KOTHARI INTERNATIONAL SCHOOL
GRADE - 11   ANNUAL ACADEMIC PLAN
SUBJECT: PHYSICS   SESSION: 2022-23
NAME OF THE TEACHER- VIPIN KUMAR

THEORY – 80 MARKS   PRACTICAL – 20 MARKS

MONTH	TOPIC	CONTENT(SUB-TOPICS)	SUBJECT ENRICHMENT ACTIVITY
MAY (05 DAYS)	INTRODUCTION ABOUT PHYSICS	DEFINITION OF PHYSICS & ITS RELATION WITH SURROUNDINGS	
JUNE SUMMER VACATION	-	-	
JULY (20 DAYS)	**UNITS & DIMENSION, ERROR ANALYSIS BASIC MATHEMATICAL TOOLS MOTION IN A STRAIGHT LINE**	Unit definition its types, dimesnion and its application, error in measurements its types, calculation of different type of errors Mathematical tools useful in physics Motion its types, graphical representation of motion	LAB PRACTICAL To measure diameter of a given wire and thickness of a given sheet using screw gauge.
AUGUST (19 DAYS) UNIT TEST – 1 (COMMENCING 08 AUGUST & ENDING 26 AUGUST 2022)	**MOTION IN A PLANE,**	• Scalar and vector quantities • Position and displacement vectors • general vectors and their notations • equality of vectors, multiplication of vectors by a real number • addition and subtraction of vectors • Relative velocity • Unit vector	FLOW CHART PREPARATION ON TYPES OF VECTOR AND THEIR PROPERTIES LAB PRACTICAL To find the weight of a given body using parallelogram law of vectors.

	LAWS OF MOTION	- Resolution of a vector in a plane - rectangular components - Scalar and Vector product of vectors - Motion in a plane (PROJECTILE MOTION ONLY) - Cases of uniform velocity and uniform acceleration-projectile motion - Uniform circular 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 a level circular road, vehicle on banked road)	WORKING MODEL FOR PROJECTILE MOTION LAB PRACTICALS To study the relationship between force of limiting friction and normal reaction and to find the co-efficient of friction between a block and a horizontal surface.
<mark>**SEPTEMBER (22 DAYS)**</mark> <mark>**PRACTICAL EXAMINATION COMMENCES 19 SEPTEMBER & ENDS 26 SEPTEMBER 2022.**</mark>	**WORK, ENERGY AND POWER**	- Work done by a constant force and a variable force - Kinetic energy - Work-energy theorem - Power - Notion of potential energy - Potential energy of a spring - Conservative forces	ACTIVITIES 1. To measure the force of limiting friction for rolling of a roller on a horizontal plane. 2. To study the variation in range of a projectile with angle of projection.

	SYSTEM OF PARTICLES & ROTATIONAL MOTION	• 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 • 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 a uniform rod • Moment of a force • Torque • angular momentum • laws of conservation of angular momentum and its applications • 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	3. To study the conservation of energy of a ball rolling down on an inclined plane (using a double inclined plane)
OCTOBER (13 DAYS) **HALF YEARLY EXAMINATION COMMENCES 06 OCTOBER & ENDS 17 OCTOBER 2022**	**GRAVITATION**	• Keplar's laws of planetary motion • The universal law of gravitation • Acceleration due to gravity and its variation with altitude and depth • Gravitational potential energy and gravitational potential • Escape velocity • Orbital velocity of a satellite • Geo-stationary satellites	

	MECHANICAL PROPERTIES OF SOLIDS	- Elastic behavior - Stress-strain relationship - Hooke's law - Young's modulus - Bulk modulus - Shear modulus of rigidity - Poisson's ratio - Elastic energy	LAB PRACTICAL To determine Young's modulus of elasticity of the material of a given wire. To find the force constant of a helical spring by plotting a graph between load and extension.
NOVEMBER (21 DAYS)	MECHANICAL PROPERTIES OF FLUIDS	- Pascal's law and its applications (hydraulic lift and hydraulic brakes) - Effect of gravity on fluid pressure - Viscosity - Stokes' law - terminal velocity - streamline and turbulent flow - critical velocity - Bernoulli's theorem and its applications - Surface energy and surface tension - angle of contact - excess of pressure across a curved surface - application of surface tension ideas to drops - bubbles and capillary rise	LAB PRACTICAL To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body. To study the relation between frequency and length of a given wire under constant tension using sonometer.
	THERMAL PROPERTIES OF MATTER	- Heat, temperature, thermal expansion - Thermal expansion of − - Solids - Liquids - Gases - Anomalous expansion of water - Specific heat capacity	

	THERMODYNAMICS	• Cp, Cv – calorimetry • Change of state • Latent heat capacity • Heat transfer − o Conduction o Convection o radiation • Thermal conductivity • Qualitative ideas of Blackbody radiation • Wein's displacement Law • Stefan's law • Greenhouse effect • Thermal equilibrium and definition of temperature o Zeroth law of thermodynamics • Heat, work and internal energy • First law of thermodynamics • Isothermal and adiabatic processes • Second law of thermodynamics − o Reversible and irreversible processes • Heat engine and refrigerator	
	KINETIC THEORY OF GASES	• Equation of state of a perfect gas • Work done in compressing a gas • Kinetic theory of gases − o Assumptions o Concept of pressure • Kinetic interpretation of temperature − o rms speed of gas molecules o Degrees of freedom o Law of equi-partition of energy (statement only) and application to specific heat capacities of gases	POWER POINT PRESENTATION

		o Concept of mean free path o Avogadro's number	LECTURE VIDEOS
DECEMBER 2022.	**OSCILLATION & WAVES**	• Periodic motion - time 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 • 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	
JANUARY (15 DAYS) ANNUAL EXAMINATION PRACTICALS COMMENCES ON 11 JANUARY & ENDS ON 18 JANUARY 2023.	REVISION		

6

		7	
FEBRUARY (20 DAYS) ANNUAL EXAMINATION **ANNUAL EXAMINATION COMMENCES ON 13 FEBRUARY & ENDS ON 24 FEBRUARY 2023.**	**REVISION**		

***PRACTICAL / PROJECT WORK WILL RUN SIMULTANEOUSLY WITH ACADEMIC TRANSACTION.