

WEEKLY SPLIT-UP SYLLABUS- 2023-24

CLASS - 11

SUBJECT - PHYSICS

Month	Week	Chapter	Topics	period	Learning outcomes	Practical syllabus (Total No. of Required Priods = 60) (TO BE COMPLETED IN BETWEEN JUNE 23 TO JAN 24) NO. OF PACTICALS WILLBE COMPLETED AS PER JAC SYLLABUS
June	WEEK 3	1. Units and Measurement (6 Periods)	Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Significant figure. Dimensions of physical quantities, dimensional analysis and its applications. Practice Session /Q A Session/ Numerical of above taught topics	6	1. Knowledge: (Student can Name, Write, Speak ,Define): Units of measurement; systems of units; SI units, fundamental and derived units. significant figures.Dimensions of physical quantities 2 .Comperhension: (Student can Explain, Discuss, Discribe): understand the Need of measurement along with basics of fundamental and derived units.understand the significance and importance of dimensional analysis, 3.Application: (Student can Derive, Solve Numericals, Apply in everyday life) : application of dimensional analysis; measuring. 4. Analysis: (Students can Correlate, Compare) : dimensional analysis ; 5. Synthesis: (Student can Visualize,Proof, Identify):Physical quantities and its dimension. 6. Evaluation: (Student can Appreciate,Present): Physical quantities and its dimension,derives formulae and equations.	SECTION A 1. To measure the diameter of a small spherical/cylindrical body using vernier callipers.
			2. To measure the internal diameter and depth of a given beaker/calorimeter using vernier callipers and hence find its volume.			
	WEEK 4	3. Motion in a Straight line (12 Periods)	Frame of reference. Motion in a straight line: Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Practice Session /Q A Session/ Numerical of above taught topics	12	1. Knowledge: (Student can Name, Write, Speak ,Define) : Frame of reference;Motion in a straight line; speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity.Uniformly accelerated motion, 2 . Comperhension: (Student can Explain, Discuss, Discribe,Understand):: understand motion and classification of motion.Motion in a straight line,Uniform and non-uniform motion,Uniformly accelerated motion, 3.Application: (Student can Derive, Solve Numericals, Apply in everyday life):Equation of motionin our daily life along with concepts of differentiation and integration for describing motion. 4. Analysis: (Students can Correlate, Compare, Plot graph): Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Uniformly	3. To measure the diameter of a given wire using a screw gauge.
			4. To measure the thickness of a given sheet using a screw gauge.			

WEEK 5	Elementary concepts of differentiation and integration for describing motion. Practice Session /Q A Session/ Numerical of above taught topics	accelerated motion, velocity-time and position-time graphs, relations for uniformly accelerated motion (graphical treatment),. 5. Synthesis: (Student can Visualize,Proof, Identify): Uniform and non-uniform motion,Uniformly accelerated moti 6. Evaluation: (Student can Appreciate,Present): Uniform and non-uniform motion;Uniformly accelerated motion .	5. To measure the volume of an irregular lamina using a screw gauge.
WEEK 1	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 . Practice Session /Q A Session/ Numerical of above taught topics	1. Knowledge (Student can Name, Write, State, Learn, Define): Scalar and vector quantities: Position and displacement vectors, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. ,Unit vectors. Resolution of a vector in a plane – rectangular components. Motion in a plane.Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion. 2 Comperhension (Student can Explain, Discuss, Discribe): understand basics of Scalar and Vector quantities along with its	6. To determine radius of curvature of a given spherical surface by a spherometer.

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<p>WEEK 2</p>	<p>4. Motion in a Plane (11 Periods)</p>	<p>Unit vectors. Resolution of a vector in a plane – rectangular components. Scalar & vector product of vectors, Motion in a plane. Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion. Practice Session /Q A Session/ Numerical of above taught topics</p>	<p>11</p> <p>Scalar and Vector quantities along with its Mathematical analysis (Addition, subtraction, Product, Resolution, Projection), understand the concept of Projectile and its mathematical analysis (Parabolic path, Maximum height attained, Range, Time of flight, Resultant velocity) 3.Application: (Student can Derive, Solve Numericals, Apply in everyday life) : equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. .Unit vectors. Resolution of a vector in a plane – rectangular components. Motion in a plane.Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion 4. Analysis: (Students can Correlate, Compare, Plot graph): equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. .Unit vectors. Resolution of a vector in a plane – rectangular components. Motion in a plane.Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion 5. Synthesis: (Student can Visualize,Proof, Identify) : equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. .Unit vectors. Resolution of a vector in a plane – rectangular components. Motion in a plane.Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion 6. Evaluation: (Student can Appreciate,Present): equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. .Unit vectors. Resolution of a vector in a plane – rectangular components. Motion in a plane.Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion</p>	<p>7. To determine the mass of two different objects using a beam balance.</p>
<p>WEEK 3</p>		<p>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. Practice Session /Q A Session/ Numerical of above taught topics</p>	<p>1. Knowledge: (Student can Name, Write, Speak ,Define): 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 . Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, circular motion 2 . Comprehension: (Student can Explain, Discuss, Describe,Understand):: 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. Equilibrium of</p>	<p>8. To find the weight of a given body using the parallelogram law of vectors.</p>
<p>WEEK4</p>		<p>Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction, lubrication. Practice Session /Q A Session/ Numerical of above taught topics</p>		<p>9. Using a simple pendulum, plot L-T and L-T² graphs. Hence find the effective length of a second’s pendulum using an appropriate graph.</p>

	WEEK 5	5. Laws of Motion (16 Periods)		16 linear momentum. Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, 3.Application: (Student can Derive, Solve Numericals, Apply in everyday life) : force. Inertia, Newton's first law of motion; Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum, Equilibrium of concurrent forces. Static and kinetic friction, rolling friction, lubrication. Centripetal force, vehicle on level circular road, vehicle on banked road. 4. Analysis: (Students can Correlate, Compare, Plot graph) : Static and kinetic friction, rolling friction,vehicle on level circular road, vehicle on banked road. 5. Synthesis: (Student can Visualize,Proof, Identify): Newton's second law of motion Newton's third law of motion. conservation of linear momentum , circular motion (vehicle on level circular road, vehicle on banked road) 6. Evaluation: (Student can Appreciate,Present): 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, Equilibrium of concurrent forces.laws of friction,Dynamics of uniform circular motion: Centripetal force,	10. To study the relationship between the force of limiting friction and normal reaction and to find the coefficient of friction between a block and a horizontal surface.
	WEEK 1		Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road). Practice Session /Q A Session/ Numerical of above taught topics		11. To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination (θ) by plotting graph between force and $\sin \theta$.
	WEEK 2		Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Practice Session /Q A Session/ Numerical of above taught topics	1. Knowledge (Student can Name, Write, State, Learn, Define) : Scalar product,Work, work-energy theorem, power, conservative forces, non-conservative forces, potential energy ,mechanical energy (kinetic and potential energies),elastic and inelastic collisions. 2 . Comperehension: (Student can Explain, Discuss, Discribe,Understand):: Scalar product of vectors. Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power, potential energy of a spring, conservative force and non-conservative force; , elastic and inelastic collisions in one and two dimensions. 3.Application: (Student can Derive, Solve Numericals, Apply in	SECTION B 1. To determine Young's modulus of elasticity of the material of a given wire.
	WEEK 3		Notion of potential energy, potential energy of a spring, conservative forces; non-conservative forces; Practice Session /Q A Session/ Numerical of above taught topics		2. To find the force constant of a helical spring by plotting a graph between load and extension.

AUGUST	WEEK4	6. Work, Energy and Power (16Periods)	motion in a vertical circle, elastic and inelastic collisions in one and two dimensions. Practice Session /Q A Session/ Numerical of above taught topics	16	everyday life): Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power, potential energy of a spring, conservative force and non-conservative force; , elastic and inelastic collisions in one and two dimensions. 4. Analysis: (Students can Correlate, Compare, Plot graph): kinetic and potential energies; conservative force and non-conservative force; , elastic and inelastic collisions in one and two dimensions. 5. Synthesis: (Student can Visualize,Proof, Identify):kinetic and potential energies; potential energy of a spring; elastic and inelastic collisions in one and two dimensions. 6. Evaluation: (Student can Appreciate,Present):work-energy theorem, conservative force and non-conservative force; kinetic and potential energies, , elastic and inelastic collisions in one and two dimensions.	3. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and 1/V.
	WEEK 5		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 circular rod ,		1. Knowledge (Student can Name, Write, State, Learn, Define) : Centre of mass , momentum conservation;Vector product of vectors; moment of a force, torque, angular momentum, conservation of angular momentum, Equilibrium of rigid bodies, moment of inertia, radius of gyration. . 2 . Comperhension: (Student can Explain, Discuss, Discribe,Understand): : Centre of mass of a two-particle system, momentum conservation. Centre of mass of a rigid body; Vector product of vectors; moment of a force, torque, angular momentum, conservation of angular momentum. Equilibrium of rigid bodies, rigid body rotation and equation of rotational motion, moment of inertia, radius of gyration.	4. To determine the surface tension of water by capillary rise method.
	WEEK 1	7. Motion of System of Particles and Rigid Body (17Periods)	moment of a force, torque, angular momentum, conservation of angular momentum and its application..Practice Session /Q A Session/ Numerical of above taught topics		3.Application: (Student can Derive, Solve Numericals, Apply in everyday life) : momentum conservation , Centre of mass of a rigid body; centre of mass of circular ring, disc, rod and sphere.Vector product of vectors; moment of a force, torque, angular momentum, conservation of angular momentum with examples. Equilibrium of rigid bodies, equation of rotational motion, moment of inertia, radius of gyration. Values of M.I. for simple geometrical objects, 4. Analysis: (Students can Correlate, Compare, Plot graph): comparison of linear and rotational motions; conservation of linear momentum and conservation of angular momentum, , equation of rotational motion . 5. Synthesis: (Student can Visualize.Proof. Identifv) :Analogv	5. To determine the coefficient of viscosity of a given viscous liquid by measuring the terminal velocity of a given spherical body.
	WEEK 2		Equilibrium of rigid bodies, rigid body rotation and equation of rotational motion, comparison of linear and rotational motions;	17	6. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.	
WEEK 3				7. To determine the specific heat capacity of a given (i) solid (ii) liquid, by the method of mixtures.		

SEPT EMBE R	WEEK4	moment of inertia, radius of gyration. Values of M.I. for simple geometrical objects (no derivation). Practice Session /Q A Session/ Numerical of above taught topics	can visualize, proof, identify) analogy between Kinematics and Rotational Dynamics ,Centre of mass of a rigid body,moment of a force, conservation of angular momentum, M.I. and radius of gyration for simple geometrical objects 6. Evaluation: (Student can Appreciate,Present): Centre of mass of a rigid body,conservation of angular momentum,Equilibrium of rigid bodies, rigid body rotation and equation of rotational motion, comparison of linear and rotational motions	8. (i) To study the relation between frequency and length of a given wire under constant tension using a sonometer.
	WEEK 5	Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.Practice Session /Q A Session/ Numerical of above taught topics	13	(ii) To study the relation between the length of a given wire and tension for constant frequency using a sonometer.
	WEEK 1	Gravitational potential energy; gravitational potential.		9. To find the speed of sound in air at room temperature using a resonance tube by two resonance positions.
	WEEK 2	Escape speed, orbital velocity of a satellite. Practice Session /Q A Session/ Numerical of above taught topics		
		8. Gravitation (13Periods)		

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WEEK 3	9. Mechanical properties of solids (4Periods)	Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity. Poisson's ratio, elastic energy	4	1. Knowledge (Student can Name, Write, State, Learn, Define) : Elastic and Inelastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity. 2 . Comperhension: (Student can Explain, Discuss, Discribe,Understand): : Elastic and Inelastic behaviour, Stress-strain relationship, Hooke's law,different types of Elastic modulli and Relation between stress and strain. 3.Application: (Student can Derive, Solve Numericals, Apply in everyday life) : Elastic behaviour, Stress-strain relationship, 4. Analysis: (Students can Correlate, Compare, Plot graph) :Elastic and Inelastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity. 5. Synthesis: (Student can Visualize,Proof, Identify) : Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity. 6. Evaluation: (Student can Apreciate,Present): Elastic behaviour, different types of Elastic modulli and Relation between stress and strain.	
WEEK4	10. Mechanical properties of Fluids (12Periods)	Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes). Effect of gravity on fluid pressure. Practice Session /Q A Session/ Numerical of above taught topics	12	1. Knowledge (Student can Name, Write, State, Learn, Define) : Pressure due to a fluid column; Pascal's law , Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Bernoulli's theorem , Surface energy and surface tension. 2 . Comperhension: (Student can Explain, Discuss, Discribe,Understand):: :Pressure due to a fluid column; Pascal's law ,hydraulic lift and hydraulic brakes. Effect of gravity on fluid pressure. Viscosity, streamline and turbulent flow. Practicality of Fluid dynamics in real life (Pascal's Law, Bernoulli's theorem, Magnus Effect) Surface energy and surface tension, angle of contact, capillary rise. 3.Application: (Student can Derive, Solve Numericals, Apply in everyday life): Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes). Effect of gravity on fluid pressure. Bernoulli's theorem and its applications. Surface energy and surface tension, angle of contact, application of surface tension ideas to drops, bubbles and capillary rise. 4. Analysis: (Students can Correlate, Compare, Plot graph): streamline and turbulent flow.Surface energy and surface tension. 5. Synthesis: (Student can Visualize,Proof, Identify) : hydraulic lift and hydraulic brakes, surface tension ideas to drops, bubbles and capillary rise. 6. Evaluation: (Student can Apreciate,Present): Pascal's Law, Bernoulli's theorem, capillary rise.	
WEEK 5		Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow. Bernoulli's theorem and its applications. Surface energy and surface tension, angle of contact, excess pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise. Practice Session /Q A Session/ Numerical of above taught topics			

WEEK 2	11. Thermal properties of matter (6Periods)	Heat, temperature, thermal expansion of solid, liquid & gas; anomalous expansion of water; specific heat capacity – calorimetry; change of state – latent heat capacity; Heat transfer – conduction, convection and radiation, thermal conductivity, Qualitative ideas of blackbody radiation, Weins displacement law, Stefans law. Practice Session /Q A Session/ Numerical of above taught topics	6	1. Knowledge (Student can Name, Write, State, Learn, Define) : Heat, temperature, thermal expansion; specific heat capacity, calorimetry; latent Heat, conduction, convection and radiation, thermal conductivity, Newton’s law of cooling. 2. Comperhension: (Student can Explain, Discuss, Discribe, Understand)::Heat, temperature, Different methods of heat transfer, Concept of thermal expansion and Laws of cooling; specific heat capacity, change of state, latent Heat 3. Application: (Student can Derive, Solve Numericals, Apply in everyday life) : calorimetry; thermal expansion and Laws of cooling. 4. Analysis: (Students can Correlate, Compare, Plot graph) : Different methods of heat transfer (conduction, convection and radiation) 5. Synthesis: (Student can Visualize, Proof, Identify): Different methods of heat transfer, change of state, 6. Evaluation: (Student can Apreciate, Present): Different methods of heat transfer,
WEEK 3		Thermal equilibrium and definition of temperature (zeroth law of thermodynamics). Heat, work and internal energy. First law of thermodynamics. Practice Session /Q A Session/ Numerical of above taught topics		
WEEK 4	12. Thermodynamics (11Periods)	Second law of thermodynamics: gaseous state of matter, change of condition of gaseous state- isothermal, adiabatic, Reversible and irreversible processes. cyclic process Practice Session /Q A Session/ Numerical of above taught topics	11	
WEEK 5				

DECEMBER	WEEK 1	13. Kinetic Theory (6Periods)	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; 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. Practice Session /Q A Session/ Numerical of above taught topics	6	1. Knowledge (Student can Name, Write, State, Learn, Define) : Equation of state of a perfect gas, work done on compressing a gas. Kinetic theory of gases, pressure. Kinetic energy and temperature; rms speed of gas molecules; degrees of freedom, law of equipartition of energy , Avogadro's number 2 . Comperhension: (Student can Explain, Discuss, Discribe, Understand): : Equation of state of a perfect gas, work done on compressing a gas. Kinetic theory of gases. relation between different specific heat capacities. 3. Application: (Student can Derive, Solve Numericals, Apply in everyday life): application to specific heat capacities of gases; 4. Analysis: (Students can Correlate, Compare, Plot graph) : Kinetic theory of gases, 5. Synthesis: (Student can Visualize, Proof, Identify) : degrees of freedom, law of equipartition of energy 6. Evaluation: (Student can Appreciate, Present): Pressure exerted by a gas on the walls of the container, relation between different specific heat capacities.	
	WEEK 1&2		Periodic motion – time period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (SHM) and its equation; phase; oscillations of a spring – restoring force and force constant; Practice Session /Q A Session/ Numerical of above taught topics		1. Knowledge (Student can Name, Write, State, Learn, Define) : Periodic motion – period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (SHM) ; phase; restoring force; force constant; Simple pendulum; (qualitative ideas only), resonance. 2 . Comperhension: (Student can Explain, Discuss, Discribe, Understand): Periodic motion, Periodic functions , Simple harmonic motion (SHM) , phase; oscillations of a spring , energy in SHM , kinetic and potential energies; simple pendulum , (qualitative ideas only), resonance. 3. Application: (Student can Derive, Solve Numericals, Apply in everyday life) Time period & frequency of simple pendulum and loaded spring; total energy of a particle in SHM. 4. Analysis: (Students can Correlate, Compare, Plot graph) period, frequency, displacement as a function of time, phase difference , kinetic and potential energies vs position , resonance. 5. Synthesis: (Student can Visualize, Recognize) phase difference ; Change in Time period of oscillation of a simple pendulum with length of string; , resonance. 6. Evaluation: (Student can Prove, Appreciate, Conclude) energy of a particle in SHM, Oscillation of liquid in U-tube, Floating Cylinder, free and forced oscillation	
	WEEK 3	14. Oscillations (10Periods)	energy in SHM – kinetic and potential energies; simple pendulum – derivation of expression for its time period; .Practice Session /Q A Session/ Numerical of above taught topics	10		
	WEEK 4	15. Waves (14Periods)	Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement , relation for a progressive wave. Practice Session /Q A Session/ Numerical of above taught topics		1. Knowledge (Student can Name, Write, State, Learn, Define) : Wave motion. Longitudinal and transverse waves, Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, Beats. 2 .	

	WEEK 5		WINTER VACATION			
	WEEK 2		Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics. Beats. Practice Session /Q A Session/ Numerical of above taught topics	16	<p>Comperhension: (Student can Explain, Discuss, Discribe, Understand): Wave motion. Longitudinal and transverse waves, 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. 3. Application: (Student can Derive, Solve Numericals, Apply in everyday life): 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, 4. Analysis: (Students can Correlate, Compare, Plot graph) Longitudinal and transverse waves, speed of wave motion in different medium, Displacement relation for a progressive wave, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, 5. Synthesis: (Student can Visualize, Recognize) Wave motion, Longitudinal and transverse waves, 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, apparent change in frequency of sound heard by listener 6. Evaluation: (Student can Prove, Apreciate, Conclude) factors affecting speed of sound, fundamental mode and harmonics, Beats,</p>	
	WEEK 3		REVISION /TEST/			
FEBRUARY			REVISION / PRE BOARDEXAM			
MARCH			BOARD EXAM			