Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-2024 Semester: even

Name of Asstt./Ass. Prof : Dr. Ajay Mann

Class: M.Sc. 4th Semester (Physics)

Name of Subject: Computational Physics (23PHY24DB1)

January 2024 to April 2024	
Month (January)	
8th Jan – 13th Jan	Random numbers: Random number generators, Mid-square methods, Multiplicative congruential method, mixed multiplicative congruential methods,
15thJan – 20th Jan	modeling of radioactive decay. Hit and Miss Monte-Carlo methods, Monte-Carlo calculation of π, Monte-Carlo evaluation of integration
23th Jan – 27th Jan	Evaluation of multidimensional integrals: the simple pendulum,
Month (February)	
29th Jan – 03rd Feb	Potential energy of a dynamical system, Un-damped motion, Damped motion, Driven and damped oscillator
05th Feb – 10st Feb	Numerical solution of Radial Schrodinger equation for Hydrogen atom using Forth-order Runge-Kutta method(when Eigen value is given),
12rd Feb – 17th Feb	Numerical Solutions of Partial Differential Equations using Finite Difference Method, Algorithms to simulate interference and diffraction of light,
19th Feb – 24th Feb	Simulation of charging and discharging of a capacitor, current in LR and LCR circuits,
Month (March)	
27th Feb – 02nd March	Computer models of LR and LCR circuits driven by sine and square functions,
04th March– 09th March	Computer model of Rutherford scattering experiment, Simulation of electron orbit in H2 ion.
11th March – 16th March	MATLAB – I: Introduction, working with arrays, creating and printing plots, Interacting Computations: Matrices and Vectors,
18th March – 22th March	Matrices and Array Operations, built in functions, saving and loading data, plotting simple graphs Programming in MATLAB:
23rd to 31st March	**HOLI Break**
Month (April)	
1st April – 06th April	Script files, function files, Compiled files, p-code, variables, loops, branches, and control flow, Input/ Output, Advanced data objects, structures, cells
8th April - 13th April	MATLAB – II: Linear Algebra; solving a linear system, Gaussian elimination, finding eigenvalues and Eigen vectors, matrix factorization,
15th April – 20th April	Curve fitting and Interpolation; polynomial curve fitting, least square curve fitting, interpolation, Data analysis and statistics, Numerical integration;
22th April – 27th April	double integration, Ordinary differential equation; first order linear ODE, second order nonlinear ODE, tolerance, ODE suite, event location, Non-linear algebraic equations
29th April onwards	Revision, Assignment and class test

Summary of Lesson Plan of College Faculty

Name of College: Pt. N. R. S. G. C., Rohtak, Academic Session 2023-2024 Semester: Even

Name of Associate Prof :**Jasbir Singh**

Class: M.Sc. 4th sem Physics Name of Subject: Physics of Nanomaterials 23 PHY 24C2 1

B. Sc PH SEM 6 EMT

3rd January 2023 to April 2023	
Week 1 **8th January – 13st January**	Introduction and scope of the course, Introduction to Nanomaterials : Introduction to nanoscience, nanotechnology, nanomaterials. Why nano? What's so special about nanomaterials? Interesting facts about nanomaterials and overview of the course.
14th January	**SUNDAY**
Week 2 **15th January – 20th January**	Free electron theory (qualitative idea) and its features, Idea of band structure, Metals, insulators and semiconductors, Concept of effective Mass, Density of States in Bands
21st January	**SUNDAY**
Week 3 **23rd January – 27th January**	Variation of Density of States with Energy, Variation of Density of States and Band Gap with Size of Crystal, Electronic Structure From Bulk to Quantum Dot,
28th January	**SUNDAY**
Week 4 **29th January – 03rd February**	Electronic States in Direct and Indirect Semiconductor Nano-crystals, Excitions in Direct and Indirect Band Gap Semiconductors**. Revision, Assignment and Test**
04th February	**SUNDAY**
Week 5 **06th February 11th February**	Physics of Reduced Dimensional Systems and Devices: Quantum Confinement, Electron confinement in One, Two and Three Dimensional Infinitely Deep Square Well Potentials, Various Low Dimensional Systems: Quantum Well Structure
11th February	**SUNDAY**
Week 6 **12th February – 17th February**	Idea of Quantum Well Structure, Electron Wave Function and Energy in Quantum Well Structure (Infinite Well Approximation), Density of States and Optical Absorption in Quantum Well,
18th February	**SUNDAY**
Week 7 **19th February – 24th February**	Quantum wires, Electron Wave Function and Energy, Density of States, Quantum Dots, Electron Wave Function and Energy, Density of States, Idea of Hetero-junction LED, Quantum Well Laser and
25th February	**SUNDAY**
Week 8 **27th February–02nd March**	Quantum Dot Laser, Coulomb Blockade and Single Electron Transistor **Revision, Assignment and Test**
03rd March	**SUNDAY**
Week 9 **06th March–11th March**	Characterization of Nanomaterials/Nanostructures: Effect of Particle Size and Strain on Width of XRD Peaks of Nanomaterials, Determination of Crystallite/Particle Size and Strain in Nanomaterials Using Debye Scherrer's Formula and Williamson–Hall's Plot
10th March	**SUNDAY**
Week 10 **13th March–18th March**	Transmission Electron Microscopy: Basic principle, Brief Idea of Set up, Sample Preparation, Imaging Modes (Dark & Bright Field), Selected Area Electron Diffraction Photoluminescence (PL) Spectroscopy: Basic Principle and idea of Instrumentation, Shift in PL Peaks with Particle Size
17th March	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. N. R. S. G. C., Rohtak, Academic Session 2023-2024 Semester: Even

Name of Associate Prof :**Jasbir Singh**

Class: M.Sc. 4th sem Physics Name of Subject: Physics of Nanomaterials 23 PHY 24C2 1

Week 11 **18th March– 22nd March**	Determination of Alloy Composition in Thin Films of Compound Semiconductors, Estimation For Width of Quantum Wells, Raman Spectroscopy: Basic Principle and idea of Instrumentation, Variations in Raman spectra of Nanomaterials with Particle Size
23rd to 31st March	**HOLI Break**
Week 12 **1st April – 05th April**	Study of Raman Spectra of Carbon Nanotubes and Graphene **Revision, Assignment and Test** Synthesis/Fabrication of Nanomaterials/Nanostructures: Bottom up and Top down Approaches for Synthesis of Nano Materials,
07th April	**SUNDAY**
Week 13 **08th April – 13th April**	Synthesis of Zero-Dimensional Nanostructures ,Nanoparticles : Sol-Gel Process Epitaxial Core-Shell Nanoparticles, Ball Milling, One-Dimensional Nanostructures (Nanowires, Nanorods Nanotubes): Vapor (or solution)-liquid-solid (VLS or SLS) growth and Size Control
14th April	**SUNDAY**
Week 15 **15th April – 20th April**	Electrochemical deposition, Lithography, Two-Dimensional Nanostructures (Thin Films & Quantum Wells): Molecular Beam Epitaxy (MBE), MOCVD
21st April	**SUNDAY**
Week 16 **22nd April – 27th April**	Cluster Beam Evaporation, Ion Beam Deposition, Chemical Bath Deposition Technique
28th April	**SUNDAY**
Week 17 **29th April – Onwards**	**Revision, Assignment and Test**

1 January 2024 to April 2024 [M.Sc. Physics Semester4]	
1st January – 15th January **Week 1** **16 January - 20 January**	UNIT 1 Laser characteristics: Spontaneous and Stimulated Emission, Absorption, Einstein Coefficients and their relationship
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Laser Idea, threshold condition for laser oscillations, Pumping Schemes, Properties of Laser Beams: Monochromaticity, Coherence, Directionality, Brightness,
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Radiation Trapping Superradiance, Superfluorescence, Amplified Spontaneous Emission, Non-radiative delay **Revision, Assignment and Test**
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**UNIT 2** Pumping process: Optical pumping and pumping efficiency, Electrical pumping and pumping efficiency
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Passive Optical Resonators, Types of Resonators, Stability Diagram, Different types of losses in optical Resonators.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Rate Equations, Four-level Laser, Three-level Laser, Q Switching, Methods of Q-switching
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Electro optical shutter, Kerr effect, Pockel effect in KDP crystal, mechanical shutter
03th March	**SUNDAY**
Week 8 **04th March–09th**	HOLI BREAK
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Acousto - optic Q-switches, Mode locking, theory of mode locking, methods of mode locking (active & passive)
17th March	**SUNDAY**
Week 10 **18th March– 22th**	Unit 3 Principle, working, characteristics and energy level diagram of various types of laser as Solid

March	State Lasers; Ruby Laser
24 March	**SUNDAY**
31March	**SUNDAY Holi Break 23arch -3March**
Week 13 **01st April – 06th April**	Helium Neon Laser, Nitrogen Laser ,Neodymium laser, Gas lasers; Neutral Atom Gas Laser
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Dye-Laser, Semiconductor Laser. , Biology, Medicine, Material, working, optical communication Thermonuclear Fusion, Holography, Military Revision, Assignment and Test
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Unit 4 Multiphoton photo-electric effects, Two-photon, Three-photon and Multiphoton Processes , Raman Scattering, Stimulated Raman Effect, Introduction to Applications of Lasers: Physics, Chemistry
21stApril	**SUNDAY**

LESSONPLAN

Pt. Neki Ram Sharma Government College, Rohtak

Name of Faculty :Shyam Sunder

Class: M.Sc.4th Semester

Subject: Electronics – II 23PHY24DA2

January2024to April 2024	
Week1	Binary numbers, Octal numbers, Hexadecimal numbers, Inter-conversions of numbers. Binary addition, subtraction, multiplication, division, Hexadecimal addition, subtraction, Octal addition, subtraction signed numbers,.
Week 2	1's complement arithmetic, 2's complement arithmetic, 9's complement arithmetic, BCD code and arithmetic, Gray code, excess-3 code
Week3	, Positive and negative logic designations, OR gate, AND gate, NOT gate, NAND gate, NOR gate, XOR gate, Circuits and Boolean identities associated with gates, Boolean algebra).
Week4	DeMorgans Laws, Sum of products and product of sums expressions, Minterm, Maxterm, Kmaps, don't care condition, deriving SOP and POS expressions from truth
Week5	Combinational Digital circuits: Binary adders:half adders & full adders,Decoders, Multiplexer, Demultiplexer,
Week6	Encoders, ROM and its application (binary, BCD, Excess-3 Code, Gray Code & BCD to seven segment), Digital comparator, Parity checker and generator
Week7	Sequential Digital Circuits: 1-bit memory, Flip-Flops- RS, JK, master slave JK, T-type and D-type flip flops, Shift-register and applications, Asynchronous counters and Synchronous counters
Week8	Metal oxide semiconductor field effect transistors, enhancement mode transistor, depletion mode transistor, p-channel and n-channel devices,.
Week9	MOS invertors- static inverter, dynamic inverter, two phase inverter, MOS NAND gates, NOR gates, complementary MOSFET technology, CMOS inverter, CMOS NOR gates and NAND gates, MOS shift register and RAM
Week10	CMOS inverter, CMOS NOR gates and NAND gates, MOS shift register and RAM
Week11	**Revision, AssignmentandTest**
Week 12	Fundamentals of modulation, Frequency spectra in AM modulation, power in AM modulated class C amplifier,
Week 13	Efficiency modulation, frequency conversion, SSB system,
Week14	Holi Vacations
Week15	Balanced modulation, filtering the signal for SSB, phase shift method,
Week16	product detector, Pulse modulation, Microwave Devices:

LESSONPLAN

Pt. Neki Ram Sharma Government College, Rohtak

Name of Faculty :Shyam Sunder

Class: M.Sc.4th Semester

Subject: Electronics – II 23PHY24DA2

Week17	Resonant Cavity, Klystrons and Magnetron feedbackEmitterfollower.

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Asstt./Ass. Prof : Parveen

Class: M.Sc.Physics Sem-II

Name of Subject: Solid State Physics 22PHY22D1

1January 2024 to 30 April 2024 [M.Sc. Physics Sem-II]	
1st January – 15 January **Week 1** **16 January - 20 January**	Practicals Slot Crystalline solids, Lattice, The basis, Lattice translation vectors, Direct lattice, Two and three dimensional Bravais lattice
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Conventional units cells of FCC, BCC, NaCl, CsCl, Diamond and cubic ZnS, Primitive lattice cell of FCC, BCC and HCP, Packing fraction: Simple Cubic, BCC, FCC, HCP and diamond structures
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Interaction of x-rays with matter, Absorption of xrays, elastic scattering from a perfect lattice, The reciprocal lattice and its application to diffraction techniques, Ewald's construction
04th February	**SUNDAY**
Week 4 **05th February 10th February**	The Laue, Powder and rotating crystal methods, Atomic form factor, Crystal structure factor and intensity of diffraction maxima, Crystal structure factors of BCC, FCC, monatomic diamond lattice, polyatomic CuZn
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Vibration of one-dimensional mono and diatomic chains, Phonon momentum, Density of normal modes in one and three dimensions
18th February	**SUNDAY**
Week 6 **19th February – 24 February**	Quantization of lattice vibrations, Measurement of phonon dispersion using inelastic neutron scattering, Point defects, Line defects and planer (stacking) faults
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Fundamental ideas of the role of dislocation in plastic deformation and crystal growth, Observation of imperfection in crystals, X-rays and electron microscopic techniques Unit test, Assignment, problems discussion
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Electron in periodic lattice, Bloch theorem,Kronig-Penny model and band theory, Classification of solids, Effective mass
10th March	**SUNDAY**

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24 Semester: Even

Name of Asstt./Ass. Prof : Parveen

Class: M.Sc.Physics Sem-II

Name of Subject: Solid State Physics 22PHY22D1

Week 9 **11th March–16th March**	Weak-binding method and its application to linear lattice, Tight-binding method and its application to Simple cubic, BCC and FCC crystals
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Concepts of holes, Fermi surface: Construction of Fermi surface in two-dimension
23 -31 March	**Holi vacations**
Week 13 **01st April – 06th April**	de Hass van Alfen effect, Cyclotron resonance, Magneto-resistance Weiss Theory of Ferromagnetism Heisenberg model and molecular field theory of ferromagnetism of spin waves and magnons
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Curie-Weiss law for susceptibility. Ferriand Anti Ferro-magnetic order, Domains and Block wall energy. Test and Assignment
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Occurrence of superconductivity, Meissner effect, Type-I and Type-II superconductors, Heat capacity, Energy gap, Isotope effect, London equation, Coherence length.
21stApril	**SUNDAY**
22April-28 April	Postulates of BCS theory of superconductivity, BCS ground state, Persistent current. High temperature oxide super conductors (introduction and discovery)

Name of the Teacher : Dr. Anand Kumar
Class and Section: M.Sc. (Physics) First Year
Subject: Physics
Paper: M.Sc. Physics Semester II Paper VII **Statistical Mechanics22PHY22C1**
January 2024
Week 1 Phase space, Ensembles, Liouville theorem, conservation of extension, Equation of motion, Equal a priori probability, Statistical equilibrium, Microcanonical ensemble
Week 2 Quantization of phase space, classical limit, symmetry of wave functions effect of symmetry on counting
Week 3 Various distributions using micro canonical ensemble Entropy of an ideal gas, Equilibrium Conditions, Quasi – Static Process, Entropy of an ideal gas using Microcanonical Ensemble
Week 4 Gibbs paradox, Sackur-Tetrode equation, Probability distribution and entropy of a two level system.
February 2024
Week 1 Entropy of a system in contact with a reservoir, Canonical ensemble, Ideal gas in a canonical ensemble
Week 2 Equipartition of energy, Third law of thermodynamics, Photons
Week 3 Grand canonical ensemble, Ideal gas in Grand Canonical ensemble
Week 4 Comparison of various ensembles, Quantum distribution using other ensembles
March 2024
Week 1 Transition from classical statistical mechanics to quantum statistical mechanics, Indistinguishability and quantum statistics

Week 2 Identical particles and symmetry requirements, Bose Einstein statistics, Fermi Dirac statistics, Maxwell Boltzmann statistics
Week 3 Bose Einstein Condensation, Thermal properties of B.E. gas, liquid Helium, Energy and pressure of F-D gas
Week 4 Electrons in metals, Thermionic Emission, Saha Theory of Thermal Ionization
April 2024
Week 1 Cluster expansion for a classical gas, Virial equation of state
Week 2 Van der Waals gas, Phase transition of second kind, Ising Mode
Week 3 Bragg Williams Approximation, Ising Model in one and two dimensions, fluctuations in ensembles
Week 4 Energy fluctuation in quantum statistics, Concentration fluctuation in quantum statistics, One dimensional random walk, Brownian motion
May 2024
Week 1 Revision
Week 2 Revision
Week 3 Revision
Week 4 Revision

Summary of Lesson Plan of College Faculty
Pt. Neki Ram Sharma Government College, Rohtak

Name of Asstt. / Assoc. Prof: Mr. Deepak
Class: M.Sc. Physics, 2nd Sem
Subject: Atomic & Molecular Physics (22PHY22C3)

Academic Session: 2023-24
Semester: Even
Days: (1-6)

January 2024 to April 2024	
Month (Jan. - Feb.)	
8th Jan – 13th Jan.	Course Discussion; Unit-I: Various atomic models; Merits and their Demerits
15th Jan – 20th Jan.	Bohr's Model of H-atom, Bohr-Sommerfield Model, Hydrogen spectrum and spectral series
22nd Jan. – 27th Jan.	Quantum states of Hydrogen atom, atomic orbitals, Complete Spectra of H-atom
29th Jan. – 03rd Feb.	Orbital Magnetic Moments, Larmor Precession, Space Quantization, Electron Spin
Month (Feb. – Mar.)	
05th Feb. – 10th Feb.	Vector Model of atom, Pauli principle, Spectroscopic terms symbols, Selection and Intensity rules
12th Feb. – 17th Feb.	Spin orbit interaction in H-atom, Spectra of alkali elements and spectral series with fine structure
19th Feb. – 24th Feb.	Types of coupling, Spectra of He atom with spectral series and its fine structure
26th Feb. – 02nd Mar.	Equivalent & Non-Equivalent electrons: spectroscopic terms in LS and JJ-coupling (Breit Scheme)
Month (Mar. – Apr.)	
04th Mar. – 09th Mar.	Unit-II: Interaction energies in various coupling schemes (LS and JJ-coupling), Influence of External fields: Zeeman effect, Paschen Back effect and Stark Effect
11th Mar. – 16th Mar.	Weak field effect: Normal and Anomalous Zeeman effect, Polarization and intensity rules, Strong field effect: Paschen-Back effect, Assignment-I
18th Mar. – 22nd Mar.	Stark effect, Hyperfine Structure (Magnetic and electric), Line Broadening, Unit Test
23rd Mar. – 31st Mar.	Holi Vacations
Month (Apr. - May)	
01st Apr. – 06th Apr.	Assignment-II, Unit-III: Types of molecules, Rotational spectra of diatomic molecules as a rigid rotator, Intensity of rotational lines, Unit Test
08th Apr. – 13th Apr.	Energy levels and spectra of non-rigid rotor, Unit-IV: Vibrational energy of diatomic molecule, Diatomic molecules as a simple harmonic oscillator, Energy levels and spectrum
15th Apr. – 20th Apr.	Morse potential energy curve, Molecules as vibrating rotator, vibration spectrum of diatomic molecules
22nd Apr. – 27th Apr.	PQR Branches, Sessional Exam and Revision of the course
29th Apr. – 30th Apr.	Doubt Clearance Session.
01st May onwards	University Examination.

Summary of Lesson Plan of College Faculty
Pt. Neki Ram Sharma Government College, Rohtak

Name of Asstt. / Assoc. Prof: Mrs. Himani Ghai
Class: M.Sc.Physics Semester II
Subject: Quantum Mechanics –II 22PHY22C2

Academic Session: 2023-24
Semester: Even
Days: **(1-6)**

January 2024 to April 2024	
Month (Jan. - Feb.)	
8th Jan – 15th Jan	**Practical Exams**
16th Jan – 20th Jan	**Introduction of Unit-1:** Variational methods: Ground state of Helium by both variational and perturbation methods
22nd Jan. – 27th Jan.	The hydrogen molecule; WKB approximation and Numerical problems based on them.
29th Jan. – 03rd Feb.	Time dependent perturbation theory; Constant perturbation,Harmonic perturbation, Fermi's golden rule
Month (Feb. – Mar.)	
05th Feb. – 10th Feb.	Adiabatic and sudden approximation,Doubt Clearance Session and discussion of Previous year Questions Of Unit-1 **Conduction of First Sessional Test and Introduction of Unit-2.**
12th Feb. – 17th Feb.	**Unit-2**:Semi-classical theory of radiation: Transition probability for absorption and induced emission;Electric dipole transition and selection rules;
19th Feb. – 24th Feb.	Magnetic dipole transitions; Forbidden transitions; Higher order transitions; Einstein's coefficients
26th Feb. – 02nd Mar.	**Assignment-I,Discussion of Previous Year Questions of Unit-2,Conduction of Second Sessional Test and Introduction of Unit-4**.
Month (Mar. – Apr.)	
04th Mar. – 09th Mar.	**Unit-4**:Identical particles: The principle of indistinguishability; Symmetric andantisymmetric wave functions;
11th Mar. – 16th Mar.	Spin and statistics of identical particles; The Slater determinant; The Pauli exclusion principle; Spin states of a two-electron system; States of the helium atom;
18th Mar. – 22nd Mar.	Collision of identical particles,**Conduction of Third Sessional Test**
23rd Mar. – 31st Mar.	**Holi Vacations**
Month (Apr. - May)	
01st Apr. – 06th Apr.	**Introduction of Unit-3:**Collision in 3D and scattering: Laboratory and C.M. reference frames; scattering amplitude; Differential scattering cross section and total scattering cross section;
08th Apr. – 13th Apr.	The optical theorem; Scattering by spherically symmetric potentials; Partial waves and phase shifts;
15th Apr. – 20th Apr.	Scattering by a perfectly rigid sphere and by square well potential; Complex potential and absorption;The Born approximation

22nd Apr. – 27th Apr.	Continue: The Born Approximation and Numerical Problems Based On it,**Doubt Clearance Session.**
29th Apr. – 30th Apr.	**Discussion of Previous Years Question Paper,Conduction of fourth Sessional Test.**
01st May onwards	**University Examination.**

Summary of Lesson Plan of College Faculty
Pt. Neki Ram Sharma Government College, Rohtak

Name of Asstt. / Assoc. Prof: Mrs. Himani Ghai
Class: B.Sc. III Hons. (Physics), 6th Sem
Subject: Phy-603(Statistical Physics-II)

Academic Session: 2023-24
Semester: Even
Days: (1-3)

January 2024 to April 2024	
Month (Jan. - Feb.)	
8th Jan – 15th Jan	Conduction Of Practical Exams
16th Jan – 20th Jan	**Introduction of Unit-1:** B.E. distribution law. Thermodynamic functions of an ideal weakly degenerate gas.
22nd Jan. – 27th Jan.	Strongly degenerate Bose gas.
29th Jan. – 03rd Feb.	Radiation as photon gas, Bose's derivation of Planck's law.
Month (Feb. – Mar.)	
05th Feb. – 10th Feb.	Thermodynamic functions of photon gas, Specific heat of hydrogen.
12th Feb. – 17th Feb.	Quantization of rotational and vibration motion
19th Feb. – 24th Feb.	**Assignment-I**, Ortho and para hydrogen.
26th Feb. – 02nd Mar.	**Introduction of Unit-2**: Fermi-Dirac distribution law, Fermi energy.
Month (Mar. – Apr.)	
04th Mar. – 09th Mar.	Unit Test, Thermodynamic functions of an ideal weakly degenerate Fermi gas.
11th Mar. – 16th Mar.	Strongly degenerate Fermi gas.
18th Mar. – 22nd Mar.	Electron gas in a metal, specific heat of metals.
23rd Mar. – 31st Mar.	**Holi Vacations**
Month (Apr. - May)	
01st Apr. – 06th Apr.	**Assignment**-II, Richardson's equation of thermionic emission.
08th Apr. – 13th Apr.	Third law of thermodynamics
15th Apr. – 20th Apr.	**Sessional Exam**, Absolute definition of entropy.
22nd Apr. – 27th Apr.	Consequences of third law, unattainability of absolute zero.
29th Apr. – 30th Apr.	**Doubt Clearance Session.**
01st May onwards	**University Examination.**

Summary of Lesson Plan of College Faculty
Pt. Neki Ram Sharma Government College, Rohtak

Name of Asstt. / Assoc. Prof: . Mr. PRINCE KUMAR
Class: B.Sc. III Hons. (Physics), 6th Sem
Subject: Phy-601 (Semester-VI) Mathematical Physics-VI

Academic Session: 2023-24
Semester: Even

Days: (4-6)

January 2024 to April 2024	
Month (Jan. - Feb.)	
8th Jan – 15th Jan	PRACTICAL SLOT
16th Jan – 20th Jan	Transformation of co-ordinates
22nd Jan. – 27th Jan.	Tensorial character of physical quantities.
29th Jan. – 03rd Feb.	Symmetric and anti-symmetric lasers, Contraction and differentiation
Month (Feb. – Mar.)	
05th Feb. – 10th Feb.	Pseudo tensors, Kronecker and attemating tensors, Step function and Dirac delta function.
12th Feb. – 17th Feb.	Fourier transform . Fourier integral theorem, Sine and cosine transforms.
19th Feb. – 24th Feb.	**Revision, Assignment and Test**
26th Feb. – 02nd Mar.	Convolution theorem, Solution of one dimensional diffusion and wave equations, Heat flow in an infinite and semi-in-finite rod
Month (Mar. – Apr.)	
04th Mar. – 09th Mar.	Laplace transform,
11th Mar. – 16th Mar.	Transform of elementary functions, Derivatives and integrals,
18th Mar. – 22nd Mar.	**Revision, Assignment and Test**
23rd Mar. – 31st Mar.	Holi Vacations
Month (Apr. - May)	
01st Apr. – 06th Apr.	Unit step function, Periodic function
08th Apr. – 13th Apr.	Translation substitution and convolution theorem,
15th Apr. – 20th Apr.	Solution of first and second order ordinary differential equations Solution of partial differential equations.
22nd Apr. – 27th Apr.	Evaluation of integrals using transforms.
29th Apr. – 30th Apr.	**Revision, Assignment and Test**
01st May onwards	University Examination.

Name of the Teacher : Dr. Anand Kumar
Class and Section: B.Sc. (P.H) III
Subject: Physics
Paper: Nanotechnology
January 2024
Week 1 Introduction of Nano science
Week 2 Introduction of Nano Technology
Week 3 Determination of particle size
Week 4 Increase in width of XRD peaks of nanoparticles
February 2024
Week 1 Shift in photoluminescence peak
Week 2 Raman Spectra
Week 3 Variations in Raman spectra of nano-materials.
Week 4 Different methods of preparation of nanomaterial
March 2024
Week 1 Different methods of preparation of nanomaterial Continue…
Week 2 Bottom up: Cluster beam evaporation
Week 3 Ion beam deposition techniques
Week 4 Chemical bath deposition with capping technique
April 2024

Week 1 Top down: Ball Milling.
Week 2 Revision
Week 3 Revision
Week 4 Revision and Test
May 2024
Week 1 Revision
Week 2 Revision
Week 3 Revision

B. Sc PH SEM 2 [Mathematical Physics II]

1st January 2024 to 16th April 2024	**[B.Sc. PH Semester 2]**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Introductory lecture Briefing
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Differential Equations : Introduction and Classification (Linear and non-linear Differential Equations)
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Homogeneous and non-homogeneous differential equations
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Revision, Assignment and Test** Linear Ordinary D.E. First order: Separable and exact equations. Integrating factor
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Second Order: Homogeneous equations with constant coefficient's. Wronskian
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	general solution Statement of Existence and Uniqueness theorem for initial value problems
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Holi Break
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Solution of non-homogeneous equations by operator (D) method. Particular integral.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Revision, Assignment 1 and Test**

24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**
	Method of undetermined coefficients and variation of parameters Equations reducible to those with constant coefficient.
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Fourier series, Dirichlet conditions (Statement only). Orthogonality of sine and cosine functions. Sine and cosine series. Distinctive features of Fourier expansions. Half-range expansions
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Applications Square wave triangular wave, output of full wave rectifier and other simple functions Summary of infinite series Theory of Errors: Systematic and random errors. Propagation of errors. Standard and probable error. Least square fitting of data (linear case).
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**

B. Sc PH SEM 2 [Mechanics II]

1st January 2024 to 16th April 2024	**[B.Sc. PH Semester 2]**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Introductory lecture Briefing
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Unit I: Gravitation and Central Force Motion: Law of gravitation. Inertial and gravitational mass. Potential energy and field due to spherical shell and solid sphere
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Self-energy. Motion of a particle under central force field Angular momentum conservation one body problem two body problem and its reduction to one body problem and its solution
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Revision, Assignment and Test** The energy equation and energy diagram. Kepler's laws. Satellites.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Non-Inertial Systems: Inertial frame and Galilean transformation, Non-inertial frame and fictitious forces.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Uniformly accelerating system. Physics in rotating coordinate systems, centrifugal and Coriolis forces.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Holi Break
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Solution of non-homogeneous equations by operator (D) method. Particular integral.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Revision, Assignment 1 and Test**

24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**
	Michelson-Morley experiment and its outcome. Postulates of special theory of relativity. Lorentz transformations. Simultaneity and order of events.
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Lorentz contraction and time dilation. Relativistic transformation of velocity, frequency and wave number. Velocity dependence of mass and equivalence of mass and energy
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Relativistic Doppler effect, Relativistic Kinematics, Transformation of energy and momentum
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**

B. Sc PH SEM 6 EMT

1stJanuary 2024 to 16th April 2024	**[B.Sc. PH Semester6]**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Introductory lecture Briefing
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Polarization of e.m. waves.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Description of linear, circular and elliptical polarization,

04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Revision, Assignment and Test** Propagation of emw in anisotropic media, Symmetric nature of dielectric tensor.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Fresnel's formula, Light propagation in uniaxial crystal. Double refraction, Nicol prism, Production of circularly and elliptically polarized light,
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Babinet compensator, Analysis of polarized light.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Holi Break
10th March	**SUNDAY**
Week 9 **11th March–16th March**	.Wave guides, Coaxial transmission line,
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Revision, Assignment 1 and Test**
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**
	Wave Guide Numerical
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Modes in rectangular wave guide, Energy flow and attenuation in wave guides,
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Rectangular resonant caves. Planar optical wave guides, Planar dielectric wave guide, condition of continuity at interface, Phase shift on total reflection, eigenvalue equations, phase and group velocity of the guided waves, field energy and power transmission.
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**

B. Sc PH SEM 6 **Electronics Devices : Physics and Applications-II**

1 January 2024 to 30April 2024	**[B.Sc. PH Semester6]**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Introductory lecture Briefing Transistor
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Amplifiers – Only bipolar junction transistor, CB.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	CE and CC configurations.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Revision, Assignment and Test** Single stage CE amplifier (biasing and stabilization circuits)
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Q-point, equivalent circuit, input impedance, output impedance, voltage and current gain).
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Class A, B. C amplifiers (definitions) RC coupled amplifiers (frequency response, Boe plot, amplitude and phase)
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Class B push-pull amplifier. Feedback in amplifiers – Voltage feedback and current feedback
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Effect of negative voltage series feedback on input impedance, output impedance and gain.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	stability distortion and noise.
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**
31March	**SUNDAY**

Week 13 **01st April – 06th April**	Oscillators – barkhausen criterion, Colpitts, phase shift and crystal oscillators.
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Multivibrators and sweep circuits Basic circuits of astable, bistable and monostable multivibrators, Details of astable multivibrators (Derivation of time period).
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Sweep circuit using transistor as a switch and UJT (derivation of time period).
21stApril	**SUNDAY**
22April-28 April	**revision**

B. Sc Pass Course SEM 2

1 January 2024 to 30 April 2024 [B.Sc. pass course Semester2]	
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Elasticity, Hooke's law, Elastic constants and their Relations.
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Poisson's ratio, torsion of cylinder and twisting couple.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Bending of beam (bending moment and its magnitude).
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Revision, Assignment and Test** Cantilevers, Centrally loaded beam. Assumptions of Kinetic Theory of gases.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Law of equipartition of energy and its applications for specific heats of gases.
18th February	**SUNDAY**

Week 6 **19th February – 24th February**	Maxwell distribution of speeds and velocities (derivation required). Experimental verification of Maxwell's Law of speed Distribution.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Most probable speed, average and r.m.s. speed mean free path.
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Transport of energy and momentum. .
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Diffusion of gases. Brownian motion (qualitative). Real gases, Van der Waal's equation. .
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**
31March	**SUNDAY**
Week 13 **01st April – 06th April**	Reference systems, inertial frames, Gallilean invariance and Conservation laws.
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Newtonian relativity principle. Michelson - Morley experiment: Search for ether
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Lorentz transformations length contraction, time dilation. Velocity addition theorem, variation of mass with velocity
21stApril	**SUNDAY**
22-28 April	Mass energy equivalence.

Summary of Lesson Plan of College Faculty
Pt. Neki Ram Sharma Government College, Rohtak

Name of Asstt. / Assoc. Prof: Mr. Deepak
Class: B.Sc. II Hons. (Physics), 4th Sem
Subject: Mathematical Physics-IV (Phy-401)

Academic Session: 2023-24
Semester: Even
Days: (1-3)

January 2024 to April 2024	
Month (Jan. - Feb.)	
8th Jan – 13th Jan	Bessel functions: first and second kind
15th Jan – 20th Jan	Bessel functions: Generating function, recurrence formulas, zeros of Bessel functions and orthogonality.
22nd Jan. – 27th Jan.	Fraunhofer diffraction integral for circular aperture, Series expansion of a function in terms of a complete set of Legendre functions.
29th Jan. – 03rd Feb.	Legendre Polynomial: Generating function, Recurrence relations, orthogonality, Rodrigue's Formula.
Month (Feb. – Mar.)	
05th Feb. – 10th Feb.	Hermite Polynomial: Generating function, Recurrence relations, orthogonality, Rodrigue's Formula.
12th Feb. – 17th Feb.	Assignment-I, Laguerre Polynomial: Generating function, Recurrence relations, orthogonality, Rodrigue's Formula.
19th Feb. – 24th Feb.	Gamma and Beta functions, Transverse vibration of stretched string.
26th Feb. – 02nd Mar.	Unit Test, General solution of wave equation in 1-D Wave equation in 2-D & 3-D.
Month (Mar. – Apr.)	
04th Mar. – 09th Mar.	Vibrations of rectangular and circular membrane
11th Mar. – 16th Mar.	Derivation of the equation of heat conduction in 1-D. Heat flow in one-dimensional rectangular systems of finite boundaries.
18th Mar. – 22nd Mar.	Assignment-II, Heat flow in 2-D & 3-D rectangular systems of finite boundaries. Test-II.
23rd Mar. – 31st Mar.	Holi Vacations
Month (Apr. - May)	
01st Apr. – 06th Apr.	Temperature inside circular plate, Problems of steady flow of heat in rectangular and circular plate.
08th Apr. – 13th Apr.	Laplace equation in Cartesian, Cylindrical coordinate system.
15th Apr. – 20th Apr.	Laplace equation in Spherical coordinate system, Sessional Exam
22nd Apr. – 27th Apr.	Gravitational potential of a ring, Oscillation of hanging chain.
29th Apr. – 30th Apr.	Doubt Clearance Session.
01st May onwards	University Examination.

Pt. Neki Ram Sharma Government College, Rohtak
Summary of Lesson Plan of College Faculty

Department of Physics

Name: Dr. Susheel Kumar **Academic Session: 2023-24**

B. Sc PH SEM 2 **Electricity – II (Magnetism)** **Phy-203**

1 January 2024 to 30April 2024	**[B.Sc. PH Semester2]**
1st January – 15th January	Practicals Slot
Week 1 **16 January - 20 January**	Magnetic force between current elements and definition of B, Properties of B
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Ampere's Circuital Law, Curl and Divergence of B
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Vector Potential, Magnetic Flux, Calculation of B for circular and solenoidal currents
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Torque on a current loop in a uniform magnetic field, Magnetic Dipole
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Force on an isolated moving charge, B, H and their relation, Magnetic susceptibility,
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Stored magnetic energy in matter, Magnetic circuit B-H curve and energy loss in hysteresis
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	A conducting rod moving through a uniform magnetic field, A loop through non-uniform magnetic field
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Curl E-dB/dt A stationary loop with field source moving, Faraday's law of induction
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Mutual Induction – reciprocity theorem ($M_{12} = M_{21}$)

Pt. Neki Ram Sharma Government College, Rohtak
Summary of Lesson Plan of College Faculty

Department of Physics

Name: Dr. Susheel Kumar **Academic Session: 2023-24**

24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**
31March	**SUNDAY**
Week 13 **01st April – 06th April**	Self Induction and related topics
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	**Revision, Assignment and Test**
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Full syllabus test
21stApril	**SUNDAY**
22April-28 April	**revision**

Pt. Neki Ram Sharma Government College, Rohtak
Summary of Lesson Plan of College Faculty

Department of Physics

Name: Dr. Susheel Kumar **Academic Session: 2023-24**

B. Sc PH SEM 4 Thermal Physics-II **Phy-402**

1 January 2024 to 30 April 2024	**[B. Sc PH SEM 4 Thermal Physics-II]**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Zeroth and first law of thermodynamics, Reversible and irreversible processes
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Conversion of heat into work, Carnot Theorem
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Second law of thermodynamics, Thermodynamic temperature
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Clausius inequality, Entropy
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Entropy changes in reversible and irreversible processes, Temperature-Entropy diagrams
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	The principle of increase of entropy applications
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Thermodynamic potentials: Enthalpy, Gibbs and Helmholtz functions
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Maxwell relations and their applications, Magnetic work .
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Magnetic cooling by adiabatic demagnetization, approach to absolute zero change of phase

Pt. Neki Ram Sharma Government College, Rohtak
Summary of Lesson Plan of College Faculty

Department of Physics

Name: Dr. Susheel Kumar **Academic Session: 2023-24**

24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**
31March	**SUNDAY**
Week 13 **01st April – 06th April**	Equilibrium between a liquid and its vapour, Clausius-Clapeyron equation
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	The triple point with examples from physics, Second order phase transitions
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	**Revision, Assignment and Test**
21stApril	**SUNDAY**
22-28 April	Full syllabus test and Revision

LESSONPLAN

Pt. Neki Ram Sharma Government College, Rohtak

Name of Faculty : Shweta

Class: B.Sc. 4th Semester (H)

Subject: : Phy-403 Semester-IV (Vibration and Wave Optics-II)

January2024to April 2024	
Week5	Kirchhoff's integral theorem
Week6	Fresnel-Kirchhoff integral formula
Week7	application to diffraction problems
Week8	Fraunhofer diffraction: Single slit
Week9	Rectangular and circular aperture.
Week10	Multiple slit. Plane diffraction grating.
Week11	Revision, Assignment and Test
Week 12	Multiple slit. Plane diffraction grating.
Week 13	Resolving power and depressive power of a plane diffraction grating.
Week14	Holi Vacations
Week15	Fresnel diffraction: Fresnel's integrals, Cornu's spiral
Week16	Fresnel diffraction pattern at a straight edge, slit and a wire (qualitatively using Cornu's spiral).
Week17	Holography : Principle of holography, recording , reconstruction method and its theory as interference between two plane waves.

Summary of Lesson Plan of College Faculty
Pt. Neki Ram Sharma Government College, Rohtak

Name of Asstt. / Assoc. Prof: . Dr. Jyoti
Academic Session: 2023-24
Class: B.Sc. II Hons. (Physics), 4th Sem
Semester: Even
Subject: Phy-404 (Semester-IV) Atomic and Nuclear Physics-IV

Days: (4-6)

January 2024 to April 2024	
Month (Jan. - Feb.)	
8th Jan – 15th Jan	PRACTICAL SLOT
16th Jan – 20th Jan	Introduction to Atomic Physics, Atoms in electric and magnetic fields
22nd Jan. – 27th Jan.	Electron spin. Stern-Gerlach experiment, Orbital angular momentum
29th Jan. – 03rd Feb.	Space quantization, Dipole moment and energy in magnetic field from classical view
Month (Feb. – Mar.)	
05th Feb. – 10th Feb.	Zeeman effect, Spin-orbit coupling. Fine structure. Total angular momentum,
12th Feb. – 17th Feb.	Many-electron atoms: Pauli exclusion principle, Many particles in one- dimensional box, Symmetric and antisymmetric wave functions, Atomic shell model and periodic table
19th Feb. – 24th Feb.	**Revision, Assignment and Test**
26th Feb. – 02nd Mar.	Spectral notations for atomic states. Vector model, L-S and JJ coupling for two electron systems, Revision
Month (Mar. – Apr.)	
04th Mar. – 09th Mar.	Doublet Structure of alkali spectra, Empirical evidence of multiplets, Selection rules.
11th Mar. – 16th Mar.	Nuclear Properties: mass, size, angular momentum, constituents of nucleus
18th Mar. – 22nd Mar.	Binding energy, stability, Models: Liquid drop model. Mass formula, Revision
23rd Mar. – 31st Mar.	Holi Vacations
Month (Apr. - May)	
01st Apr. – 06th Apr.	Shell model, Spin and parity of nucleons
08th Apr. – 13th Apr.	Radioactivity : Law of radioactive decay, time constant , problems
15th Apr. – 20th Apr.	Theory of successive radioactive transformations in detail
22nd Apr. – 27th Apr.	Radioactive series (mentioning the series-diagram), Nuclear forces, Revision
29th Apr. – 30th Apr.	**Revision, Assignment and Test**
01st May onwards	University Examination.

LESSON PLAN
January, 2024 TO April, 2024

Name of the Assistant/Associate Professor: Munish Sahni
Class and Section: B.Sc. Physics hon.4th semester
Subject: Computer Fundamentals and Programming-2
Paper: 406
January unit1
Truncation and round-off errors, floating point computation, overflow and underflow, single and double precision arithmetic, iterative process, Solution of nonlinear equations: bisection, secant and Newton-Raphson methods. Comparison and error, estimation. Program for finding zeros of a given function.
Assignment: Single and double precision arithmetic exercise examples.
February **unit-1-2**
Solution of simultaneous linear equations : Gauss elimination and iterative (Gauss-Seidel) method. Computation of eigenvalues and eigenvectors of matrices using iterative, process. Program for finding solution of a given system of three coupled linear-equations. Interpolation (Newton forward and backward formulas). Program for (a) Interpolating data points and (b) first and second derivative of a given function/data.
Assignment: Exercise Examples of Gauss Elimination and Newton-Raphson Method
March, Unit2
Integration: General quadrature formula, trapezoidal and Simpson's rule, Gauss, quadrature formulas: Gauss-Hermite, Gauss-Legendre. Program for Integrating a given function using Simpson and Gauss-Legendre methods.
Assignment: Exercise examples of Newton Forward and Backward Methods.
April, Unit2
Solution of ordinary differential equations : Euler method and Runge-Kutta method of second order with error estimation, idea of predictor-corrector method. Program for solving initial value problem for a first order differential equation using Runge-Kutta method.
Assignment: Exercise examples of Gauss-Hermite methods

LESSON PLAN
January, 2024 to April 2024

Name of the Assistant/Associate Professor: Munish Sahni
Class and Section: B.Sc. Physics Hon. (2nd Sem.)
Subject: Linear & Digital Integrated Circuits and Instrumentation-II
Paper: Phy-206
Week 1: differences between digital and Analog Circuits. Sequential circuits: flip-flops – RS, JK , D
Week 1 **Chapter: unit 1**
Assignments: draw waveforms of jk ff
Week 2: clocked, preset and clear operation, race-around conditions in JK Flip-flop, master slave JK flip-flop as building block of sequential circuits.
Week 3 **Chapter: unit 1**
Assignments: **Excitation table of MSJKFF**
Week 3: Shift registers: Serial-in-serial-out, serial-in-parallel-out, parallel-in-parallel-out, parallel-in-paralleled-out (only upto 4 bits).
Week 4 **Chapter: unit 1**
Assignments: **design and discuss bidirectional shift register**
Week 4: Asynchronous counters
Week 5 **Chapter: units 1**
Assignments **: Asynchronous counter applications**
Week 5: synchronous counter, decade counter
Week-6 **Chapter: unit-1**
Assignments: up down counter design by synchronous counter mehod
Week 6: D/A and A/D conversion: D/A converter-resistive network, accuracy and resolution.
Week 7, unit 1
Assignments: counter applications
Week 7: A/D converter (only counter method) – accuracy and resolution
Week 8 **unit -1**
Assignments: preparing for sessional exam.
Week 8: unit-1 revision and sessional exam.
Week-9 **Unit-2**
Assignments: Binary to Gray code converter design by synchronous method
Week 9: **Simple applications of 555 timer circuits. Astable multi-vibrator**
Week10, unit 2
Assignments: note on **Astable multi-vibrator**
Week 10: Simple applications of 555 timer circuits. Bi-stable multi-vibrator

LESSON PLAN
January, 2024 to April 2024

Week 11 **Chapter: unit 2**
Assignment: design and draw applications of 555 timer
Week 11: Power supply: requirement of ideal voltage and current source, voltage source
Week 12 **Chapter: unit 2**
Assignments: difference between practical and ideal current source, voltage source
Week 12: half-wave rectifier
Week 13 **Chapter: unit 2**
Assignments: discuss different specifications of half wave rectifier
Week 13: full-wave rectifier
Week 14 **Chapter: unit 2**
Assignments: discuss different specifications of full wave rectifier
Week 14: bridge rectifier, L and C filters, some idea of ripple
Week15 **Unit2**
Assignment: note on different types of filter
Week15: Oscilloscope: Input attenuators, DC, AC and ground, horizontal and vertical deflecting system,
Week 16: time base generation and synchronization: measurement of positive, positive-negative wave shape,
Week 17: rise time and fall time; frequency, amplitude and phase of sinusoidal waves and revision and revision

Summary of Lesson Plan of College Faculty
Pt. Neki Ram Sharma Government College, Rohtak

Name of Asstt. / Assoc. Prof: . Mr. PRINCE KUMAR
Class: B.Sc. III Hons. (Physics), 6th Sem
Subject: Phy-601 (Semester-VI) POM-II

Academic Session: 2023-24
Semester: Even

Days: (1-3)

January 2024 to April 2024	
Month (Jan. - Feb.)	
8th Jan – 15th Jan	PRACTICAL SLOT
16th Jan – 20th Jan	Polarization
22nd Jan. – 27th Jan.	Local electric field at an atom
29th Jan. – 03rd Feb.	Depolarization field, Lorentz fields of dipoles inside a cavity
Month (Feb. – Mar.)	
05th Feb. – 10th Feb.	Dielectric constant and polrizability
12th Feb. – 17th Feb.	Electric susceptibility, polarizability
19th Feb. – 24th Feb.	**Revision, Assignment and Test**
26th Feb. – 02nd Mar.	Clausius- Mosotti equation
Month (Mar. – Apr.)	
04th Mar. – 09th Mar.	Qualitative discussion of ferroelectric properties of materials and P-E hysteresis loop.
11th Mar. – 16th Mar.	Qualitative description of free electron theory and its inadequacies with reference to Hall effect and specific heat of electrons in a metal.
18th Mar. – 22nd Mar.	**Revision, Assignment and Test**
23rd Mar. – 31st Mar.	Holi Vacations
Month (Apr. - May)	
01st Apr. – 06th Apr.	Elementary band theory-Bloch theorem,

08th Apr. – 13th Apr.	Kronig-Penney model, effective mass of electron, concept of hole
15th Apr. – 20th Apr.	Band gaps, difference between conductors, semiconductors and insulators, intrinsic and action
22nd Apr. – 27th Apr.	conductivity in semiconductors, mobility of carriers (lattice & semiconductors (qualitative).
29th Apr. – 30th Apr.	**Revision, Assignment and Test**
01st May onwards	University Examination.

Jyoti
Paper : atomic molecular & laser physics

1 January 2024 to April 2024	**[B.Sc. Semester6th, section c+d, week=1-3 days**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Basic about atomic molecular physics, Bohr model and it's drawback
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Vector atom model,. Quantum no.associated wiith. Vam, features of Vactor atom model
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Penetrating n non penetrating orbit, spectral lines in alkali spectra, spin orbit interaction
04th February	**SUNDAY**
Week 4 **05th February 10th Febuary**	**Spin orbit interaction for non penetrating orbit, various coupling**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Numerical n problems Zeeman effect (normal & anomalous), Zeeman pattern of D1&D2 lines of na atom,paschen effect
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Stark effect (weak n. Strong stark effect), vibrational spectra
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Rotational spectra, Raman effect, stokess n antistoke lines Numerical n problems
03th March	**SUNDAY**
Week 8 **04th March–09th**	Main features or properties of laser, component of laser,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Einstein cofficient n possibility of application, momentum transfer
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Life time, threshold conditions**
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**

31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Kinetic of optical absorption, He-Ne laser(principal, construction n working)
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Ruby laser, application of laser, submission of. Assignment
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Revision n problems.
21stApril	**SUNDAY**

Jyoti

Paper= nuclear physics

1 January 2024 to April 2024	**[B.Sc.6th sem, section c+d, week= 4-6 days**
1st January – 15th January **Week 1** **16 January - 20 January**	**PRACTICAL SLOTS** Basic about nuclear physics, nuclear mass, binding energy, stability, nuclear size
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Spin, parity, dipole moments, quadruple determination of mass by bain bridge
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Jordan mass spectrograph, Mosley law, Rutherford scattering
04th February	**SUNDAY**

Week 4 **05th February 10th February**	Alpha particles, disintegration,, energetic of alpha decay
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Straggling of alpha particles, Geiger nuttal law, beta particles, beta decay, energy loss, range of electron, absorption of beta particles
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Gamma ray, nature, energetic of gamma, photoelectric,.comton,pair production, absorption of gamma ray n application**
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Nuclear reaction, elastic scattering, photonuclear reaction,
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Conservation law, Q value,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Nuclear reactor, reactor design, nuclear fission
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Nuclear fusion reactor principal, construction n working
24 March	**SUNDAY**
	Holi break
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Linear accelerator, tendon accelerator, cyclotron, betatron
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Ionisation chamber, proportional counter, gm counter, scintillation. Counter
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Semiconductor detector, revision n test
21stApril	**SUNDAY**

Jyoti

Paper: -OPTIONAL PHYSICS

1 January 2024 to April 2024	**[B.Sc. CH semester 4th, week = 1-3 days**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals of Different Subject Basic about computer, computer programming, binary, algorithm,
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Flowchart n their interpretation, integer,. Arithmetic expression, built in function, executable n non executable statement
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Input output statement, format if, do, goto statement
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Array n function subprogram, problems**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Probability, some probability consideration, Maxima n minima probability, case with weightage
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Phase space, micro, macrostate, fluctuations, constraints
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Division of phase space, conditions of equilibrium between two system,,
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Entropy n probability, Boltzmann distribution law,, Bose Einstein statistics,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Plank radiation law,b- e gas, failure of classical mechanics,old quantum theory
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Photon, photoelectric conversion effect, comton effect, debroglie hypothesis,

24 March	**SUNDAY**
	Holi Break
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Davission n germer experiment, gp Thomson experiment,phase velocity n group velocity
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Heisenberg uncertainty principle,n it's experiments,. Schroedinger equations
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**

B. Sc PH SEM 6EMT

1 January 2024 to April 2024	**[B.Sc. PH Semester6]**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Introductory lecture Briefing
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Polarization of e.m. waves.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Description of linear, circular and elliptical polarization,
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Revision, Assignment and Test** Propagation of e.m waves in anisotropic media,Symmetric nature of dielectric tensor.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Fresnel's formula, Light propagation in uniaxial crystal. Double refraction, Nicol prism, Production of circularly and elliptically polarized light,
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Babinet compensator, Analysis of polarized light.
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test**
03th March	**SUNDAY**
Week 8 **04th March–09th**	Wave Guide Numerical
10th March	**SUNDAY**
Week 9 **11th March–16th March**	.Wave guides, Coaxial transmission line,
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Revision, Assignment 1 and Test**
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**

31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Modes in rectangular wave guide, Energy flow and attenuation in wave guides,
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Rectangular resonant caves. Planar optical wave guides, Planar dielectric wave guide, condition of continuity at interface, Phase shift on total reflection, eigenvalue equations, phase and group velocity of the guided waves, field energy and power transmission.
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**

BSC PH SEM 4 THERMAL PHYSICS

1 January 2024 to April 2024	**[B.Sc. PH Semester4]**
1st January – 15th January **Week 1** **16 January - 20 January**	**PRACTICAL SLOTS**
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Introduction to Unit I : Thermodynamics: Zeroth and first law of the thermodynamics,Reversible and irreversible processes.

28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Carnot theorem,Numericals' Based on Carnot Theorem.Introduction to Second law of thermodynamics
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Clausius inequality, Introduction to Entropy,Entropy Changes in Reversible Process Continued Entropy: Entropy Changes in Irreversible Process., Temperature -Entropy Diagram
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Numericals' Based on Entropy,The principle of increase of entropy & its applications
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Revision, Assignment and Test** **Revision Of Unit-I with Doubt Clearing Session, Conduction of First Sessional Test,Assignment-I**
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Introduction to Unit II,Thermodynamic potentials: Enthalpy, Gibbs Function** **Thermodynamics Potentials:Helmoltz Functions ,Maxwell Relations and their applications**.
03th March	**SUNDAY**
Week 8 **04th March–09th March**	
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Thermodynamic Potential Numerical
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Clausius Clapeyron equation and Problems'
24 March	**SUNDAY**
	Revision, Assignment and Test
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	triple point with examples . Second order phase transitions
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Numerical Unit 1
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Numerical Unit 2
21stApril	**SUNDAY**
	Submission of assignments and Queries will be taken. Revision Of Unit-II with Doubt Clearing Session, Conduction of

	Second Sessional Test, Assignment-II
	SUNDAY
	Revision, Assignment and Test
	SUNDAY
	Revision, Assignment and Test
	SUNDAY
	Revision, Assignment and Test

BSC CH SEM 2 OPTIONAL PHYSICS

1 January 2024 to April 2024	**[B.Sc. CH Semester4]**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals of Different Subject
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Introductory lecture Briefing Diode, Transistors, Circuit.
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Energy bands in solids. Intrinsic and extrinsic semiconductor, Hall effect, P-N junction diode and their V-I characteristics. Zener and avalanche breakdown. Resistance of a diode, Light Emitting diodes (LED).simple regulated power supply.
04th February	**SUNDAY**
Week 4 **05th February 10th February**	Photo conduction in semiconductors, photodiode, Solar Cell. Diode Rectifiers P-N junction half wave and full wave rectifier. Types of filter circuits. Zener diode as voltage regulator. simple regulated power supply.
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Junction Transistors, Bipolar transistors, working of NPN and PNP transistors, Transistor connections(C-B, C-E, C-C mode), constants of transistor.
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Transistor characteristic curves (excluding h parameter analysis), advantage of C-B configuration. C.R. O. (Principle, construction and working in detail

25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Revision, Assignment and Test** Oscillators, Principle of Oscillation, Classification of Oscillator. Condition for self sustained oscillation ; Hartley oscillator
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Main features of a laser : Directionality, high intensity, high degree of coherence, spatial and temporal coherence,), Applications of laser in the field of medicine and industry.
10th March	**SUNDAY**
Week 9 **11th March–16th March**	.Transistor biasing, methods of Transistor biasing and stabilization. D.C. load line. Common-base and common-emitter transistor biasing. Common-base, common-emitteer amplifers.
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Revision, Assignment and Test** Classification of amplifers. Resistance-capacitance (R-C) coupled amplifer (two stage; concept of band width, no derivation). Feed-back in amplifers, advantage of negative feedback Emitter follower..
24 March	**SUNDAY**
	Holi Break
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Einstein's coefficients and possibility of amplification, momentum transfer,
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	life time of a level, kinetics of optical obsorption. Threshold condition for laser emission,
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**
	Revision, Assignment and test Laser pumping, He-Ne laser and RUBY laser (Principle, Construction and Working). Applications of laser
	SUNDAY
	Revision, Assignment and test **Brief Section A, B**
	SUNDAY
	Revision, Assignment and test **Brief Section C, D**
	SUNDAY
	Revision, Assignment and test **Brief Section A, B, C, D Queries/ Doubts**

Parveen Kumar Goyal
Paper : atomic molecular & laser physics

1 January 2024 to April 2024	**[B.Sc. Semester6th, section c+d, week=1-3 days**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Basic about atomic molecular physics, Bohr model and it's drawback
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Vector atom model,. Quantum no.associated wiith. Vam, features of Vactor atom model
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Penetrating n non penetrating orbit, spectral lines in alkali spectra, spin orbit interaction
04th February	**SUNDAY**
Week 4 **05th February 10th Febuary**	**Spin orbit interaction for non penetrating orbit, various coupling**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Numerical n problems Zeeman effect (normal & anomalous), Zeeman pattern of D1&D2 lines of na atom,paschen effect
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Stark effect (weak n. Strong stark effect), vibrational spectra
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Rotational spectra, Raman effect, stokess n antistoke lines Numerical n problems
03th March	**SUNDAY**
Week 8 **04th March–09th**	Main features or properties of laser, component of laser,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Einstein cofficient n possibility of application, momentum transfer
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Life time, threshold conditions**
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**

31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Kinetic of optical absorption, He-Ne laser(principal, construction n working)
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Ruby laser, application of laser, submission of. Assignment
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Revision n problems.
21stApril	**SUNDAY**

1 January 2024 to April 2024	**[B.Sc.6th sem, section c+d, week= 4-6 days**
1st January – 15th January **Week 1** **16 January - 20 January**	**PRACTICAL SLOTS** Basic about nuclear physics, nuclear mass, binding energy, stability, nuclear size
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Spin, parity, dipole moments, quadruple determination of mass by bain bridge
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Jordan mass spectrograph, Mosley law, Rutherford scattering
04th February	**SUNDAY**
Week 4 **05th February 10th**	Alpha particles, disintegration,, energetic of alpha decay

February	
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Straggling of alpha particles, Geiger nuttal law, beta particles, beta decay, energy loss, range of electron, absorption of beta particles
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Gamma ray, nature, energetic of gamma, photoelectric,.comton,pair production, absorption of gamma ray n application**
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Nuclear reaction, elastic scattering, photonuclear reaction,
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Conservation law, Q value,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Nuclear reactor, reactor design, nuclear fission
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Nuclear fusion reactor principal, construction n working
24 March	**SUNDAY**
	Holi break
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Linear accelerator, tendon accelerator, cyclotron, betatron
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Ionisation chamber, proportional counter, gm counter, scintillation. Counter
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Semiconductor detector, revision n test
21stApril	**SUNDAY**

1 January 2024 to April 2024	**[B.Sc. CH semester 4th, week = 1-3 days**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals of Different Subject Basic about computer, computer programming, binary, algorithm,
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Flowchart n their interpretation, integer,. Arithmetic expression, built in function, executable n non executable statement
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Input output statement, format if, do, goto statement
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Array n function subprogram, problems**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Probability, some probability consideration, Maxima n minima probability, case with weightage
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Phase space, micro, macrostate, fluctuations, constraints
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Division of phase space, conditions of equilibrium between two system,,
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Entropy n probability, Boltzmann distribution law,, Bose Einstein statistics,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Plank radiation law,b- e gas, failure of classical mechanics,old quantum theory
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Photon, photoelectric conversion effect, comton effect, debroglie hypothesis,
24 March	**SUNDAY**
	Holi Break

31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Davission n germer experiment, gp Thomson experiment,phase velocity n group velocity
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Heisenberg uncertainty principle,n it's experiments,. Schroedinger equations
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**

Jyoti
Paper : atomic molecular & laser physics

1 January 2024 to April 2024	**[B.Sc. Semester6th, section c+d, week=1-3 days**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals Slot Basic about atomic molecular physics, Bohr model and it's drawback
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Vector atom model,. Quantum no.associated wiith. Vam, features of Vactor atom model
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Penetrating n non penetrating orbit, spectral lines in alkali spectra, spin orbit interaction
04th February	**SUNDAY**
Week 4 **05th February 10th Febuary**	**Spin orbit interaction for non penetrating orbit, various coupling**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Numerical n problems Zeeman effect (normal & anomalous), Zeeman pattern of D1&D2 lines of na atom,paschen effect
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Stark effect (weak n. Strong stark effect), vibrational spectra
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Rotational spectra, Raman effect, stokess n antistoke lines Numerical n problems
03th March	**SUNDAY**
Week 8 **04th March–09th**	Main features or properties of laser, component of laser,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Einstein cofficient n possibility of application, momentum transfer
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Life time, threshold conditions**
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**

31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Kinetic of optical absorption, He-Ne laser(principal, construction n working)
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Ruby laser, application of laser, submission of. Assignment
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Revision n problems.
21stApril	**SUNDAY**

Jyoti

Paper= nuclear physics

1 January 2024 to April 2024	**[B.Sc.6th sem, section c+d, week= 4-6 days**
1st January – 15th January **Week 1** **16 January - 20 January**	**PRACTICAL SLOTS** Basic about nuclear physics, nuclear mass, binding energy, stability, nuclear size
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Spin, parity, dipole moments, quadruple determination of mass by bain bridge
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Jordan mass spectrograph, Mosley law, Rutherford scattering
04th February	**SUNDAY**

Week 4 **05th February 10th February**	Alpha particles, disintegration,, energetic of alpha decay
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Straggling of alpha particles, Geiger nuttal law, beta particles, beta decay, energy loss, range of electron, absorption of beta particles
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	**Gamma ray, nature, energetic of gamma, photoelectric,.comton,pair production, absorption of gamma ray n application**
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Nuclear reaction, elastic scattering, photonuclear reaction,
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Conservation law, Q value,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Nuclear reactor, reactor design, nuclear fission
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Nuclear fusion reactor principal, construction n working
24 March	**SUNDAY**
	Holi break
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Linear accelerator, tendon accelerator, cyclotron, betatron
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Ionisation chamber, proportional counter, gm counter, scintillation. Counter
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Semiconductor detector, revision n test
21stApril	**SUNDAY**

Jyoti

Paper: -OPTIONAL PHYSICS

1 January 2024 to April 2024	**[B.Sc. CH semester 4th, week = 1-3 days**
1st January – 15th January **Week 1** **16 January - 20 January**	Practicals of Different Subject Basic about computer, computer programming, binary, algorithm,
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Flowchart n their interpretation, integer,. Arithmetic expression, built in function, executable n non executable statement
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Input output statement, format if, do, goto statement
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Array n function subprogram, problems**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Probability, some probability consideration, Maxima n minima probability, case with weightage
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Phase space, micro, macrostate, fluctuations, constraints
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	Division of phase space, conditions of equilibrium between two system,,
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Entropy n probability, Boltzmann distribution law,, Bose Einstein statistics,
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Plank radiation law,b- e gas, failure of classical mechanics,old quantum theory
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	Photon, photoelectric conversion effect, comton effect, debroglie hypothesis,

24 March	**SUNDAY**
	Holi Break
31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Davission n germer experiment, gp Thomson experiment,phase velocity n group velocity
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Heisenberg uncertainty principle,n it's experiments,. Schroedinger equations
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Submission of assignments and Queries will be taken.
21stApril	**SUNDAY**

Lesson Plan : B.Sc. 2nd
Even Semester, Session 2023-24
Seema bisla
Extension lecturer Physics
Pt.NRS Govt College Rohtak.

Month/Week	Topic
January Week 1	Probability, some probability considerations, combinations possessing maximum probability, combinations possessing minimum probability. I
January Week 2	Probability, some probability considerations, combinations possessing maximum probability, combinations possessing minimum probabil
January Week 3	Distribution of molecules in two boxs. Case with weightage (general). .
January Week 4	Phase space,microstates and macrostates.
January Week 5	statistical fluctuations constraints and accessible,States
February Week 1	Thermodynamical probability.
February Week 2	Postulates of Statistical Physics.
February Week 3	Division of Phase space into cells, Condition of equilibrium between two system in thermal contact. b-Parameter.
February Week 4	Division of Phase space into cells, Condition of equilibrium between two system in thermal contact. b-Parame
March Week 1	Entropy and Probability, Boltzman's distribution law.
March Week 2	Evaluation of A and b.

	Limit of resolution, Rayleigh's criterion, resolving power of telescope and a grating.

March Week 3	Bose-Einstein statistics, Application of B.E.
March Week 4	Statistics to Plancks's radiation law, B.E. gas
April Week 1	Fermi-Dirac statistic
April Week 2	M.B. Law as limiting case of B.E. Degeneracy and B.E.,
April Week 3	Condensation. F.D. Gas, electron gas in metals.
April Week 4	Zero point energy. Specific heat of metals and its solution

April Week 5	Revision

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24
Semester: Even
Name of Asstt./Ass. Prof : Seema Bisla
Class: B.Sc. 2nd Semester (Pass Course)

Name of Subject: PROPERTIES OF MATTER, KINETIC THEORY AND RELATIVITY

16th January 2024 to 30th April 2023 [B.Sc. 2nd Semester Pass Course]	
Week 1 January	Properties of Matter (Elasticity) : Elasticity, Hooke's law
Week 2 January	Elastic constants and their relations
Week 3 February	Poisson's ratio, torsion of cylinder and twisting couple
Week 4 February	Bending of beam (bending moment and its magnitude) cantilevers, Centrally loaded beam.
Week 5 February	Kinetic Theory of Gases : Assumptions of Kinetic Theory of gases, Law of equipartition of energy
Week 6 February	**Revision, Assignment and Test**
Week 7 March	s applications for specific heats of gases. Maxwell distribution of speeds and velocities (derivation required),
Week 8 March	Experiomental verification of Maxwell's Law of speed distribution : most probable speed, average and r.m.s. speed, mean free path.
Week 9 March	Transport of energy and momentum, diffusion of gases. Brownian motion (qualitative), Real gases, Van der Waal's equation.

Summary of Lesson Plan of College Faculty

Name of College: Pt. Neki Ram Sharma Government College, Rohtak Academic Session 2023-24
Semester: Even
Name of Asstt./Ass. Prof : Seema Bisla
Class: B.Sc. 2nd Semester (Pass Course)

Name of Subject: PROPERTIES OF MATTER, KINETIC THEORY AND RELATIVITY

Week 10 April	Theory of Relativity : Reference systems, inertial frames, Gallilean invariance and Conservation laws
Week 11 April	Newtonian relativity principle, Michelson - Morley experiment : Search for ether.
Week 12 April	Lorentz transformations length contraction,
Week 17 April	time dilation, velocity addition theorem, variation of mass with velocity and mass energy equivalence.

LESSONPLAN

Pt. Neki Ram Sharma Government College, Rohtak

Name of Faculty :Reeta Saharan

Class:B.Sc.2nd Semester(PassCourse)

Subject: Electromagnetic Induction and Electronic Devices (Phy-202)

January2024to April 2024	
Week1	Electromagnetic Induction : Growth and decay of current in a circuit with (a)Capacitance and resistance (b) resistance and inductance (c) Capacitance andinductance(d)Capacitanceresistanceandinductance.
Week2	ACcircuitanalysisusingcomplexvariableswith(a)capacitanceandresistance, (b) resistance and inductance (c) capacitance and inductance (d)capacitance
Week3	,inductanceandresistanceSeries and parallelresonantcircuit.Quality factor(Sharpnessofresonance).
Week4	SemiconductorDiodes:Energybandsinsolids.Intrinsicandextrinsicsemiconductor
Week5	Halleffect,P-Njunction diodeandtheirV-Icharacteristics
Week6	**Revision,AssignmentandTest**
Week7	Zenerandavalanchebreakdown
Week8	Photoconductioninsemiconductors,photodiode,SolarCell.
Week9	Resistanceofadiode,LightEmittingdiodes(LED)
Week10	HoliVacations.
Week11	**Revision, AssignmentandTest**
Week 12	Photoconduction in semiconductor
Week 13	Photodiode, Solar cell
April	
Week14	Diode Rectifiers : P-N junction half wave and full wave rectifier. Types of filtercircuits(Land-withtheory).Zenerdiodeasvoltageregulator,simpleregulatedpowersupply
Week15	Transistors : JunctionTransistors, Bipolar transistors, workingof NPNandPNPtransistors, Transistorconnections(C-B, C-E, C-Cmode), constantsoftransistor. Transistor characteristic curves (excluding h parameter analysis),advantageofC-Bconfiguration.C.R.O.(Principle,constructionandworkingindetail).
Week16	Transistor Amplifers : Transistor biasing, methods of Transistor biasing andstabilization. D.C. load line. Common-base and common-emitter transistorbiasing.Common-base,common-emitteramplifers.Classificationofamplifers. Resistance-capacitance (R-C) coupled amplifer (two stage; conceptofbandwidth,noderivation).Feed-

LESSONPLAN

Pt. Neki Ram Sharma Government College, Rohtak

Name of Faculty :Reeta Saharan

Class:B.Sc.2nd Semester(PassCourse)

Subject: Electromagnetic Induction and Electronic Devices (Phy-202)

	backinamplifers,advantageofnegative feedbackEmitterfollower.
Week17	Oscillators : Oscillators, Principle of Oscillation, Classification of Oscillator.Condition for self-sustained oscillations :Barkhausen Criterion for oscillations.Tunedcollectorcommonemitteroscillator.Hartleyoscillator.Colpitt' soscillatorand revision

LESSONPLAN

Pt. Neki Ram Sharma Government College, Rohtak

Name of Faculty : Shweta

Class: B.Sc.2nd Semester (PassCourse)

Subject: Electromagnetic Induction and Electronic Devices (Phy-202)

January2024to April 2024	
Week5	Electromagnetic Induction : Growth and decay of current in a circuit with (a)Capacitance and resistance (b) resistance and inductance (c) Capacitance and inductance (d) Capacitance resistance and inductance.
Week6	AC circuit analysis using complex variables with (a)capacitance and resistance, (b) resistance and inductance (c) capacitance and inductance (d)capacitance
Week7	Inductance and resistance Series and parallel resonant circuit. sharpness of resonance). Quality factor
Week8	SemiconductorDiodes:Energybandsinsolids.Intrinsicandextrinsicsemiconductor
Week9	Hall effect,P-Njunction diode and their V-I characteristics Zener and avalanche breakdown
Week10	HoliVacations.
Week11	Photoconduction in semiconductors,photodiode,Solar Cell.Resistance of a diode,Light Emitting diodes(LED)
Week 12	**Revision, Assignmentand Test**
Week 13	Diode Rectifiers : P-N junction half wave and full wave rectifier. Types of filter circuits .Zener diode as voltage regulator,simple regulated power supply
Week14	**Holi Vacations**
Week15	Transistors : JunctionTransistors, Bipolar transistors, workingof NPNandPNPtransistors, Transistorconnections(C-B, C-E, C-Cmode), constantsoftransistor. Transistor characteristic curves (excluding h parameter analysis),advantageofC-Bconfiguration.C.R.O.(Principle,constructionandworkingindetail).
Week16	Transistor Amplifers : Transistor biasing, methods of Transistor biasing andstabilization. D.C. load line. Common-base and common-emitter transistorbiasing.Common-base,common-emitteeramplifers.Classificationofamplifers. Resistance-capacitance (R-C) coupled amplifer (two stage; conceptofbandwidth,noderivation).Feed-backinamplifers,advantageofnegative feedbackEmitterfollower.
Week17	Oscillators : Oscillators, Principle of Oscillation, Classification of Oscillator.Condition for self-sustained oscillations :Barkhausen Criterion for oscillations.Tunedcollectorcommonemitteroscillator.Hartleyoscillator.Colpitt'soscillatorand revision

B. Sc 4 semester optics TEACHER REENA Department Physics

16th January 2023 to 16th May 2023	
1st January – 15th January **Week 1** **16 January - 20 January**	PRACTICAL EXAMS Thin film, wedge shape film interference
21st January	**SUNDAY**
Week 2 **22rd January – 27th January**	Newton ring ,Michelson morley experiment
28th January	**SUNDAY**
Week 3 **29th January - 03th February**	Fresnel diffraction,half period zones ,zone plate
04th February	**SUNDAY**
Week 4 **05th February 10th February**	**Diffraction at straight edge,rectangular slit**
11th February	**SUNDAY**
Week 5 **12th February – 17th February**	Circular aperture,introduction to fraunhoffer diffraction,single slit diffraction
18th February	**SUNDAY**
Week 6 **19th February – 24th February**	Double slit diffraction
25th February	**SUNDAY**
Week 7 **26thFebruary–02nd March**	**Many slit diffraction,grating**
03th March	**SUNDAY**
Week 8 **04th March–09th March**	Test and assignments
10th March	**SUNDAY**
Week 9 **11th March–16th March**	Rayleigh criterion,resolving power of telescope and microscope
17th March	**SUNDAY**
Week 10 **18th March– 22th March**	**Introduction to polarisation,double refraction**
24 March	**SUNDAY. Week 11-12** **23-31 March Holi Break**

31Match	**SUNDAY**
Week 13 **01st April – 06th April**	Polarisation by reflection,scattering,malus law
07th April	**SUNDAY**
Week 14 **8th April – 13th April**	Nicol prism,quarter wave plate and half wave plate,plane ,circularly,elliptically polarised light,optical activity,specific rotation
14th April	**SUNDAY**
Week 15 **15th April – 20thApril**	Numericals and doubts
21stApril	**SUNDAY**

Lesson Plan : B.Sc. 2nd
Even Semester, Session 2023-24
Reeta Saharan
Extension lecturer Physics
Pt.NRS Govt College Rohtak.

Month/Week	Topic
January Week 1	Probability, some probability considerations, combinations possessing maximum probability, combinations possessing minimum probability. I
January Week 2	Probability, some probability considerations, combinations possessing maximum probability, combinations possessing minimum probabil
January Week 3	Distribution of molecules in two boxs. Case with weightage (general). .
January Week 4	Phase space,microstates and macrostates.
January Week 5	statistical fluctuations constraints and accessible,States
February Week 1	Thermodynamical probability.
February Week 2	Postulates of Statistical Physics.
February Week 3	Division of Phase space into cells, Condition of equilibrium between two system in thermal contact. b-Parameter.
February Week 4	Division of Phase space into cells, Condition of equilibrium between two system in thermal contact. b-Parame
March Week 1	Entropy and Probability, Boltzman's distribution law.
March Week 2	Evaluation of A and b.

	Limit of resolution, Rayleigh's criterion, resolving power of telescope and a grating.

March Week 3	Bose-Einstein statistics, Application of B.E.
March Week 4	Statistics to Plancks's radiation law, B.E. gas
April Week 1	Fermi-Dirac statistic
April Week 2	M.B. Law as limiting case of B.E. Degeneracy and B.E.,
April Week 3	Condensation. F.D. Gas, electron gas in metals.
April Week 4	Zero point energy. Specific heat of metals and its solution

April Week 5	Revision