Lesson Plan 2021-22 (2nd Sem)

Name : Smriti Sharma & Rashmi Kakkar Paper Code: PHY-201

Class: B.Sc. 1st year Subject: Mechanics

1st week of April	Unit I: Elasticity, Hooke's law, Elastic constants and their relations.
2nd week of April	Poisson's ratio, torsion of cylinder and twisting couple.
3rd week of April	Bending of beam (bending moment and its magnitude) cantilevers, Centrally loaded beam.
4th week of April	Unit II: Assumptions of Kinetic Theory of gases, Law of equipartition of energy and its applications for specific heats of gases
1st week of May	TEST 1 OF UNIT 1; Maxwell distribution of speeds and velocities (derivation required).
2nd week of May	Experimental verification of Maxwell's Law of speed distribution : most probable speed, average and r.m.s. speed, mean free path.
3rd week of May	Transport of energy and momentum, diffusion of gases.
3rd week of May	ASSIGNMENT 1; Brownian motion (qualitative), Real gases, Van der Waal's equation.
4th week of May	Unit III: Reference systems, inertial frames, Gallilean invariance and Conservation laws.
1st week of June	TEST 2 OF UNIT 2; Newtonian relativity principle, Michelson - Morley experiment : Search for ether.
2nd week of June	Lorentz transformations length contraction, time dilation, velocity addition theorem.
3rd week of june	Variation of mass with velocity and mass energy equivalence. Test 3 of UNIT 3 ; ASSIGNMENT 2

Lesson Plan 2021-22 (2nd Sem)

Name : Ms.Komal and Ms. Ritu Malik Paper PHY-202

Physics :- BSc 1st year subject. : Electromagnetic Induction and Electronic Devices

April 1st week	Unit I: Growth and decay of current in a circuit with (a) Capacitance and resistance (b) resistance and inductance
April 2nd week	c) Capacitance and inductance (d) Capacitance resistance and inductance. AC circuit analysis using complex variables with (a) capacitance and resistance,
April 3rd week	(b) resistance and inductance (c) capacitance and inductance (d) capacitance, inductance and resistance Series and parallel resonant circuit.
April 4th week	Quality factor (Sharpness of resonance).Unit I test and Assignment Semiconductor Diodes : Energy bands in solids. Intrinsic and extrinsic semiconductor
May 1st week	Hall effect, P-N junction diode and their V-I characteristics. Zener and avalanche breakdown. Resistance of a diode, Light Emitting diodes (LED)
May 2nd week	Photo conduction in semiconductors,photodiode, Solar Cell Diode Rectifiers : P-N junction half wave and full wave rectifier.
May 3rd week	Types of filter circuits (L and - Pi wiith theory). Zener diode as voltage regulator, simple regulated power supply. Numerical practice and Assignment.Transistors : Junction Transistors,working of NPN and PNP transistors,
May 4th week	Transistor connections(C-B, C-E, C-C mode), constants of transistor. Transistor characteristic curves (excluding h parameter analysis) advantage of C-B configuration. C.R. O.
June 1st week	Unit III Transistor Amplifers : Transistor biasing, methods of Transistor biasing and stabilization.D.C..load line. Common-base and common-emitter transistor biasing. Commonbase, common-Emitter amplifers
June 2nd week	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
June 3rd week	Test of unit -2, Oscillator,Principle of Oscillation, Classification of Oscillator,Condition for self Sustained oscillation : Barkhousen Criterion for oscillations,. Tuned collector common emitter Oscillator. Hartley oscillator. Colpitt's oscillator unit test 3
June 4th week	.Doubt classe, revision and test

Lesson Plan Jan 2021-22(4th sem)

Name: Kusum Lata and Abhilasha

Class: B.Sc. 2nd year

Paper Code: 401

Subject: Statistical Mechanics

April 1st week	Introduction to statistical mechanics ,Probability , some probability considerations. Combinations possessing maximum probability and minimum probability

2nd week	Distribution of molecules in two boxes , case with weightage. Phase space , micro and macro states with distribution of particles
3rd week	statistical fluctuations constraints and accessible states, thermodynamical probability. Numerical problems
4th week	Postulates of statistical physics, division of phase space into cells. Test and assignment.
May 1st week	Condition of equilibrium between two systems in thermal contact,β- parameter. Entropy and probability.
2nd week	Boltzman-distribution law, evaluation of A and β. Bose Einstein statistics, application of Bose Einstein statistic to Planks radiation law.
3rd week	Bose Einstein gas, Fermi-Dirac statistics. Numericals, doubt class and class test.
4th week	MB-law as limiting case of BE degeneracy and Bose Einstein condensation. Revision
June 1st week	Fermi- Dirac gas , electron gas in metals, Zero point energy and assignement submission.
2nd week	Specific heat of metals and its solutions ,class test
3rd week	Numerical problems and quiz

Lesson Plan 2021-22(4th sem)

Name: Sapana kumari and Meena

Class: B.Sc. 2nd year

Paper Code: 402

Subject: Optics-2

April 1st week	Introduction to Optics and brief discussion on interference. Brief introduction to Interference by division of amplitude, colour of thin films.
2nd week	Wedge Shaped film, Newton's ring , introduction to interferometers, Michelson's interferometer and its application.
3rd week	Standardisation of a meter to determine wavelength, class test.Fresnel's diffraction and half period Zones, Zone plate.
4th week	Diffraction at a straight edge, rectangular slit and circular aperture and doubts regarding concepts. Numerical problems, test and assignment.
May 1st week	Introduction to Fraunhoffer diffraction , One slit diffraction , Two slit diffraction .
2nd week	N-slit diffraction, Plane transmission grating spectrum, Dispersive power of a grating & limit of resolution. Rayleigh's criterion, Resolving power of telescope and a grating.
3rd week	Class Presentation and assignement submission. Brief introduction to polarisation , polarisation and double refraction
4th week	polarisation by reflection. Polarisation by scattering, Malus law, phenomenon of double refraction, Huygen's wave theory of double refraction.
June 1st week	Analysis of polarised light : Nicol prism, Quarter wave plate and half wave plate. Production and detection of plane polarised light. Class test.
2nd week	Detection of Circularly polarised and elliptically polarised light. Optical activity. Fresnel's theory of rotation and Specific rotation and introduction of polarimeters.
3rd week	Polarimeters : half shade polarimeter and Biquartz. Revision and test

Lesson Plan 2021-2022 (6th sem)

Name: Kusum Lata and Meena Yadav

Class: B.Sc. 3rd year

Paper Code: 601

Subject: Atomic, Molecular and Laser Physics

April 1st week	Introduction to atomic spectroscopy, Quantum numbers and space quantization, vector atom model, quantum numbers associated with vector atom model.
April 2nd week	Explanation of penetrating and non- penetrating orbits, spectral lines in different series of alkali spectra. Discussion on spin- orbit interaction, doublet term separation, LS coupling.
April 3rd week	Explanation of jj coupling, expressions for interaction energies for LS and jj coupling, Numerical problems, Test and Assignment
April 4th week	Explanation of normal and anomalous Zeeman effect, Zeeman pattern of D1 and D2 lines of Na atom.
May 1st week	Paschen- Back effect of a single valance electron system, weak field stark effect of hydrogen atom.
May 2nd week	Discrete set of electronic energies of molecules, quantization of vibrational and rotational energies. Description of Raman effect, Stoke's and anti-Stoke's lines, Unit test
May 3rd week	Introduction to LASER, Main features of LASER: directionality, high intensity, high degree of coherence.
May 4th week	Einstein's coefficients and possibility of amplification, momentum transfer, life time of a level.
June 1st week	Kinetics of optical absorption, threshold condition for LASER emission, LASER pumping.
June 2nd week	He-Ne LASER and Ruby LASER (principle, construction and working), Application of LASER in the field of medicine and industry.
June 3rd week	Revision & test

Lesson Plan 2021-2022(6th sem)

Name: Geetanjali and Meena Class: B.Sc. 3rd year

Paper Code: 602 Subject: Nuclear Physics

April 1st week	Unit 1: Nuclear mass and binding energy, systematics of nuclear binding energy,
April 2nd week	Nuclear stability, Various properties of Nucleus: spin, parity, magnetic dipole moment, quadrupole moment.
April 3rd week	Determination of mass by Bain Bridge and Jordan Mass spectrographs,

April 4th week	Determination of charge by Mosely law, Rutherford scattering. Numerical discussion and test of unit 1
May 1st week	Unit :2, Interaction of charged particles (Alpha particles), Energy loss of heavy charged particles, Alpha disintegration and its theory,
May 2nd week	Energetics of alpha Decay, Range and straggling of alpha particles, Geiger-Nuttal law.
May 3rd week	Introduction of light charged particle (beta particle), origin of continuous Beta spectrum (Neutrino Hypothesis), types of beta decay , energetics of beta decay, energy loss in beta decay.
May 4th week	Gamma decay Interaction of Gamma rays through photoelectric effect, Compton effect and pair production.
June 1st week	Electron position annihilation. Absorption of gamma rays and its application. Numerical discussion and test of unit 2
June 2nd week	Unit 3: General aspects of Nuclear reactors, fission and fusion reactors, linear and tandem accelerators, Cyclotron and Betatron, ionisation and proportional counter, Gm Counter.
June 3rd week	Scintillation counter, Semiconductor counter, types of Nuclear reactions. Q-values and reaction threshold, conservation laws.Test of unit 3.