PNS SCHOOL OF ENGINEERING & TECHNOLOGY, MARSHAGHAI
DEPARTMENT OF SCIENCE AND HUMANITIES
LESSON PLAN OF APPLIED PHYSICS –II (TH 2)

BRANCH : CIVIL,CSE,ETC DISCIPLINE : SEMESTER: 2ND SUBJECT: APPLIED PHYSICS II NO.OF DAYS/WEEK CLASS ALLOTED: 05			NAME OF THE TEACHING FACULTY: MR KSHITISH KUMAR SINGH
			SEMESTER FROM DATE: 04/02/2025 TO DATE: 17 /05 /2025 NO OF WEEKS: 15
WEEK	**UNIT**	**CLASS DAY**	**THEORY TOPICS**
1st	UNIT - 1: Wave motion and its applications	1	Wave motion, transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length and their relationship
		2	Sound and light waves and their properties, wave equation (y = r sin t) amplitude, phase, phase difference
		3	principle of superposition of waves and beat formation
		4	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency etc.
		5	Simple harmonic progressive wave and energy transfer
2nd		6	study of vibration of cantilever and determination ofits time period
		7	Free, forced and resonant vibrations with examples
		8	Acoustics of buildings – reverberation, reverberation time, echo, noise
		9	coefficient of absorption of sound, methods to control reverberation time and their applications
		10	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic
3rd	UNIT - 2: Optics	11	Basic optical laws; reflection and refraction
		12	refractive index, Images and image formation by mirrors
		13	lens and thin lenses, lens formula, power of lens
		14	magnification and defects. Total internal reflection
		15	Critical angle and conditions for total internal reflection, applications of total internal reflection in optical fiber
4th		16	simple microscope in normal adjustment, magnifying power, resolving power, uses, optical projection systems.
		17	Compound microscope in normal adjustment, magnifying power, resolving power, uses, optical projection systems.
		18	Astronomical telescope in normal adjustment, magnifying power, resolving power, uses, optical projection systems.
	UNIT - 3: Electrostatics	19	Coulombs law, unit of charge,
		20	Electric field, Electric lines of force and their properties
5th		21	, Electric flux, Electric potential and potential difference
		22	Gauss law: Application of Gauss law to find electric field intensity of straight charged conductor
		23	, plane charged sheet and charged sphere
		24	Capacitor and its working, Types of capacitors, Capacitance and its units
		25	Capacitance of a parallel plate capacitor, Series and parallel combination of capacitors (related numerical)
		26	dielectric and its effect on capacitance, dielectric break down

6th	**UNIT - 4: Current Electricity**	27	Electric Current and its units, Direct and alternating current
		28	Resistance and its units, Specific resistance, Conductance, Specific conductance
		29	Series and parallel combination of resistances
		30	Factors affecting resistance of a wire, carbon resistances and colour coding
7th		31	Ohm's law and its verification, Kirchhoff's laws
		32	Wheatstone bridge and its applications (slide wire bridge only)
		33	Concept of terminal potential difference and Electromotive force (EMF)
		34	Heating effect of current, Electric power
		35	Electric energy and its units (related numerical problems)
		36	Advantages of Electric Energy over other forms of energy
8th	**UNIT - 5: Electromagnetism**	37	Types of magnetic materials; dia, para and ferromagnetic with their properties
		38	Magnetic field and its units, magnetic intensity
		39	magnetic lines of force, magnetic flux and units
		40	magnetization. Concept of electromagnetic induction, Faraday's Laws
9th		41	Lorentz force (force on moving charge in magnetic field). Force on current carrying conductor, force on rectangular coil placed in magnetic field.
		42	Moving coil galvanometer; principle, construction and working, Conversion of a galvanometer into ammeter and voltmeter
		43	Moving coil galvanometer; principle, construction and working, Conversion of a galvanometer into ammeter and voltmeter
10th	**UNIT - 6: Semiconductor Physics**	44	Energy bands in solids
		45	Types of materials (insulator, semi-conductor, conductor)
		46	, intrinsic and extrinsic semiconductors, p-n junction
		47	junction diode and V-I characteristics,types of junction diodes
		48	Diode as rectifier – half wave and full wave rectifier (centre taped)
		49	Transistor; description and three terminals, Types- pnp and npn, some electronic applications (list only)
		50	Photocells, Solar cells; working principle and engineering applications
11th	**UNIT - 7: Modern Physics**	51	Lasers: Energy levels, ionization and excitation potentials
		52	spontaneous and stimulated emission; population inversion, pumping methods, optical feedback
		53	Types of lasers; Ruby, HeNe and semiconductor
		54	laser characteristics, engineering and medical applications of lasers
		55	Fiber Optics: Introduction to optical fibers, light propagation
12th		56	acceptance angle and numerical aperture, fiber types
		57	applications in; telecommunication, medical and sensors
		58	Nanoscience and Nanotechnology: Introduction, nanoparticles
		59	nanomaterials, properties at nanoscale, nanotechnology
		60	nanotechnology based devices and applications

Sunakar Singh.

Signature of the

Kshitish Kumar Singh.

Signature of the Teacher