplifier
54	Revision of above Lectures
55	characteristics of ideal operational amplifier
56	feedback in amplifier (black box approach)
57	open loop and close loop gain
58	Inverting Op Amp
59	non-inverting amplifier
60	zero crossing detector
61	Previous year paper solved
62	Revision
63	Application of op-amps: Mathematical operations addition
64	Multiplication Cont.
65	Multiplications, integration and differentiation.
66	Electronic circuits – oscillator (Wien's bridge)
67	rectangular and triangular wave generators
68	Revision
69	Revision
70	Revision
71	Assignment
72	Test

Lesson plan

Name of the Assistant/ Associate Professor: **Dr. Surjeet Chahal**
Class and Section: **B. Sc. (Hons.) Physics, Semester 5th**
Subject: **Nano Technology (Phy-506 (a))**

Lectures	Topics
1.	**Unit I: Basic Introduction to Nanotechnology**
2.	--continue--
3.	Applications of Nanotechnology
4.	--continue--
5.	Free electron theory
6.	--continue--
7.	qualitative idea and its features
8.	--continue--
9.	Idea of band structure
10.	--continue--
11.	--continue--
12.	Metals
13.	--continue--
14.	semiconductors
15.	--continue--
16.	--continue--
17.	Density of states in bands
18.	--continue--
19.	--continue--
20.	**First Assignment**
21.	Variation of density of states with energy
22.	--continue--
23.	**Class Test: 01**
24.	Variation of density of states with size of crystal
25.	--continue--
26.	Variation of band gap with size of crystal
27.	--continue--
28.	--continue--
29.	--continue--
30.	*Presentation on self study topic by initial 06 students*
31.	**Unit II: Basic Introduction**
32.	--continue--
33.	Electron confinement
34.	*Presentation on self study topic by next 06 students*
35.	Electron confinement in infinitely deep square well
36.	--continue--
37.	--continue--
38.	*Presentation on self study topic by next 06 students*
39.	**Second Assignment**

40.	confinement in two-dimensional well
41.	**Class Test: 02**
42.	*Presentation on self study topic by next 06 students*
43.	--continue-- (confinement in two-dimensional well)
44.	confinement in one-dimensional well
45.	--continue--
46.	--continue-- and related numerical
47.	Idea of quantum well structure
48.	--continue--
49.	*Presentation on self study topic by next 06 students*
50.	Idea of Quantum dots
51.	--continue--
52.	--continue--
53.	Idea of Quantum wires
54.	--continue--
55.	**Third Assignment**
56.	*Presentation on self study topic by next 06 students*
57.	Numerical on related topics
58.	--continue--
59.	--continue--
60.	**Class Test: 03**
61.	Revision of Unit: I
62.	--continue--
63.	Revision of Unit: II
64.	*Presentation on self study topic by remaining students*
65.	Solution of Question Paper: 2016-17
66.	--continue--
67.	Solution of Question Paper: 2017-18
68.	--continue--