



CLASS – XI

PHYSICS

Month	Unit	Topic	Sub Topic
April	–	Bridge Course	Elementary Ideas of motion liner motion, uniform and non uniform motion, circular and oscillatory motion equation of motions. Elementary Mathematical Tools — Logarithm, differentiation and integration. Vectors and different types of graphs.
May & June	I & II	Physical World and Measurement Kinematics	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. Dimensions of physical quantities, dimensional analysis and its applications Frame of reference. Motion in a straight line : Position-time graph, speed and velocity average speed and non-uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time, position-time, graphs, relations for uniformly accelerated motion (graphical treatment). Elementary concepts of differentiation and integration for describing motion. Scaler and vector and notation, equality of vectors, multiplication of vectors by a real number; addition and ubtraction of vectors. Relative velocity.



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September	VI VII	Gravitation	<p>Keplar's laws of planetary motion. The universal law of gravitation.</p> <p>Properties of Acceleration due to gravity and its variation with attitude and depth.</p> <p>Gravitational potential energy; gravitational potential. Escape velocity. Orbital velocity of a satellite. Elastic behavior, Stress-strain relation ship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity.</p> <p>Pressure due to fluid column; Pascal's law and its applications (hydrauli lift and hydraulic brakes). Effect of gravity on fluid pressure.</p>
October	VII	Properties of Bulk Matter	<p>Viscosity, Stokes' law terminal velocity, Reynold's number, streamline adn turbulent flow. Bernoulli's theorem and its applications.</p> <p>Surface energy and surface tension, angle of contact, application of surface tension ideas to drops, bubbles and capillary rise. Heat, temperature, thermal expansion; specific heat - calorimetry; change of state - latent heat. Heat transfer-conduction, convection and rediation, thermal conductivity, Newton's law of cooling. Cp, Cv, Black body, Wein Displacement Law Stefan's Law, Green House Effect.</p>
November	VIII	Thermodynamics Behaviour of Perfect Gas and Kinetic Theory	<p>Thermal equilibrium and definition of tempera ture (zeroth law of thermodynamics). Heat, work and internal energy. First law of thermo dynamics.</p> <p>Second law of thermodynamics: reversible and irreversible processes. Heat Engines and refrigerators.</p>



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			Equation of state of a perfect gas, work done on compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic energy and temperature; rms speed of gas molecules, 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 heats of gases; concept of mean free path, Avogadro's number.
December	X	Oscillations	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 forced and damped oscillations (qualitative ideas only) resonance.
January	XI	Waves	Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement relation for a progressive. 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. Ray Optics - Reflection of light, Spherical mirrors, Mirror formula. Reflection of Light. Total Internal Reflection and its application, optical fibres, Refraction at Spherical surfaces, Lens, Thin Lens formula lens makers formula power of lens magnification combination of Lens. Dispersion and prism, Scattering optical Instruments - Microscope and Astromical Talescape.
January		Revision	REVISION.