Lesson Plan

Name of the Institute:	**C. V. Raman Polytechnic**
Department:	**Basic Science**
Semester/Division/Branch:	**1st & 2nd 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 andDimensions Physical quantities, Fundamental and derived units, Systems ofunits	
2	Dimensional formulae of physical quantities. Dimensional equations and Principle of homogeneity.	
3	Checking the dimensionalcorrectness of Physical relations, Limitations ofdimensional 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 quantites with Examples, representation of vector	
6	. Triangle and Parallelogramlaw of vector Addition.Numericals. Resolution of Vectors – Simple Numericals on Horizontal and Vertical components. Vector multiplication (scalar product and vector product of vectors).	
7	**Revision and numericalpractice**	
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 velocityand 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 **Revision test**	
14	Work – Definition, Formula & SI units. Friction – Definition & Concept. Types of friction (static, dynamic), LimitingFriction	
15	Laws of Limiting Friction,Coefficient of Friction – Definition & Formula	
16	Methods to reduce friction,Simple Numericals.	
17	Numerical practice andderivations **Revision**	

18	**Class test**	
19	Newton's Laws of Gravitation,Universal Gravitational Constant (G)- Definition, Unitand 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	**Revision and examples.**	
24	Simple Harmonic Motion (SHM) - Definition & Examples. Expression (Formula/Equation)for displacement, velocity, acceleration of a body/ particlein 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 betweenVelocity, Frequency and Wavelength of a wave	
28	Ultrasonics – Definition, Properties & Applications	
29	**Class test**	
30	Heat and Temperature – Definition & Difference, Units of Heat, Mechanical Equivalentof 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, superficialand cubical expansions of Solids – Definition & Units., Relation between α, β & γ, Work and Heat - Concept &Relation	
34	First Law of Thermodynamics(Statement and concept only)	

35	**Class test**	
36	Reflection & Refraction –Lawsof reflection and refraction Refractive index – Definition, Formula & Simple numerical.	
37	Critical Angle and Totalinternal reflection	
38	Refraction through Prism (RayDiagram & Formula	
39	Fiber Optics – Definition,Properties & Applications	
40	Electrostatics, Explanation of Coulombs laws, Definition ofUnit charge.	
41	Absolute & Relative Permittivity (ε), Electric potential and Electric Potentialdifference	
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 (Φ) & MagneticFlux Density (B) – Definition, Formula & Unit.	
47	Electric Current, Ohm's law and its applications. Kirchhoff'slaws (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	

	Class test	
	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 andFleming's Left Hand Rule.	
	LASER & laser beam (Conceptand Definition) Principle of LASER (	
8	Population Inversion & OpticalPumping, 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