LESSONPLAN (APPLIEDPHYSICS-II)

Discipline :Math & Sc		Semester:2ND Sem(S-2025)	Name of theTeaching Faculty: Sipra Subhadarshini Jena, Lect Stage II Physics
Subject: TH 2A		No.of Days/ Per week class allotted:04	Semester From date: 04.02.2025 To Date: 17.05.2025
MONTH	Week	Day	Topics
FEBRUARY	2ND	2	UNIT-1:Wavemotion,transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length and their relationship.
		3	Sound and light waves and their properties, wave equation(y=rsint)amplitude, phase, phase difference
		5	Principle of superpositionofwaves and beat formation
	3RD	1	Simple Harmonic Motion(SHM):definition, expression for displacement,velocity, acceleration, time period, frequency etc
		2	Simple harmonic progressive wave and energy transfer, study of vibration of cantileveranddeterminationofitstimeperiod,Free, forced and resonant vibrations with examples.
		3	Acousticsofbuildings–reverberation,reverberationtime,echo,noise,coefficient of absorption of sound, methods to control reverberation time and their applications
		5	Ultrasonic waves–Introduction and properties,engineering and medical applications of ultrasonic.
	4TH	1	UNIT-2: Basic optical laws; reflection and refraction, refractive index, Images and image formation by mirrors, lens and thin lenses, lens formula, power of lens, magnification and defects.
		2	Total internal reflection,Critical angleandconditions for total internal reflection, applications of total internal reflection in optical fiber.
		3	Optical Instruments; simple and compound microscope, astronomical telescope in normal adjustment, magnifying power, resolving power, uses of microscope and telescope, optical projection systems.
		5	REVISION
	5TH	1	CLASSTEST
		2	UNIT-3:Coulombs law, unit of charge,Electric field,Electric lines of forceand their properties, Electric flux, Electric potential and potential difference
		5	Gauss law: Application of Gauss law to find electric field intensity of straight charged conductor, plane charged sheet and charged sphere.
MARCH		1	Capacitor and its working, Types of capacitors,Capacitance and its units. Capacitance of a parallel plate capacitor, Series and parallel combination of capacitors

	2ND	2	Series and parallel combination of capacitors (related numerical),dielectric and its effect on capacitance, dielectric break down.
		5	UNIT-4:Electric Current and its units,Direct andalternating current,Resistance and its units, Specific resistance
	3RD	1	Conductance, Specific conductance,Series and parallel combination of resistances. Factors affecting resistance of a wire, carbon resistances and colour coding.
		2	Ohm's law and its verification, Kirchhoff's laws, Wheatstone bridge and its applications(slide wire bridgeonly),Concept of terminal potential difference and Electromotive force(EMF)
		3	Heating effect of current, Electric power, Electric energy and its units (related numerical problems), Advantages of Electric Energy over other forms of energy.
	4TH	1	REVISION
		2	CLASSTEST
	5TH	1	UNIT-5:Types of magnetic materials;dia,para and ferromagnetic with their properties, Magnetic field and its units,magnetic intensity,magnetic lines of force, magnetic flux and units, magnetization
		2	Concept of electromagnetic induction, Faraday's Laws, Lorentz force (force on moving charge in magnetic field).Force on current carrying conductor,force on Rectangular coil placed in magnetic field.
		3	Moving coil galvanometer; principle,construction and working,Conversion of a galvanometer into ammeter and voltmeter.
		5	UNIT-6:Energy bands in solids,Types of materials(insulator,semi-conductor, conductor), intrinsic and extrinsic semiconductors
APRIL	1ST	3	p-njunction,junction diode and V-I characteristics,types of junction diodes.Diodeas rectifier – half wave and full wave rectifier (centre taped).
		5	Transistor;description and three terminals,Types-pnp and npn,someelectronic applications (list only).
	2ND	1	Photocells, Solar cells;working principle and engineering applications.
		2	REVISION
		3	CLASSTEST
		5	UNIT-7:Lasers:Energylevels,ionization and excitation potentials;spontaneous and stimulated emission
	3RD	2	Population inversion,pumping methods,optical feedback,
		3	Types of lasers; Ruby, He-Ne and semiconductor,laser characteristics,engineering and medical applications of lasers.
	4TH	1	Fiber Optics: Introduction to optical fibers,light propagation,acceptance angle and numerical aperture,
		2	Fiber types, applicationsin; tele-communication, medical and sensors.
		3	Nano-science and Nano-technology:Introduction,nanoparticles and nanomaterials, properties at nanoscale, nanotechnology
		5	Nanotechnology based devices and applications

	5TH	1	REVISION
		2	CLASSTEST
		3	REVISION
MAY	1ST	5	REVISION
	2ND	1	REVISION
		2	REVISION
		3	REVISION
		5	CLASSTEST
	3RD	2	CLASSTEST
		3	CLASSTEST
		5	CLASSTEST

4.2.25

Signature of the faculty

Principal
Govt. Polytechnic Dhenkanal