THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

SCHEME OF WORK

TEACHER'S NAME:

SCHOOL NAME:

SUBJECT: PHYSICS

FORM: FIVE

YEAR: 2024/25

TERM: 1ST AND 2ND

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-T OPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
By the end of this topic student should be able to: (a) Communicate effectively using the language of physics (b)Make appropriate and accurate measurements. (b) Investigate physical phenomenon scientifically.	(a) To distinguish between fundamental and derived physical quantities.	**1. MEASUREMENT**	**1.1 PHYSICAL QUANTITIES**		3rd	2	To guide students to: i.discuss the meaning of fundamental and derived physical quantities. ii. Summarize the difference between fundamental and derived physical quantities.	Students in groups to: i.Discuss the meaning of fundamental and derived physical quantities. ii.Summarize the difference between fundamental and derived physical quantities.	• Flipcharts • Maker pen	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	Observation on precise distinction between fundamental and derived physical quantities.	
	(b) To describe method of dimensional analysis					2	To guide students to discuss the meaning of dimension of a physical quantities and its difference to units of a physical quantities	Students in groups to discuss the meaning of dimension of a physical quantities and its difference to units of a physical quantities.	• Flipcharts • Marker pen		To check if student are able to describe dimensions of physical quantities.	
	(c) To discuss the applications of dimensional analysis				3rd	4	To lead the students to discuss the application of dimensional analysis.	To discuss how dimensional analysis is used to, check correctness of formulae, derive some formulae, and determine the dimension of unknown constants.	• Flip charts with dimensions of Physical quantities.		To check student's ability to explain applications of dimension analysis.	
	(d) To explain limitations of using dimensional analysis.					4	To guide students to brainstorm on the limitations of dimensional analysis.	To discuss the failure of dimensional analysis to work on some equations such as: Exponential trigonometric and logarithmic functions,	• Flip charts • Marker pen.		To observe student's ability to explain the limitations of dimensional analysis.	
	(a) To identify types and sources of error		**1.2: ERROR**		4th	2	To guide students to discuss types and sources of errors.	To discuss:- i. Types of errors snd their sources ii.Ways of minimizing errors in measurements	• Variety of measuring instruments.	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check student's ability to identify types and sources of errors.	
	(b) To determine errors in measurement.				4th	4	To guide students to analyze errors in various measurements	Students to perform experiments to measure fundamental quantities and determine their corresponding errors.	• Metre rule • Beam balance • Stop watch.		To check student's ability to identify types and sources of errors.	

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	(c) Estimation of errors of derived physical quantities					4	To guide students to estimate errors in sum, different, product and quotient and exponents.	To brainstorm on and discuss how to estimate error of a derived physical quantity.	• Metre rule • Beam balance • Stop watch		To observe whether the students are able to estimate errors of derived physical quantities.	
	(d) Estimation of errors from a graph.	**1.0: MEASUREMENT**	**1.2: Error**	**August**	1st	4	Through questions and answers to guide students to estimate errors from the graph.	To guide students to plot the best fit-line for a linear graph and estimate the error on it.	• Graph paper • Flip charts with looted graphs.		To observe whether student able to estimate errors from a graph or not.	
	(e) Distinguishing between accuracy and precision.				1st	2	To lead students to discuss the difference between accuracy and precision.	Students to discuss the accuracy and precision of a pair of sets of measured data.	• Sets of measured data using different instruments of the same type. • Charts with graph of best-fit line.		To check student's ability to distinguish between accuracy and precision.	

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By the end of this topic students should be able to: (i) Apply theories, laws and principles of mechanics in daily life. (ii) Design and perform experiments in mechanics. (iii) Use scientific methods in designing and carrying out experiments (iv) Work independently for self advancements in new frontiers of physics	(a) Determination of equilibrant on A body.	**2.0 MECHANICS**	**2.1: Newton's Laws of Laws Motion**	**August**	1st	4	To guide students to compute equilibrant forces on a body of horizontal and inclined plane.	Students in groups to measure equilibrant forces on a body resting on a horizontal and inclined plane	• Spring balances • Loads/ masses • Inclined plane • In-extensible spring	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check student's ability to determine equilibrant forces of a body.	
	(b) Derivation of expressions for tension and acceleration for connected bodies.				2nd	6	To guide students to discuss Newton's laws of motion.	Students in groups to: (i) Perform an experiment to determine acceleration of connected bodies in horizontal and inclined planes. (ii) Derive expressions for tension and acceleration for connected bodies.	• Pulleys • Masses • String • Inclined Plane		To check if a student is able to derive correctly expression for tension and acceleration of connected bodies.	
	(c) Determination of reaction forces	**2.0 MECHANICS**	**2.1: Newton's laws of laws motion**			4	To lead students to demonstrate reaction forces on a hosepipe, firing gun, rocket, rocket and jet plane	(i)Students in group through role-play to demonstrate reaction forces on a hosepipe, firing gun, rocket, rocket and jet plane. (ii) Students to calculate reaction forces.	• Hosepipe • Gun • Rocket (water) • Jet – Plane • Computer simulation.		To observe student's ability to determine reaction forces.	

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	(d) Application of the laws of conservation of linear momentum				3rd	8	To guide students to deduce the principle of conservation of linear momentum, its applications and discuss the difference between elastic and inelastic collision.	Students in groups to: (i) use Newton's laws of motion to deduce the principle of conservation of linear momentum. (ii) discuss on distinction between elastic and inelastic collision (iii) applications principle of conservation of linear momentum.	• Balls • Trolley • Ballistic pendulum	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check student's ability to state and apply correctly the principle of conservation of linear momentum	
	(e) Description of applications of Newton's laws of motion in daily life.					2	To guide students to discuss the applications of Newton's laws of motion.	Students to brainstorm on the applications of Newton's laws of motion in daily life.	• Flip charts.		To check student's ability to explain applications of Newton's laws of motion in daily life.	

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	(a) Description of parameters of projectile motion.	**2.0 MECHANICS**	**2.2 : Projectile Motion**	August		2	To guide students to discuss the parameters of projectile motion	Students to discuss and define projectile motion, trajectory, time of flight, range, maximum height and angle of projection.	• Soccer ball • Catapult Bow and arrow • Gun and Bullet • Computer simulation.	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics*. New Delhi: CBS.	To observe ability of a student to describe projectile motion parameters.	
	(b) To derive expressions of projectile motion's parameters				4th	2	To lead students to derive expressions for each of the parameters of projectile motion.	Students to discuss derivation of expressions of trajectory, time of flight, range, maximum height and angle of projection.	• Flip chart • Marker pen		To check correctness of the student in deriving expressions of projectile motion parameters.	
	(c)To describe applications of projectile motion.					2	To guide students to discuss the applications of projectile motion	Students in groups to discuss the applications of projectile motion.	• Flip charts		To check student's ability to describe the applications of projectile motion.	
	(a) To explain velocity and acceleration with respect to circular motion		**2.3 Circular Motion.**			2	(i)To guide students to discuss the concept of circular motion and velocity and acceleration with respect to circular motion.	(i)To discuss the concept of circular motion and explain the common terms associated with it.	• String • Pendulum bob • Stop watch.	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics*. New Delhi: CBS.	To test out student's ability to explain the concept of circular motion, angular velocity, and angular acceleration.	
		2.0 MECHANICS				2	(ii) To lead students to deduce expressions for tension and period of vertical and horizontal circular mtion	(ii) Students to deduce expressions for tension and period of vertical and horizontal circular mtion	• String • Pendulum bob • Stop watch		To check ability of the student to deduce expressions for tension and period of vertical and horizontal circular motion	

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	(b) To describe the applications of circular motion			**September**	1st	8	To guide students to discuss (i) the concept of banking (ii) condition for overturn (iii) relationship and applications of centripetal and centrifugal forces	Students to discuss (i) the concept of banking (ii) condition for overturn (iii) relationship and applications of centripetal and centrifugal forces	• Charts with diagram of vehicle, road and railways • Bucket • Test tube • Water • Granules •	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To examine student ability to describe applications of circular motion in daily life.	
	(a) To describe Simple Harmonic Motion		**2.4 :Simple Harmonic Motion (SHM)**			2	To guide students to relate s.h.m and circular motion.	Students in groups to (i) demonstrate s.h.m (ii) demonstrate existence of restoring force	• U – tube • Water • Spring balance • Metre rule • Graph paper.		To test student's ability to describe S.H.M	
	(b) To derive expressions for displacement, velocity, acceleration and period for SHM.			**September**	2nd	8	To guide students to discuss and derive expressions for displacement, velocity, acceleration and period of SHM.	To discuss the derivation of expressions for displacement, velocity, acceleration and period of SHM hence to solve related problems.	• Loaded spring • Water in U-tube • Simple pendulum • Floating loaded test tube • Stop watch		To check the ability of student to deduce correctly displacement, velocity, acceleration and period for SHM.	
	(c) To analyse energy changes in SHM	**2.0 MECHANICS**				2	To lead students to: (i) discus PE and KE changes in SHM (ii) sketch graphs of energy changes in SHM.	Students in groups to: i) discus PE and KE change in SHM (ii) sketch graphs of energy changes in SHM.	• Charts with graphs of energy changes in SHM.		To observe correctness of the student in making analysis of energy changes in SHM.	

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	(d) To explain the applications of SHM.			**September**	3rd	2	To guide students to brain storm on the applications of SHM?	Students to discuss and explain the application of SHM.	• Flip charts • Marker pen		To check student's ability to explain the application of SHM.	
	(a) To explain the three Kepler's laws of planetary motion.		**2.5 Gravitation**			2	To lead students to state and illustrate the Kepler's laws of planetary motion.	To discuss in groups the illustrations of Kepler's laws of planetary motion.	• Manila sheets • Computer simulations.	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD.	To examine student's ability to explain the three Kepler's laws of planetary motion.	
	(b) To deduce Newton's laws of universal gravitation				3rd	2	To guide students to deduce Newton's laws of universal gravitation.	Students to discuss the forces existing between two bodies and hence deduce Newton's laws of universal gravitation.	• Manila sheets • Computer simulation.	Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd.	To examine student's ability to deduce Newton's laws of universal gravitation.	
	(c) To derive Kepler's third law of planetary motion from Newton's laws of universal gravitation					2	To lead the students to use Newton's laws of universal gravitation to derive Kepler's third law of planetary motion.	Students to use Newton's laws of universal gravitation to derive Kepler's third law of planetary motion	• Manila sheets • Computer simulation	Nelkon, & parker. (1995). *Advanced Level Physics*. New Delhi: CBS.	To observe student's ability to derive Kepler's third law of planetary motion from Newton's laws of universal gravitation.	
	(d) To determine gravitational potential of a body.					2	To lead students to discuss the concept of gravitational potential.	Students to discuss the concept of gravitational potential of a body and derive its expression.	• Manila sheets		To examine student's ability to determine gravitational potential of a body.	
	(e) To apply Kepler's laws and Newton's law of universal gravitation in satellite motion.	**2.0 MECHANICS**	**2.5 :Gravitation**	**September**		2	To guide students to derive expressions for escape velocity, height and velocity of parking orbit.	Students to: (i) examine satellite motion, (ii) derive expressions for escape velocity, height and velocity of parking orbit. (iii) discuss the importance of artificial earth satellite.	• Manila sheets • Computer simulation.		To student's ability to apply correctly Kepler's laws and Newton's law of universal gravitation in satellite motion.	

MIDTERM BREAK

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	(a) To explain the concept of a rigid body	**2.0 MECHANICS**	**2.6: Rotation of Rigid Body**			1	To lead students to demonstrate rigid body motion.	Students in groups to discuss and demonstrate rigid body motion.	• Rigid rod • Rotating stool • Masses	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check if student is able to explain clearly the concept of a rigid body.	
	(b) To determine the moment of inertia of a rotating rigid body.					4	To guide students to discuss then explain the meaning of moment of Inertia.	Students to: (i) perform an experiment to moment of inertia of a rotating rigid body. (ii) deduce expressions for moment of inertia of a rod, disc, lamina, cylinder and sphere.	• Rod • Disc • Lamina • Cylinder • Sphere.		To check student's ability to determine the moment of inertia of a rotating rigid body.	
	(c) To deduce radius of gyration of a rotating rigid body.			**October**	1st	7	To lead the students to discuss the meaning of radius of gyration.	Students in groups to perform an experiment to determine the radius of gyration of a rod, disc, lamina, cylinder and sphere.	• Rod • Disc • Lamina • Cylinder • Sphere • Stop watch • Beam balance.		To examine student ability to deduce radius of gyration of a rotating rigid body.	
	(d) To deduce expression for torque	**2.0 MECHANICS**	**2.6: Rotation of Rigid Body**	**October**		2	To lead students to discuss the meaning of torque and deduce its expression.	Students to discuss the meaning of torque and derive an expression for torque.	• Hinged door • Disc • Lamina.		To observe ability of the student to derive an expression for torque.	
	(e) To derive expression for Kinetic energy of a rotating rigid body.				1st	2	To guide students to derive expression for kinetic energy of a rotating rigid body.	Students to discuss and derive expression for kinetic energy.	• Rigid body • Disc • Metre rule.		To examine student's ability to derive expression for Kinetic energy of a rotating rigid body.	
	(f) To deduce an expression for work done by a torque.				2nd	2	To lead students to discuss the derivation an expression of work done by torque.	Students to discuss and derive an expression for work done by torque.	• Rotating rod • Metre rule		To check the correctness of the student in deducing an expression for work done by a torque.	

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	(g) To explain the concept of angular momentum.					2	To guide students demonstrate and discuss the concept of angular momentum.	Students to demonstrate and discuss the concept of angular momentum.	• Bicycle wheel on axle • Rotating stool		To observer if a student is able to explain correctly the concept of angular momentum	
	(h) To deduce the principle of conservation of angular momentum.					2	To guide students to discuss the principle of conservation of angular momentum.	Students to demonstrate conservation of angular momentum.	• Rotating body.		To check student's ability to deduce the principle of conservation of angular momentum.	
	(i) To describe the applications of rotational motion of rigid bodies in daily life.					4	To guide students to brainstorm the applications of rotational motion of rigid bodies in daily life.	Students in groups to discuss the applications of rotational motion of rigid bodies in daily life.	• Manila sheets • Marker pens		To examine student's ability to describe the applications of rotational motion of rigid bodies in daily life.	

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By the end of this topic students should be able to: (i) Apply theories, laws and principles of mechanics in daily life. (ii) Design and perform experiments in mechanics. (iii) Use scientific methods in designing and carrying out experiments (iv) Work independently for self advancements in new frontiers of physics	(a) To explain the concept of fluid motion	**3.0: FLUID DYNAMICS**	**3.1: Streamline Flow and Continuity**	**October**	3rd	2	To guide students to discuss the concepts of some common terms in fluid dynamics.	Students in groups to discuss the meaning of fluid motion, compressible fluids, incompressible fluids, streamline flow, viscous and turbulent flow and critical velocity.	● Charts with streamlines	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD.	To observe if the student is able to explain the concept of fluid motion.	
	(b) To derive the law of mass continuity.					2	To guide students to derive the law of mass continuity.	Students in groups to perform an experiment to determine volume rates of in-flow and out-flow of a liquid in a pipe.	● Liquid (water) ● Pipe ● Graduated container (larger and Smaller size) ● Stop watch.	Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check student's ability to deduce the law of mass continuity.	
	(a) To deduce Bernoulli's principle.		**3.2: Bernoulli's Principle.**			2	To guide students to deduce Bernoulli's equation from the law of continuity..	Students to derive Bernoulli's equation from the continuity equation.	● Manila sheet		To check out the correctness of the student to deduce and state Bernoulli's principle.	
	(b) To explain the applications of Bernoulli's principle.					4	To guide students to discuss the applications of Bernoulli's principle in Jets and nozzle, aerofoil, venture meter and pitot tube.	Students to brainstorm and discuss the applications of Bernoulli's principle in Jets and nozzle, aerofoil, venture meter and pitot tube.	● Bunsen burner ● Filter pump. ● Paint Sprayer ● Sail ● Venture meter ● Pitot Tube.		To observe the correctness of the student on explaining applications of Bernoulli's principle.	

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	(a) To explain the concept of viscosity.		**3.3: Viscosity and Turbulent Flow.**	**October**		6	To guide student to explain the concept of viscosity and deduce the coefficient of viscosity.	Student to perform an experiment to determine the coefficient of viscosity.	● Small sphere steel balls ● Viscous fluid (glycerin) ● water ● Stop watch	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check the student's ability to explain the concept of viscosity.	
	(b) To deduce Poiseulli's formula				4th	6	To guide students to perform an experiment and use dimensional analysis to deduce Poiseulli's formula.	Students to perform an experiment to determine rate of a liquid flow as a function of tube length, radius and pressure difference and use dimension analysis to deduce Poiseulli's formula.	● Flow tubes ● Liquid (water) ● Graduated container ● Stop watch.		To examine student's ability to deduce Poiseulli's formula.	
	(c) To derive Stoke's law	**3.0: FLUID DYNAMICS**	**3.3: Viscosity and Turbulent Flow.**	**November**	1st	6	To guide students to use dimensional analysis to derive Stoke's law.	(i) Students to use dimensional analysis to derive Stoke's law (ii)Student to perform an experiment to determine the coefficient of viscosity of a liquid by using Stokes law	● Hydrometer ● Meter rule ● Glycerin ● Steel balls of varying diameters ● Stop watch ● Measuring cylinder.		To check the correctness of the student on deriving Stoke's law.	
	(d) Explain the variation of coefficient of viscosity with temperature.					6	To lead the students to perform an experiment to determine coefficient of viscosity of a liquid at varying temperature.	Students to perform an experiment to determine coefficient of viscosity of a liquid at varying temperature.	● Heater ● Meter rule ● Glycerin ● Steel ball ● Stop watch ● Measuring cylinder.		To check student's ability to explain the variation of coefficient of viscosity with temperature.	
	(e) To describe the applications of viscosity.				2nd	4	To guide students to discuss the applications of viscosity in daily life.	Students to brainstorm and discuss the applications of viscosity in daily life.	● Flip charts ● Marker pens		To test out student's ability to describe the applications of viscosity.	

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By the end of this topic students should be able to: (i) Apply theories, laws and principles of mechanics in daily life. (ii) Design and perform experiments in mechanics. (iii) Use scientific methods in designing and carrying out experiments (iv) Work independently for self advancements in new frontiers of physics	(a) To describe surface tension in terms of molecular theory.	**4.0 : PROPERTIES OF MATTER**	**4.1: Surface Tension**	**November**	3rd	2	To guide students to explain surface tension in terms of molecular theory.	Students in groups to discuss, demonstrate and explain various phenomena due surface tension.	● Water ● Mercury ● Computer simulation	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check out the ability of the student to describe surface tension in terms of molecular theory.	
	(b) T o analyze surface tension in terms of surface energy.					2	To lead students to deduce expression of surface tension in terms of surface energy	Students to discuss the relationship between surface tension and surface energy.	● Manila sheets ● Marker pen.		To examine student's ability to analyze surface tension in terms of surface energy.	
	(c) To determine the coefficient of surface tension of a liquid.					2	To lead students to determine the coefficient of surface tension for various liquids.	Students to perform an experiment to determine coefficient of surface tension for various liquids.	● Water ● Glycerin ● Soap solution ● Funnel ● Beaker ● Measuring Cylinder		To check out if the student is able to determine the coefficient of surface tension of a liquid.	
	(d) To explain the factors affecting surface tension.					2	To guide students to discuss the effect of impurity and temperature on the surface tension	To brainstorm and discuss the factors affecting surface tension	● Manila Sheets ● Marker pen	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To find out student's ability to explain the factors affecting surface tension.	
	(a) To explain the concept of elasticity in terms of molecular theory.		**4.2: Elasticity**			2	To guide students to explain the concept of elasticity in terms of molecular theory.	Students in groups to discuss the concept of elasticity in terms of molecular theory.	● Charts of molecular dislocation and slip.		To observe the correctness of the student to explain the concept of elasticity in terms of molecular theory.	
	(b) To distinguish between brittle and ductile materials in terms of molecular structures.			**November**	4th	2	To guide student to distinguish brittle and ductile materials physically and in terms of molecular theory.	To identify and distinguish brittle and ductile materials in terms of molecular theory.	● Glass rod ● Copper ● Rubber ● Steel rod		To observe the ability of student to distinguish between brittle and ductile materials in terms of molecular structures.	
	(c) To distinguish among moduli of elasticity				4th	8	To guide students to perform experiment to determine, young modulus, shear modulus and bulk modulus of materials	Students to: (i) perform experiments to determine young modulus, shear modulus and bulk modulus of materials (ii) discuss the different between moduli of elasticity.	● Balloon ● Vernier caliper ● Wires ● Slotted masses ● Meter rule ● Micrometer screw gauge.		To check out the ability of the student able to distinguish between Moduli of elasticity.	

END OF THE FIRST TERM - BREAK

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(d) To derive an expression for potential energy of a deformed solid body	**4.0 : PROPERTIES OF MATTER**		**January**		2	To guide students to derive an expression for potential energy of a stretched or compressed material.	Students to discuss the formula for potential energy of a stretched or compressed material.	● Vernier caliper ● Heavy mass ● Constantan wire ● Micrometer screw gauge ● Metre rule.		To examine the ability of the student to derive correctly an expression for potential energy of a deformed solid body.	
	(e) To describe the applications of elasticity.					2	To lead students to discuss the applications of elasticity.	Students to discuss the applications of elasticity.	● Manila sheet ● Marker pen.		To check student's ability to describe the applications of elasticity.	
	(a) To interpret the assumptions of kinetic theory of gases.		**4.3: Kinetic Theory of Gases.**		2nd	2	To guide students to discuss the assumptions of the kinetic theory of gases.	Students to state and interpret the assumptions of the kinetic theory of gases.	● Computer simulation ● Perfume bottle		To observe the ability of the student to interpret the assumptions of kinetic theory of gases.	
	(b) To obtain an expression for pressure of a gas					2	To lead the students to derive the formula for pressure of a gas in cubical container using the kinetic theory of a gas.	Student to use the kinetic theory of gases to derive the formula for pressure of a gas in cubical container.	● Manila sheets ● Marker pens ● Charts of cubic gas container		To check out ability of the student to derive an expression for pressure of a gas.	
	(c) To deduce the root mean speed (*rms*) of a gas.					2	To lead students top derive the formula for root mean speed (*rms*) of a gas molecules.	Students in groups to discuss the derivation of an expression for root mean speed (*rms*) of a gas molecules	● Manila sheet.		To examine ability of student to deduce the root mean speed (*rms*) of a gas.	
	(d) To establish the relationship between Kinetic energy and Temperature of a gas.					2	To guide students to deduce the relationship between kinetic energy and temperature of the gas from the gas equation and expression for pressure.	Students in groups to discuss and deduce the relationship between kinetic energy and temperature of the gas from the gas equation and expression for pressure.	● Manila sheet		To check if student is able to establish correctly the relationship between Kinetic energy and Temperature of a gas.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
By the end of this topic student should be able to (i) Apply laws, theories and principles of heat In daily life activities. (ii) Handle and managing various heat appliances effectively. (iii) Work independently for self-advancement in new frontier of physics	(a) To explain thermometric properties of a substance.	**5.0 HEAT**	**5.1 Thermometers**	**January**		2	To guide students to explain the thermometric properties of materials	To discuss the thermometric properties, types of thermometric scale and their fundamental interval.	• Mercury/ alcohol thermometer • Platinum thermometer, Constant volume gas thermometer • Thermocouple	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD.	To check student's ability to explain thermometric properties of a substance.	
	(b) To describe thermodynamic scale of temperature.				3rd	4	To guide students to discuss thermodynamic temperature scale, triple point of water and absolute zero temperature.	Students in groups to deduce temperature scale and distinguish triple point of water and absolute zero temperature.		Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd.	To observe correctness of the student to describe thermodynamic scale of temperature.	
	(c) To classify types and uses of thermometers.					4	To guide students on ways making calibration of thermometers.	Students to identify different types of thermometers and their uses.		Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD.	To inspect ability of the student to classify types and uses of thermometers	
	(a) To explain thermal conduction in terms of kinetic theory of matter.		**5.2 Transfer of heat 5.2.1 Thermal conduction**			2	To guide students to discuss and explain the molecular transfer of heat.	To explain the process of heat conduction in solids under the bases of kinetic theory of matter.	• Suspended elastic balls in a row.	Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To observe correctness of the student to explain thermal conduction in terms of kinetic theory of matter.	
	b) To derive an expression for the rate of heat flow through a conductor.	5.0 : HEAT			3rd	4	To guide students to deduce the heat flow equation in solids.	To perform an experiment to determine the rate of heat flow through a solid conductor.	• Lagged metal rod • Thermometer • Source of heat • Ice • Vernier caliper.		To check student's ability to derive an expression for the rate of heat flow through a conductor.	
	(c) To describe the application of thermal conduction in domestic and industries.					4	To lead the students to discuss the applications of thermal conduction in domestic and industries.	To discuss the applications of thermal conduction in daily life.	• Manila sheets • Marker pen		To observe clearance of the student's ideas to describe the application of thermal conduction in domestic and industries.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(a) To explain the process of heat transfer by convection.		5.**2.2 THERMAL CONVECTION**	**January**		2	To guide students to explain the process of heat transfer by convection.	Students in groups to discuss the mechanism of heat transfer by convection and explain the concept of natural and forced convections.	● Heated surface ● Blower ● Hot liquids ● Stop watches ● Calorimeters ● Thermometer ● Stirrer		To check if the student is able to explain correctly the process of heat transfer by convection.	
	(b) To investigate the factors affecting the rate of cooling.				4th	8	To guide students to deduce Newton's law of cooling.	Students to perform an experiment to determine the effect of: (i) excess temperature over the surrounding on the rate of cooling (ii) mass/ volume of the liquid on the rare of cooling (iii) nature of the surface on the rate of cooling	● Calorimeter ● Thermometer ● Liquids (water, oil) ● Source of soot ● Metal foil ● Measuring cylinder ● Beam balance. ● Source of heat		To observe if the student is able to explain the factors affecting the rate of cooling.	

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	(c) To describe the applications of thermal convection in domestic and industries	5.0 : HEAT		**February**		2	To guide students to conduct a project on the applications of thermal convection.	To conduct a project on the applications of thermal convection			To check out if the student is able to describe clearly applications of thermal convection in domestic and industries.	
	(a) To explain the process of heat transfer by radiation.		**5.2.3 THERMAL RADIATION**			2	To guide student to brainstorm on the process of heat transfer by radiation.	Students in groups to brainstorm then discuss the mechanism of heat transfer by radiation.	● Spectrum chart ● Infrared thermometer ● Thermal flask		To examine student's ability to explain correctly the process of heat transfer by radiation.	
	(b) To describe spectrum of thermal radiation emitted by blackbody.				1st	2	To lead students to describe the nature of the spectra produced by blackbody.	Students to discuss the nature of the spectra produced by blackbody.	● Chart showing blackbody spectra with label of wavelength.		To observe if the student is able to describe spectrum of thermal radiation emitted by blackbody.	
	(c) To state laws of blackbody radiation.					2	To guide students to state laws of blackbody radiation.	Students in groups to discuss and state laws of blackbody radiation (Win's displacement law and Stefan's law)	● Spectrum of blackbody radiation.		To check ability of the student to state laws of blackbody radiation.	
	(d) To explain the application of laws of blackbody radiations in daily life.				2nd	4	To guide students to identify and explain the applications of laws of blackbody radiations in daily life.	Students to discuss the applications of laws of blackbody radiations in daily life.	● Manila sheets		To observe correctness of the student to explain the applications of laws of blackbody radiations in daily life.	
	(e) To explain Prevost's theory of heat exchange.					2	To lead the students to state Prevost's theory of heat exchange.	Students to state and discuss Prevost theory of heat exchange.	● High vacuum electric Lump ● Can of water ● Thermometer.		To check if student is able to describe correctly Prevost's theory of heat exchange.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(a)To explain thermodynamics processes	5.0: HEAT	5.3: THERMAODYNAMICS	**February**		4	To guide students to discuss the meaning and common terms of thermodynamics process.	Students in group to discuss the meaning of thermal dynamics process, isothermal, isochoric, isobaric and adiabatic process.	• Manila sheets • Marker pens.	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check ability of the student to describe thermodynamics processes.	
	(b) To identify specific heat capacity of gases.				3rd	4	To lead students to use library books and internet to explain and the relationship and difference between Cv and Cp.	To establish the relationship between specific molar heat capacity at constant volume (Cv) and specific molar heat capacity at constant pressure (Cp)	• Internet		To observe correctness of the student to explain specific heat capacity of gases.	
	(c) To derive expressions for workdone during thermodynamic processes					4	To lead the students to derive expressions for work done during thermodynamic processes.	Students to discuss on how to derive expressions for work done during isothermal, isochoric, isobaric and adiabatic process.	• Sketches representing thermodynamic processes. • Manila sheets • Marker pen	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To examine student's ability to derive expressions for work done during thermodynamic processes.	
	(d) To establish first law of thermodynamics				4th	2	To guide students to discuss partitioning of heat supplied to a system.	Students to discuss partitioning of heat supplied to a system and hence establish the first law of thermodynamics	• One end open Cylinder • Piston • Manila sheets		To check ability of the student to establish first law of thermodynamics.	
	(e) To identify the applications of first law of thermodynamics					2 **After class hours**	To guide students to conduct project work to identify to identify the applications of the first law of thermodynamics	Students in groups of fives, to conduct a project work to identify to identify the applications of the first law of thermodynamics.	• Plain papers • Graph papers		To observe student ability to identify applications of first law of thermodynamics.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
By the end of this topic student should be able to: (i) Apply laws, theories and principles of vibrations and waves in daily life activities. (ii) Handle and managing various optical devices/ substaces effectively. (iii) Work independently for self-advancement in frontiers of Physics.	(a) To distinguish between free and forced vibration.	**6.0: VIBRATIONS AND WAVES**	**6.1: Mechanical Vibrations**	**March**	1st	2	To guide students to distinguish between free and forced vibration	Students to demonstrate free and forced vibration and come out with explanations for their difference.	• Water • Helical spring • Coupled pendulum • Simple pendulum	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Muncaster, R. (1993). *A- Level Physics* . Cheltenham: Nelson Thornes Ltd. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To examine ability of individual student to distinguish between free and forced vibration.	
	(b) To distinguish among under-damped, critically damped and over-damped vibrations.					2	To guide students to demonstrate the concept of damping.	Students in groups to (i) demonstrate the three types of damping and sketch their corresponding graphs of displacement against time. (ii) discuss the applications of damping.	• Loaded helical spring • Liquids of varying viscosity.		To check correctness of the student to distinguish under-damped, critically damped and over-damped vibrations.	
	(c) To derive the velocity of vibration.					2	To guide students to discuss the derivation of velocity of vibration of material using dimensional analysis.	Students to derive velocity of vibration using dimensional analysis.	• Manila Sheets.		To observe correctness of the student to derive the velocity of vibration.	
	(a) To distinguish between progressive and stationary waves.		**6.2 Wave Motion**			2	To guide students to distinguish between stationary and progressive waves	Students in groups to discuss the meaning of stationary and progressive waves and to state their difference.	• String • Slinky string		To check ability of student to distinguish between progressive and stationary waves.	
	(b) To derive expressions for progressive and stationary waves.	6.0: VIBRATIONS AND WAVES		**March**	2nd	2	To lead students to derive expressions for displacement and velocity of stationary and progressive waves.	Students in groups to discuss and deduce expressions for displacement and velocity of progressive and stationary waves.	• Manila sheets • Marker pen		To check correctness of the student to derive expressions for progressive and stationary waves.	
	(c) To deduce the principle of superposition of waves.					2	To guide students to state the principle of superposition of waves.	Students to discuss, demonstrate and deduce the principle of superposition of waves.	• Ripple tank • Slink Spring • String.		To observe ability of student to deduce the principle of superposition of waves.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(a) To derive the formula for velocity of sound in materials		**6.3: SOUND**			6	To lead the students to derive expressions for velocity of sound in solids, liquids and gases.	In Jig –Saw groups; students to derive velocity of sound in solids, liquids and gases.	• Manila sheets		To check correctness of the student to derive the formula for velocity of sound in materials.	
	(b) To determine velocity of sound in air			**March**	3rd	6	To guide students to perform an experiment to determine velocity of sound in air.	Students to perform an experiment to determine velocity of sound in air.	• Turning fork • Glass tube • Water • Gas Jar		To examine the ability of the student to determine the velocity of sound in air.	
	(c) To describe the applications of mechanical vibrations and waves.					4	To facilitate students' discussion on the applications of mechanical vibrations and waves.	Students to discuss the applications of mechanical vibrations and waves in daily life.	• Manila sheets • Marker pens		To observe correctness of the student describe the applications of mechanical vibrations and waves.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(a) To explain the nature of *em* waves.	6.0: VIBRATIONS AND WAVES	6.4: ELECTOMAGNETIC WAVES (*EM* WAVES)	**March**		2	Teacher to highlight the concept electromagnetic radiation.	Students in groups to discuss the nature of *em* waves by considering electric vectors of *em* waves.	● Computer simulation ● Manila sheets.	Lowe, T., & J.F.Rounce. (2002). *Calculation for A-level Physics* . Cheltenham: Nelson Thornes Ltd. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check ability of the student to explain correctly the nature of *em* waves.	
	(b) To describe propagation of *em* waves.					2	To guide students to discuss the propagation of *em* waves in terms of oscillating electric and magnetic vectors.	Student to discus and explain the way in which *em* waves is propagated by focusing on oscillating electric and magnetic vectors.	● Computer simulation ● Manila		To observe student's ability to describe clearly propagation of *em* waves.	
	(a) To explain the necessary conditions for interference of light.		6.5: PHYSICAL OPTICS: 6.5.1 INTERFERENCE		4th	2	To lead the students to explain the conditions necessary for light beams to interfere.	Students to demonstrate interference of two light beams and state the conditions for interference of light beams.	● Monochromatic light source ● Screen ● Double slit		To examine student's ability to explain the necessary conditions for interference of light.	
	(b) To determine wave length of monochromatic light by interference method.					4	To guide students to perform; (i) Young's double slit experiment (ii) Newton's ring experiments to determine wave length of monochromatic light	Students use Young's double slit and Newton's ring methods to determine wave length of monochromatic light.	● White light ● Convex lens ● Flat glass plate ● Travelling microscope.		To observe ability of the student to determine wave length of monochromatic light by interference method.	

MIDTERM BREAK

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(c)To investigate production of interference by thin films	6.0: VIBRATIONS AND WAVES	6.5.1 INTERFERENCE	**April**		4	To lead students to demonstrate the production of interference by thin transparent films.	Students to demonstrate the production of interference by transparent soap and oil films.	• Soap film • Oil filim.		To examine student's ability to demonstrate and explain production of interference by thin films.	
	(d) To describe the applications of interference of light.				2nd	2	To guide students to discuss the applications of interference of light.	Students to discus and come out with the applications of interference of light in testing Optical surface and measurements.	• Manila sheets • Marker pens.		To observe ability of a student to describe the applications of interference of light.	
	(a) To explain necessary condition for diffraction of light to occur.		**6.5.2 DIFFRACTION**		2nd	2	To guide students to define the concept of diffraction and demonstrate diffraction of two light beams	Students to demonstrate the process of diffraction of two light beams, state the conditions for diffraction of light waves to occur and derive an expression for wavelength on Fraunhofer single slit diffraction	• Source of light • Single slit • Large aperture.		To check out correctness of the student to explain necessary condition for diffraction of light to occur.	
	(b) To explain the principles of diffraction grating.					2	To guide students to explain the principle of diffraction grating.	Students to discuss the principle of diffraction grating and deduce the grating equation.	• Diffraction grating • Source of light. • Screen.		To check out if a student is able to explain the principles of diffraction grating.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(c) To determine the wavelength of monochromatic light by diffraction method.	**6.0: VIBRATIONS AND WAVES**	**6.5.2 Diffraction**	**April**		4	To lead students to perform an experiment to determine the wavelength of monochromatic light using diffraction grating.	Students to measure wave length of wavelength of monochromatic light experimentally using diffraction grating.	• grating • Source of light. • Screen	Lowe, T., & J.F.Rounce. (2002). *Calculation for A-level Physics* . Cheltenham: Nelson Thornes Ltd. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check out ability of the student to determine the wavelength of monochromatic light by diffraction method.	
	(e) To identify applications of light.				**3rd**	2	To guide students to describe the applications of diffraction of light.	Students in groups to identify the applications of diffraction of light.	• Manila sheets • Marker pens.		To examine ability of the student to explain applications of light.	
	(a) To explain the concept of polarization of light.		**6.5.3 Polarization**			2	To guide the students to explain the meaning of polarization.	Students in groups to discuss the concept of polarization	• String • Slit • Polaroid		To check if student is able to explain the concept of polarization of light.	
	(b) To describe methods for producing plane polarization.					2	To guide students to discuss methods of producing plane polarization.	To demonstrate production of plane polarized light by Polaroid, reflection, double refraction and scattering.	• Light source • Polaroid • Glass block • Nicol Prism • Scattering prism.		To examine ability of the student to describe methods for producing plane polarization.	
	(c)To deduce Brewster's law.					2	To guide students to derive Brewster's law.	Students to derive Brewster's law.	• Manila sheets • Marker pen		To observe correctness of student to derive Brewster's law.	
	(d) To examine optical activity of solution.					4	To guide student to examine optical activity of solution.	Students to demonstrate optical activity of solution.	• Saccharimeter apparatus.		To check correctness of the student to describe optical activity of solution.	

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	(a) To explain Doppler effect with Sound.		**6.6 Doppler Effect**	**April**		2	To guide students to explain the concept of Doppler effect with sound and lead the students to make derivation of apparent frequency of observer.	Students to define Doppler effect and derive apparent frequency for approaching, receding and stationary observer.	• Source of sound, • Microphone • Observer.	Lowe, T., & J.F.Rounce. (2002). *Calculation for A-level Physics* . Cheltenham: Nelson Thornes Ltd. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To observe correctness of the student to explain Doppler effect with Sound.	
	(b) To explain Doppler effect with light.	**6.0: VIBRATIONS AND WAVES**			**4th**	2	To guide students to explain the Doppler effect with light and lead them to derive apparent speed for approaching, receding and stationary observer.	Students to derive apparent speed for approaching, receding and stationary observer.	• Computer simulation • Manila sheets		To examine student's ability to explain Doppler effect with light.	
	(c) To describe the applications of Doppler effect					4	To lead the students to discuss the applications of Doppler effect of light and sound in daily life.	Students to discuss the applications of Doppler effect of light and sound in daily life.	• Manila sheets		To check correctness of the student to describe the applications of Doppler effect.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
By the end of this topic student should be able to; (i) Apply laws, theories and principles of static electricity in daily life activities. (ii) Handle and managing various electric appliances effectively. (iii) Work independently for self-advancement in frontiers of Physics.	(a) To describe the coulomb's law	**7.0: ELECTROSTATICS**	**7.1: The Electric Field.**	**May**		2	To guide students to formulate Coulomb's law.	Students to brainstorm on the forces between two charged bodies.	• Computer simulation.	Lowe, T., & J.F.Rounce. (2002). *Calculation for A-level Physics* . Cheltenham: Nelson Thornes Ltd. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS. Lowe, T., & J.F.Rounce. (2002). *Calculation for A-level Physics* . Cheltenham: Nelson Thornes Ltd. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To check correctness of the student on stating the coulomb's law and its implications.	
	(b) To describe the electric field of a point charge.					2	To guide students to deduce the relationship between electric force, amount of charge and electric field intensity.	Students to brain storm on the concept of lines of force and deduce the relationship between electric force, amount of charge and electric field intensity	• Charts with diagrams of electric fields.		To observe student's ability to describe the electric field of a point charge.	
	(c) To derive expressions for electric field intensity for simple symmetrical charged distributions.				1st	2	To facilitate students discussion on derivation of expressions for electric field intensity for simple symmetrical charged distributions	Students to discuss and derive expressions for electric field intensity for simple symmetrical charged distributions	• Computer simulation of Point charge, Charged sphere, Plane conductor and line charge. • Manila sheets • Marker pen.		To check if student is able to derive correctly expressions for electric field intensity for simple symmetrical charged distributions.	
	(a) To explain the concept of electric potential.		**7.2: The Electric Potential**			2	To guide students to discuss the concept of electric potential.	Students to discuss the concept of electric potential and deduce the relationship between electric potential and electric field intensity.	• Computer simulation • Flip charts with diagrams of plane charge and Plane conductor.		To observe student's ability on explaining the concept of electric potential.	
	(b) To derive expressions for electric potential due to some charge distributions.					2	To lead students to derive expressions for electric potential due to simple symmetrical charge distributions	students to derive expressions for electric potential due to simple symmetrical charge distributions	• Computer simulation of Point charge, Charged sphere, Plane conductor and line charge.		To check out ability of the student to derive correctly expressions for electric potential.	

COMPETENCE	*OBJECTIVES*	*MAIN TOPIC*	*SUB-TOPIC*	*MONTH*	*WEEK*	*No. PERIODS*	*TEACHING ACTIVITIES*	*LEARNING ACTIVITIES*	*TEACHING/ LEARNIG RESOURCES*	*TEACHING/ LEARNIG MATERIALS*	*ASSESSMENT*	*REMARKS*
	(c) To analyze motion of electric charged particle in uniform electric field.	7.0: ELECTROSTATICS	**7.2: The Electric Potential**	**May**	2nd	2	To guide students to analyze the motion of electric charged particle in uniform electric field.	Students to: (i) analyze the motion of electric charged particle in uniform electric field. (ii) derive the expression governing the path taken by the charged particle in electric field.	• Air filled parallel plate capacitor • Atomizer • Stop watch. • Computer simulation.	Lowe, T., & J.F.Rounce. (2002). *Calculation for A-level Physics* . Cheltenham: Nelson Thornes Ltd. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	To observe ability of the student to analyze motion of electric charged particle in uniform electric field.	
	(a) To identify types of capacitors.		**7.3 Capacitance**			2	To lead students to identify types of capacitors.	Students to brainstorm and explain various types of capacitors	• Parallel plate capacitor • Cylindrical capacitor • Spherical capacitor		To check if student is able to identify clearly types of capacitor.	

COMPETENCE	OBJECTIVES	MAIN TOPIC	SUB-TOPIC	MONTH	WEEK	No. PERIODS	TEACHING ACTIVITIES	LEARNING ACTIVITIES	TEACHING/ LEARNIG RESOURCES	TEACHING/ LEARNIG MATERIALS	ASSESSMENT	REMARKS
	(b) To investigate on the factors those determine the capacitance of a capacitor.	**7.0 ELECTROSTATICS**	**7.3 Capacitance**	May	2nd	4	To lead the students to perform an experiment using parallel plate capacitor in order to determine relationship between capacitance and plate area, plate separation and permittivity of the dielectric material.	Students in groups to perform an experiment using parallel plate capacitor in order to determine relationship between capacitance and plate area, plate separation and permittivity of the dielectric material.	● Parallel plate capacitor, ● Various dielectric materials ● Voltmeter ● dc source.	Lowe, T., & J.F.Rounce. (2002). *Calculation for A-level Physics* . Cheltenham: Nelson Thornes Ltd. Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics*. New Delhi: CBS.	To check correctness of the student on investigating factors which determine capacitance.	
	(c) To deduce effective capacitance for series and parallel combination of capacitors.					2	To guide students to discuss the derivation of an expression for effective capacitance for series and parallel combination of capacitors.	Students to derive an expression for effective capacitance for series and parallel combination of capacitors.	● Flip charts with diagrams of series and parallel combinations of capacitors		To student able to deduce effective capacitance for series and parallel combination of capacitors?	
	(d) To determine energy stored in a capacitor.	**7.0: ELECTROSTATICS**	**7.3: Capacitance**			4	To guide students to discuss the derivation of an expression for energy stored in a capacitor.	Students in groups to brainstorm to discuss the derivation of an expression for energy stored in a capacitor.	● Flip charts with diagrams of capacitors.		To examine student's ability to determine energy stored in a capacitor.	
	(e) To investigate the process of charging and discharging of a capacitor.			**May**	**3rd**	4	To guide students to perform experiments for charging and discharging rates and time constant of a capacitor.	Students to perform to perform experiments for charging and discharging rates and time constant of a capacitor and derive the corresponding expression.	● Capacitors ● Dc source ● Voltmeter ● Resistor ● Stop watch.		To check correctness of the student in describing the process of charging and discharging of a capacitor.	

CHECKED AND APPROVED BY: **NAME** **SIGN** **DATE**

1. **HEAD OF DEPARTMENT OF PHYSICS:** _____ _____ _____
2. **SCHOOL ACADEMIC MASTER:** _____ _____ _____
3. **HEAD OF THE SCHOOL:** _____ _____ _____

SIGNATURE: _____

SUBJECT TEACHER: