Summary of lesson plan of college faculty

Semester: ODD   **Class**: B.Sc. 1st Year   **Subject**: Physics

For the Month of: August to December, 2023   **Name of Assistant Professor**: Mrs. Pooja

Sr. No.	Month	Topic to be Covered	Academic Activities /Assignments/Test
1.	August	Fundamentals of dynamics: rigid body, moment of inertia, radius of Gyration, terms of perpendicular and parallel axis, moment of inertia of ring, desk, angular days, solid cylinder, solid sphere, Hollowsphere, moment of inertia of rectangular plate, nature of rotational motion, equation of rotational kinetic's. Moment of inertia of square plate, solid cone, triangular plate, torque, rotational, Carnatic energy, angular momentum, law of conservation of angular momentum, rolling motion, condition for pure, rolling, acceleration of body, rolling down an inclined plane, fly wheel, moment of inertia of an irregular body using torsion pendulum.	Assignment on Moment of Inertia of ring, disc, hollow sphere. Test of Rotational motion
2.	September	Elasticity: deforming, force, elastic limit, stress, strain and their types, Hooke's Law, Moduli of elasticity, relation between shear angle and angle of twist, elastic energy, stored in elastic body, elongation produced in heavy Rod due to its own weight and elastic potential energy, stored in it, tension in rotating Rod, poisson's ratio, and it's limiting value, relation between young modulus, bulk modulus, and poission ratio. Torque required for twisting cylinder, Hollow shaft is stiffer than solid one. Bending of beam, bending moment and its magnitude, Floxural rigidity, geometrical moment of inertia for beam of rectanguler cross-section and circular cross - section. Bending of contilever (loaded by weight W at its free end), weight of cantilever uniformly distributed over its entire length. depression of a centrally loaded beam supborted at its ends, searle's Method.	Test on Elasticity

3.	October	Special Theory of Relativity: Michelson's Morley experiments and its outcome, Postulate of special theory of relativity, Lorentz transformation, simultaneity and order of events, Lorentz contraction, Time - Dilation, Inertial frame of reference, non-inertial frame of reference, Search for a true inertial frame, co-ordinates system, absolute and relative motion. Relativistic transformation of velocity, relativistic addition of velocities, variation of mass -energy equivalence, relativistic Doppler effect, relativistic kinematics, transformation of energy and momentum, transformation of force, Four vectors, problems of relativistic dynamics, acceleration of charge particles by constant electric field, transverse electric field.	One - Day Workshop on topic "ISRO Contribution to space-science and Exploration"
4.	November	Gravitational and central force motion: Law of gravitation, Potential and field due to spherical shell and solid sphere, motion of a particle under central force field, two body problem and its reduction to one body problem and its solution, compound pendulum or physical pendulum in form of elliptical lamina and expression of time period. Determination of g by means of bar pendulum, Normal coordinates and normal modes, normal modes of vibration for given spring mass system, possible angular frequencies of oscillation of two identical simple pendulums of length (l) and small bob of mass (mo) joined together with spring of spring constant (K)	Half- term exam of first two units
5.	December	Revision of Chapter- Gravitational and Central force motion	

Summary of lesson plan of college faculty

Semester: ODD   **Class**: B.Sc. 2nd Year   **Subject**: Physics

For the Month of: August to December, 2023   **Name of Assistant Professor**: Mrs. Pooja

Sr. No.	Month	Topic to be Covered	Academic Activities /Assignments/Test
1.	August	Computer Programming: Computer Organization, Binary representation, Algorithm development, Flow charts, and their interpretation, Fortran preliminaries: Integer and floating-point expression. Built in function, executable and non- executable statements, input and output statements, Formats, IF, DO and GO To statements, Dimension arrays, statement function and function subprogram. Applications of Fortran Programming: Algorithm, flow chart, and programming for print out of natural numbers, Range of the set of given numbers, Ascending and descending order. Mean a standard deviation, least square fitting of curve, Roots of quadratic equation, Product of two matrices, Numerical Integration (Trapezoidal and Simpson 1/3 rule.	Test of Algorithm and Flow chart and Program
2.	September	Thermodynamics -I : Thermodynamic system and Zeroth law of thermodynamics, Finst law of thermodynamics and its limitations, reversible and irreversible process, second law of thermodynamics, Carnot theorm, Absolute scale of temperature. Joule's free expansion, Joule - Thomson effect, Joule -Thomson (Porous Plug) experiment, analytic treatment, Entropy, T-s diagram, Nearst heat law, Liquefication of gases, (oxygen, air, hydrogen, and helium), cooling by adiabatic demagnetization. Thermodynamics-II : Derivation of Clausius - Clapeyron and latent heat equation, specific heat of saturated vapors, phase diagram and triple point of a substance, development of Maxwell thermodynamical relation, thermodynamical function: Interned energy (U),	Assignment of thermodynamics- I

		- Helmholtz function (F), Enthalby (H), Gibbs Function, derivation of Maxwell thermodynamical relations from thermodynamical functions, Application of Maxwell- relations: variation of intrinsic energy with volume, (i) perfect gas (ii) van der Waals gas (iii) solids and liquids, derivation of Stefan's law	
3.	October	Interference-I: Interference by Division of Wave Front: Young's double slit experiment, Coherence, Condition of Interference, Fresnel's biprism and its applications to determine the wavelength. Wavelength of sodium light and thickness of a mica sheet, Lloyd's mirror, Difference between Bi- prism and Lloyd mirror fringes, phase change on relation. Interference -II: Interference by Division of Amplitude: Plane parallel thin Film, classification of fringes in films, wedge shape film, Newton's rings. Michelson's Interferometer. Production of colours in their films, Interference due to transmitted light and reflected light, Application of interferometer. (i) standardization of a meter (ii) determination of wavelength	One- Day Workshop on topic- "ISRO Contribution to Space Science and Exploration"
4.	November	Diffraction-I: Fresnel's theory, Fresnel's assumption, and half period zones, rectilinear propagation of light, zone plate, diffraction at a single edge. Rectangular slit, and diffraction at a circular aperture, Diffraction due to a narrow-slit wire. Diffraction -II: Fraunhoffer diffraction: Single -Slit diffraction, double slit diffraction, N- slit diffraction, plane transmission grating spectrum. Dispersive power of grating, limit of resolution, Rayleigh's criterion, resolving power of telescope and a grating, differences between prism and grating spectra.	Assignment of Diffraction - I
5.	December	Revision of Chapter- Diffraction – I and Diffraction - II	

Summary of lesson plan of college faculty

Semester: ODD   **Class**: B.Sc. 3rd Year   **Subject**: Physics

For the Month of: August to December, 2023   **Name of Assistant Professor**: Mrs. Pooja

Sr. No.	Month	Topic to be Covered	Academic Activities /Assignments/Test
1.	August	ORIGIN OF QUANTUM PHYSICS: Overview, scale of quantum Physics, boundary between classical and quantum phenomena, Photon, Photoelectric Effect, Compton Effect, Frank Hertz Experiment, De-Broglie Concept, Phase velocity, group velocity and their relation. Heisenberg's Uncertainty Principle, Time-energy and angular momentum, position uncertainty, Uncertainty principle from de-Broglie wave, Time- Independent Schrodinger wave equation, Eigen value and function, Orthogonality, Normalization, Probability current density. Application of Schrodinger Ware Equation: (i) Free particle in One dimensional Box (ii) One dimensional step potential (E > Vo) (iii) One dimensional step potential (E <Vo) (iv) One dimensional potential barrier (E> Vo) (v) One dimensional potential barrier (E < Vo) (vi) Solution of Schrodinger equation of harmonic Oscillator	Assignment on Quantum Physics
2.	September	Laser Physics I: Absorption and emission of radiation, main feature of laser: Directionality, high Intensity, Monochromaticity, high degree of Coherence - spatial and Temporal Coherence, Einstein Coefficients, spontaneous and stimulates emission and possibility of amplification. Momentum transfer, Life - time of a level, kinetics of optical absorption, line shape function, line broadening mechanisms, population inversions, A necessary condition for laser light amplification, resonance cavity, Laser pumping, threshold condition of laser emission. Laser Physics II: Ruby laser, He-Ne laser, optical properties of semiconductor, semiconductor laser, Injection laser, Application of laser: Non- linear Optics, holography, application of laser in field of medicine and industry.	Test of Laser Physics I

3.	October	Nuclear Structure and Properties of Nuclei: Nuclear composition, mass and binding energy, systematics of nuclear binding energy, nuclear stability, nuclear size, spin, pairity, statistics, dipole moment, quadrapole moment, Determination of mass by Brain-Bridge. Brain - Bridge and Jordan Mass Spectrograph, determination of charge by Mosley Law, determination of size of nucleus by Rutherford Back Scattering, shape concept of nucleus. Nuclear Radiations Decay Process: Alpha disintegration and its theory, energies of alpha decay, origin of continuous beta spectrum, type of beta decay and energetics of beta decay, nature of gamma rays, energetics of gamma rays. Radiation Interaction: Interaction of heavy charged particles, energy loss of heavy charged particle, Range and straggling of alpha particles, Geiger-Nuttal law, energy loss of beta particles, Interaction of gamma rays, Range of electrons, absorption of gamma rays and its applications.	One-Day Workshop on topic 'ISRO Contribution to Space-Science and Exploration'
4.	November	Nuclear Accelerators: Linear Accelerators, Tendem accelerators, cyclotron and Betatron accelerators. Nuclear Radiation Detectors: Ionization chamber, proportional counter, G.M-counter (detailed study), Seintillation counter and semiconductor detectors. Nuclear Reactions: Nuclear reactions, elastic scattering, nuclear disintegration, photo - nuclear reaction, radiative capture, direct reaction, Heavy ion reaction, spallation reactions, conservation laws, a-Value and Threshold. Nuclear Reactors: Nuclear reactors, General aspects of reactor, Design, Nuclear fission and fussion reactors, (Principle, construction, working and their uses).	Assignment of nuclear radiation detectors.
5.	December	Revision of Chapter- Nuclear Physics	