LESSON PLAN

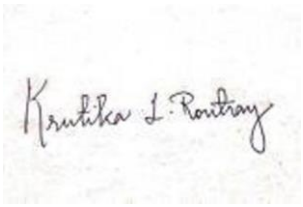
Name of the Institute:	**C. V. RAMAN POLYTECHNIC**
Department:	**BASIC SCIENCE AND HUMANITIES**
Semester/Division/Branch:	**2ND SEM/ ALL BRANCHES**
Subject Name with code:	APPLIED PHYSICS 2
Total No. of Class (Required):	**60**
Faculty Name:	**Dr. Krutika L. Routray**

Class No.	*Brief description of the Topic/Chapter to be taught*	Remarks
1	Wave motion - Introduction	
2	Terms - displacement, amplitude, time period,frequency,wavelength,wave velocity,	
3	Transverse wave motion	
4	longitudinal wave motion	
5	Difference b/w Transverse & longitudinal wave motion	
6	• Relationship among wave velocity, frequency and wave length. • Simple Harmonic Motion (SHM): definition,examples	
7	• Cantilever • Vibrations & its types	
8	• Acoustics of buildings – reverberation • reverberation time	
9	Echo, noise, coefficient of absorption of sound	
10	methods to control reverberation time.	
11	Ultrasonics	
12	Engineering applications of Ultrasonics	
13	Optics – Introduction.	

14	Reflection of Light • Refraction of Light	
15	• Refractive index • Total internal reflection • Critical angle • Applications of TIR • conditions for TIR	
16	Super Position of Waves, Definition of Interference, Diffraction and Polarization of Waves • Microscope, telescope& their uses	
17	Introduction of Lens, lens Formula (no derivation), Power of Lens • Based numerical	
18	Assignment – wave motion and Ultrasonics	
19	Test	
20	Electrostatics and Electricity – Introduction	
21	Coulombs law • Unit charge	
22	Electric field • Electric lines of force,its properties	
23	Electric Intensity • Electric Flux	
24	Electric potential • Electric field intensity due to a point charge.	
21	Gauss law(Statement and derivation)	
22	Capacitor • Capacitance	
23	Series combination of capacitors	
24	parallel combination of capacitors • Ohm's Laws	
25	Numerical based on Grouping of capacitors	
26	dielectric and its effect on capacitance, dielectric break down.	
27	Revision and test	
28	Introduction to Current Electricity	
29	Electric Current and its units, Direct and alternating current, Resistance and its units, Specific resis tance, Conductance, Specific conductance,	
30	Series and parallel combination of resistances. Factors affecting resistance of a wire, carbon resistances and colour coding	
31	Ohm's law and its verification , numericals	
32	Kirchhoff's laws, Wheatstone bridge and its applications (slide wire bridge only)	

33	Concept of terminal potential difference and Electro motive force (EMF)	
34	Heating effect of current	
35	Electric power, Electric energy and its units (related numerical problems)	
36	Advantages of Electric Energy over other forms of energy	
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, magnetization	
40	Concept of electromagnetic induction	
41	Faraday's Laws, Lorentz force (force on moving charge in magnetic field	
42	Force on current carrying conductor, force on rectangular coil placed in magnetic field. Solve numerical problems	
43	Moving coil galvanometer; principle, construction and working, Conversion of a galvanometer into ammeter and voltmeter..	
44	Revision and test . Assignment	
45	Introduction to Semiconductor Physics	
46	Energy bands in solids, Types of materials (insulator, semi-conductor, conductor),	
47	intrinsic and ex trinsic semiconductors, p-n junction, junction diode and V-I characteristics	
48	types of junction diodes. Diode as rectifier – half wave and full wave rectifier (centre taped).	
49	Transistor; description and three terminals, Types- pnp and npn, some electronic applications	
50	Photocells, Solar cells; working principle and engineering applications	
51	Introduction to Modern Physics	
52	Lasers: Energy levels, ionization and excitation potentials	
53	spontaneous and stimulated emission; population inversion, pumping methods, optical feedback	

54	Types of lasers; Ruby, He-Ne and semicon ductor, laser characteristics, engineering and medical applications of lasers.	
55	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aper ture,	
56	fiber types, applications in; telecommunication, medical and sensors	
57	Nanoscience and Nanotechnology- : Introduction, nanoparticles and nanomaterials, properties at nanoscale, nanotechnology	
58	Nanotechnology based devices and applications.	
59	Test	
60	revision	



Signature of the Faculty **Signature of the H.O.D**