

## Lesson Plan

Name of the Institute:	C. V. Raman Polytechnic
Department:	Basic Science
Semester/Division/Branch:	1 <sup>st</sup> & 2 <sup>nd</sup> Sem/ All Branches
Subject Name with code:	Engineering Physics (2.a.)
Total No. of Class (Required):	60
Faculty Name:	Omkar Sharma

Theory		Remarks
Class No.	Topic (including assignment /test)	
1	Introduction of units and Dimensions Physical quantities, Fundamental and derived units, Systems of units	
2	Dimensional formulae of physical quantities. Dimensional equations and Principle of homogeneity.	
3	Checking the dimensional correctness of Physical relations, Limitations of dimensional analysis	
4	Scalar and Vector quantities	

	(definition and concept), Representation of a Vector – examples, types of vectors.	
5	Introduction of Force and motion and scalar and vector quantities with Examples, representation of vector	
6	. Triangle and Parallelogram law of vector Addition. Numericals. Resolution of Vectors – Simple Numericals on Horizontal and Vertical components. Vector multiplication (scalar product and vector product of vectors).	
7	<b>Revision and numerical practice</b>	
8	Concept of Rest and Motion. Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units).	
9	Equations of Motion under Gravity (upward and downward motion) - no derivation. Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula & SI units).	
10	Relation between –(i) Linear & Angular velocity, (ii) Linear & Angular acceleration).	
11	Define Projectile, Examples of Projectile. Expression for Equation of Trajectory, Time of Flight, Maximum Height	
12	Horizontal Range for a projectile fired at an angle, Condition for maximum Horizontal Range	
13	Numerical practice and derivations <b>Revision test</b>	
14	Work – Definition, Formula & SI units. Friction – Definition & Concept. Types of friction (static, dynamic), Limiting Friction	
15	Laws of Limiting Friction, Coefficient of Friction – Definition & Formula	
16	Methods to reduce friction, Simple Numericals.	
17	Numerical practice and derivations <b>Revision</b>	

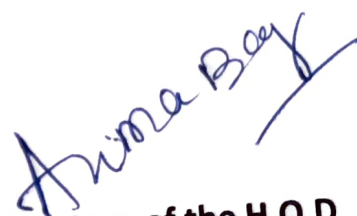
8	<b>Class test</b>	
19	Newton's Laws of Gravitation, Universal Gravitational Constant (G)- Definition, Unit and Dimension.	
20	Acceleration due to gravity (g)-Definition and Concept.	
21	Definition of mass and weight. Relation between g and G. Variation of g with altitude and depth	
22	Kepler's Laws of Planetary Motion (Statement only).	
23	<b>Revision and examples.</b>	
24	Simple Harmonic Motion (SHM) - Definition & Examples. Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle in SHM.	
25	Wave motion – Definition & Concept. Transverse and Longitudinal wave motion – Definition, Examples & Comparison	
26	Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period)	
27	Derivation of Relation between Velocity, Frequency and Wavelength of a wave	
28	Ultrasonics – Definition, Properties & Applications	
29	<b>Class test</b>	
30	Heat and Temperature – Definition & Difference, Units of Heat, Mechanical Equivalent of Heat (Definition, Unit)	
31	Thermal Expansion – Definition & Concept, Expansion of Solids (Concept) Specific Heat, Numericals on specific heat	
32	Change of state, Latent Heat, Numericals on Latent Heat	
33	Coefficient of linear, superficial and cubical expansions of Solids – Definition & Units., Relation between $\alpha$ , $\beta$ & $\gamma$ , Work and Heat - Concept & Relation	
34	First Law of Thermodynamics (Statement and concept only)	

35	<b>Class test</b>	
36	Reflection & Refraction –Laws of reflection and refraction Refractive index – Definition, Formula & Simple numerical.	
37	Critical Angle and Total internal reflection	
38	Refraction through Prism (Ray Diagram & Formula	
39	Fiber Optics – Definition, Properties & Applications	
40	Electrostatics, Explanation of Coulomb's laws, Definition of Unit charge.	
41	Absolute & Relative Permittivity ( $\epsilon$ ), Electric potential and Electric Potential difference	
42	Electric field, Electric field intensity (E) Capacitance - Definition, Formula & Unit	
43	Coulomb's Laws in Magnetism – Statement & Explanation, Unit Pole	
44	Series and Parallel combination of Capacitors -Formula for effective/Combined/total capacitance & numericals	
45	Magnet, Properties of a magnet, Magnetic field, Magnetic Field intensity (H) , Magnetic lines of force (Definition and Properties)	
46	Magnetic Flux ( $\Phi$ ) & Magnetic Flux Density (B) – Definition, Formula & Unit.	
47	Electric Current, Ohm's law and its applications. Kirchhoff's laws (Statement & Explanation with diagram )	
48	Series and Parallel combination of resistors, Formula for effective/ Combined/ total resistance & Simple numericals	
49	Kirchhoff's laws (contd..). Application of Kirchhoff's laws to Wheatstone bridge	
50	Balanced condition of Wheatstone's Bridge –Condition of Balance (Equation).	
51	Numericals	

	<b>Class test</b>	
	Electromagnetism – Definition & Concept., Lenz's Law	
	Force acting on a current carrying conductor placed in a uniform magnetic field	
	Fleming's Right Hand Rule, Fleming's Left Hand Rule, Faraday's Laws of Electromagnetic Induction	
	Comparison between Fleming's Right Hand Rule and Fleming's Left Hand Rule.	
	LASER & laser beam (Concept and Definition) Principle of LASER (	
8	Population Inversion & Optical Pumping, Properties & Applications of LASER	
59	Wireless Transmission – Ground Waves, Sky Waves, Space Waves (Concept & Definition)	
60	Revision and test.	



Signature of the Faculty



Signature of the H.O.D