Month	Name of Topic	Detailed syllabus	Period for class room teaching & Practical	Period for computer aided teaching	Total Period
June	Physical World and Measurement	Physics - scope and excitement; nature of physical laws; Physics, technology and society.Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.	5	1	10
	Practical	**Experiment 1A**.To measure diameter of small spherical/ cylindrical body using Vernier Callipers **Experiment 2A**. To measure internal diameter and depth of a given beaker/ calorimeter using Vernier Callipers& to find its volume. **Activity-1**:- To make a paper scale of given least count e.g. 0.2 cm & 0.5 cm	4		
July	Physical World and Measurement	Dimensions of physical quantities, dimensional analysis and its applications.	22	4	34
	Kinematics	Frame of reference, Motion in a straight line: Position-time graph, speed and velocity. Elementary concepts of differentiation and integration for describing motion. Uniform and non uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time, position-time graphs. Relation for uniformly accelerated motion (graphical treatment). Scalar and vector quantities; Position and displacement vectors, general vectors and notation; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity. Unit vector; Resolution of a vector in a plane -			

		rectangular components. Scalar and Vector product of vectors. Motion in a plane. Cases of uniform velocity and uniform acceleration, projectile and circular motion			
	Practical	**Experiment 3A.** To measure diameter of a given wire using Screw guage. **Experiment 4A**. To measure thickness of given paper sheet using Screw guage **Experiment 5A**.To measure volume of an irregular lamina using screw gauge. **Experiment 6A.** To determine radius of curvature of a given spherical surface by spherometer **Activity: 2**. To study the variation in the range of jet of water with angle of projection	8		
August	Laws of Motion	Intuitive Concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications.Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction,lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).	20	4	32
	Work energy and power	Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power.			
	Practical	**Experiment 7A.** to find the weight of a given body, using parallogram law of vectors, **Experiment 8A.** Using simple pendulum plot L-T & L-T2 Graph. Hence find the effective length second pendulum using appropriate graph **Activity 3:** To study the conservation of energy of a ball rolling down on a inclined plane (using double inclined plane)	8		

September	Work Energy & Power	Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non-conservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.	18	6	32
	Motion of system of particles & rigid body	Centre of mass of a two-particle system, momentum conservation and centre of mass motion.Centre of mass of a rigid body; centre of mass of uniform rod. Moment of a force, torque, angular momentum, conservation of angular momentum with some examples.Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions; moment of inertia, radius of gyration.Values of moments of inertia, for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.			
	Practical	**Experiment 1B**. To determine young's modulus of elasticity of material of a given wire **Experiment 2B**. To find the force constant of a helical spring by plotting a graph between load and extension. **Activity 4**. To determine of mass of given body using a meter scale by principal of moment.	8		
October	Gravitation	Kepler's laws of Planetary motion, The universal law of gravitation, Acceleration due to gravity. & its variation with altitude and depth. Gravitational potential energy, gravitational potential & held escape velocity, orbital velocity of a satellite, geostationary satellite.	14	4	26
	Practical	**Experiment 3B.1**. to study the relation between frequency and length of a given wire under constant tension using sonometer. **Experiment 3B.2** to study the relation between the length of given wire and tension for constant frequency using sonometer.	8		
November	Properties of bulk matter	Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity, poisson's ratio;	20	4	38

		elastic energy. Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes). Effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Critical velocity. Bernoulli's theorem and its applications. Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise. Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity. Heat transfer-conduction, convection and radiation, Qualitative ideas of Blackbody radiation, green house effect, thermal conductivity, Newton's law of cooling, Wein's displacement Law, Stefan's Law.	14		
	Practical	**Experiment 4B.** to determine surface tension of water by capillary rise method **Experiment 5B.**To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body. **Activity 5.** To observe and explain the effect of heating on a bimetallic strip. **Activity 6.** to study the effect of detergent on surface tension by observing capillary rise.			
December	Thermodyna mics	Thermal equilibrium and definition of temperature (zeroth law of thermodynamics). Heat, work and internal energy. First law of thermodynamics. Isothermal and adiabatic processes. Second law of thermodynamics: reversible and irreversible processes. Heat engines and refrigerators.	14	4	24
	Kinetic	Equation of state of a perfect gas, work done in compressing a gas.			

	theory of Gases	**Experiment 6B.** to study the relationship between temperature of a hot body and time by plotting a cooling curve.			
		Activity 7. To observe change of state and plot a cooling curve for molten wax	6		
	Practical	**Activity 8**. To observe the change in the level of liquid in a container on heating and interpret the observation			
January	Kinetic theory of gases	Kinetic theory of gases - assumptions, concept of pressure. Kinetic energy and temperature; rms speed of gas molecules; degrees of freedom, law of equipartition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.	20	4	28
	Oscillation & waves	Periodic motion - period, frequency, displacement as a function of time. Periodic functions.Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a spring–restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum–derivation of expression for its time period; free and forced and damped oscillations (qualitative ideas only), resonance.			
	Practical	**Experiment 7B.** to find the speed of sound in air at room temperature using resonance tube by two resonance position	4		
February	Oscillation & waves	Wave motion. Transverse and longitudinal waves, speed of wave motion. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect.	10	2	27
		Revision of Theory & Practical.	15		

COURSE STRUCTURE
Class XI (Theory)

Time: Three Hours   **Max Marks: 70**

Unit	Name of the Unit	Weightage
1	Physical World & Measurement	03
2	Kinematics	10
3	Laws of Motion	10
4	Work, Energy & Power	06
5	Motion of System of particles & Rigid Body	06
6	Gravitation	05
7	Properties of Bulk Matter	10
8	Thermodynamics	05
9	Behavior of Perfect Gas & Kinetic Theory of gases	05
10	Oscillations & Waves	10

Class XI (Practical)

Every student will perform at least 15 experiments (7 from section A and 8 from Section B) The activities mentioned here should only be for the purpose of demonstration. One Project of three marks is to be carried out by the students.

B. Evaluation Scheme for Practical Examination: *Total Periods : 60*

      Two experiments one from each section   **8+8 Marks**

      Practical record (experiments & activities)   **6 Marks**

      Project   **3 Marks**

      Viva on experiments & project   **5 Marks**