Lesson-Plan

Shaheed Smarak Govt. College Tigaon

Subject: Physics: - PHY 202 : ELECTRO MAGNETIC INDUCTION AND ELECTRONIC DEVICES

Name: Dr. Jagjit Singh

Month	Topic
March 2022	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. AC circuit analysis using complex variables with (a) capacitance and resistance,.
April 2022	(b) resistance and inductance (c) capacitance and inductance (d) capacitance, inductance and resistance Series and parallel resonant circuit. Quality factor (Sharpness of resonance). 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). Photo conduction in semiconductors, photodiode, Solar Cell. Diode Rectifiers : P-N junction half wave and full wave rectifier. Types of filter circuits (L and - with theory). Zener diode as voltage regulator, simple regulated power supply.
May 2022	Transistors : Junction Transistors, Bipolar transistors, working of NPN and PNP transistors, 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. (Principle, construction and working in detail). Transistor biasing, methods of Transistor biasing and stabilization. D.C. load line. Common-base and common-emitter transistor biasing. Common-base, common emitteer amplifers. Classification of amplifers. Resistance-capacitance (R-C) coupled amplifer (two stage; concept of band width, no derivation).
June 2022	Feed-back in amplifers, advantage of negative feedback Emitter follower. Oscillators : Oscillators, 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

30/05/22

Shaheed Smarak Govt. College Tigaon

Subject: Physics: - PHY 602 : NUCLEAR PHYSICS

Name: Dr. Jagjit Singh

Month	Topic
March 2022	Nuclear mass and binding energy, systematics nuclear binding energy, nuclear stability, Nuclear size, spin, parity, statistics magnetic dipole moment, quadrupole moment (shape concept), Determination of mass by Bain-Bridge
April 2022	Bain-Bride and Jordan mass spectrograph, Determination of charge by Mosley law Determination of size of nuclei by Rutherford Back Scattering. Interaction of heavy charged particles (Alpha particles), alpha disintegration and its theory Energy loss of heavy charged particle (idea of Bethe formula, no derivation), Energetics of alpha -decay, Range and straggling of alpha particles. Geiger-Nuttal law. Introduction of light charged particle (Beta-particle)
May 2022	Origin of continuous beta-spectrum (neutrino hypothesis) types of beta decay and energetics of beta decay, Energy loss of beta particles (ionization), Range of electrons, absorption of beta-particles. Interaction of Gamma Ray, Nature of gamma rays, Energetics of gamma rays, passage of Gamma radiations through matter (photoelectric, compton and pair production effect) electron position anhilation. Asborption of Gamma rays (Mass attenuation coefficient) and its application. Nuclear reactions, Elastic scattering, Inelastic scatting, Nuclear disintegration, photoneclear reaction, Radiative capture, Direct reaction, heavy ion reactions and spallation Reactions, conservation laws.
June 2022	Q-value and reaction threshold. Nuclear Reactors General aspects of Reactor design. Nuclear fission and fusion reactors (Principles, construction, working and use) Linear accelerator, Tendem accelerator, Cyclotron and Betatron accelerators. Ionization chamber, proportional counter, G.M. counter detailed study, scintillation counter and semiconductor detector

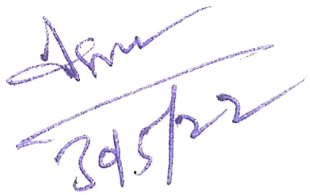
30/5/22

Shaheed Smarak Govt. College Tigaon

Subject: Physics: - PHY 401 : Statistical Mechanics

Name: Dr. Jagjit Singh

Month	Topic
March 2022	Probability, some probability considerations, combinations possessing maximum probability, combinations possessing minimum probability, distribution of molecules in two boxs.
April 2022	Case with weightage (general). Phase space, microstates and macrostates, statistical fluctuations constraints and accessible States Thermodynamical probability. Postulates of Statistical Physics. Division of Phase space into cells, Condition of equilibrium between two system in thermal contact. b-Parameter.,
May 2022	Entropy and Probability, Boltzman's distribution law. Evaluation of A and b. Bose-Einstein statistics, Application of B.E. Statistics to Plancks's radiation law, B.E. gas.
June 2022	M.B. Law as limiting case of B.E. Degeneracy and B.E., Condensation. F.D. Gas, electron gas in metals. Zero point energy. Specific heat of metals and its solution.



SHAHEED SMARAK GOVT. P.G. COLLEGE TIGAON (FARIDABAD)

LESSON PLAN FOR SESSION 2021-22. (Even Semester)

B.Sc.

Subject Name with code and semester:--- Properties of Matters, PHY201, 2nd Sem

Teacher Name:--- Dr. Sanjeev Kumar

MONTH	TOPIC
April	UNIT - I Properties of Matter (Elasticity): Elasticity, Hooke's Law, Elastic constants and their relations, Poission's ratio, torsion of cylinder and twisting couple, Bending of beam cantilevers, centrally loaded beam.
May	UNIT - II Kinetic Theory Of Grases:- Assumptions of kinetic Theory of gases, Law of equipartition of energy and its applications for specific heats of gases. Maxwell distribution of speed, velocities Experimental verification of Maxwell's Law of speed distribution: Most probable speed, average & r.m.s speed mean free path, Transport of energy and momentum, diffusion of gases. Brownian motion, Real gases, Van der Waal's equation.
June	UNIT - III Theory Of Relativity :- Reference systems, inertial frames, Gallilean invariance and conservation laws, Newtonian relativity principle, Michleson-Morely experiment: search for ether. Lorentz transformations length contraction, time dilation, velocity addition theorem, variation of mass with velocity and mass energy equivalence.

SHAHEED SMARAK GOVT. P.G. COLLEGE TIGAON (FARIDABAD)

LESSON PLAN FOR SESSION 2021-22. (Even Semester)

Subject Name with code and semester:--- Atomic, Molecular & Laser Physics PHYOG, B.Sc. 6th Sem.

Teacher Name:--- Dr. Sanjeev Kumar

MONTH	TOPIC
April	UNIT-I Vector atom model, quantum numbers associated with vector atom model, penetrating and non-penetrating Orbits, spectral lines in different series of alkali spectra spin orbit interaction and double term separation LS or Russel-Saunder coupling, jj coupling (expressions for interaction energies for LS and jj coupling required)
May	UNIT-II Zeeman effect, Zeeman pattern of D_1 and D_2 lines of Na-atom, Paschen Back effect of single valence e-system. Weak field stark effect of Hydrogen. Discrete set of electronic energies of molecules, quantisation of vibrational and rotational energies Raman effect; stoke's and anti stoke's lines.
June	UNIT-III Main features of a laser: Directionality, high intensity, high degree of coherence, spatial and temporal coherence, Einstein's coefficients and possibility of amplification, momentum transfer, life time of a level, kinetics of optical absorption, Threshold condition for laser emission
	laser pumping, He-Ne laser and RUBY laser (Principle, construction and working). Application of laser in the field of medicine and industry.