

ARMY PUBLIC SCHOOL, MUMBAI (2019-2020)
STANDARD CURRICULUM

CLASS: XII

SUB: PHYSICS

<u>S. NO</u>	<u>MONTH</u>	<u>TOPIC</u>	<u>CORE VALUES / VALUES AND SKILLS</u>	<u>METHODOLOGY</u>	<u>LEARNING OUTCOMES</u>
1	APRIL	WAVE OPTICS, DUAL NATURE	SELF AWARENESS Critical and logical thinking, Scientific skills	Experiments in lab and Practice of diagrams	Student was able to <ul style="list-style-type: none"> ● Describe Huygen's principle ● Explain interference and Young's double slit experiment. ● Explain diffraction due to single slit ● Derive and explain the resolving power of microscope and telescope. ● Explain polarisation of plane polarised light. ● Solve numericals on Brewster's law. ● Describe and explain the photoelectric effect of light. ● Describe the De-Broglie wavelength of particles. ● Explain Davisson and Germer's experiment.
2	JUNE	ELECTROSTA TICS	TEAMWORK Problem solving ability, decision making, Critical and logical thinking	Numericals for practice	Student was able to <ul style="list-style-type: none"> ● Explain Coulomb's law. ● Explain forces acting on the system of particles. ● Explain and derive the electric field due to point charge and dipole . ● Derive torque on a dipole. ● State and derive for the various

					applications of Gauss's theorem.
3	JULY	ELECTRIC POTENTIAL.	ENVIRONMENTAL AWARENESS Critical thinking and logical thinking, problem solving ability	Numericals for practice	<p>Student was able to</p> <ul style="list-style-type: none"> ● Explain electric potential and potential difference for point and system of charges. ● Explain and derive electric potential energy for two point charges and of dipole. ● Differentiate between conductors and insulators, free and bound charges. ● Explain and derive the effect of dielectric and electric polarisation. ● solve numericals on a combination of capacitors. ● Derive expression for capacitance and energy of parallel plate capacitor .
4	AUG	CURRENT ELECTRICITY, MAGNETIC EFFECTS OF CURRENT AND MAGNETISM	PATRIOTISM AND NATIONALISM Problem solving ability, scientific attitude, dependability and responsibility	Experimental awareness and Numericals for practice	<p>Student was able to</p> <ul style="list-style-type: none"> ● Explain and derive an expression of drift velocity and mobility. ● State Ohm's law and draw I-V characteristics. ● Explain resistivity, conductivity and electrical energy. ● Describe the colour coding of resistors. ● Explain temperature dependence of resistance. ● State Kirchoff's laws and explain the working of wheatstone bridge and meter bridge.

					<ul style="list-style-type: none"> ● State and explain potentiometre and its applications. ● Solve numericals on the combination of resistors and cells. ● state and explain Biot-Savart's law and its applications. ● state and explain Ampere's circuital law and its applications. ● force on moving charge due to electric and magnetic fields. ● describe the working of cyclotron. ● Derive for force and torque on the conductor. ● Explain working of moving coil galvanometer, its current and voltage sensitivity. ● Describe the behaviour of current carrying loop as dipole and hence calculate dipole moment.
5	SEP	MAGNETISM CONTD..., EMI	DISCIPLINE AND DILIGENCE Dependability and responsibility, logical thinking, analytical thinking	Experimental awareness and classroom discussion	<p>Student was able to</p> <ul style="list-style-type: none"> ● Explain magnetic dipole moment of a revolving electron. ● Explain magnetic field intensity due to magnetic dipole and torque acting on it. ● Explain the behaviour of solenoid as a bar magnet. ● Describe earth's magnetic field.

					<ul style="list-style-type: none"> ● Classify the various magnetic substances with examples. ● Classify types of magnets and factors affecting its strength. ● Explain electromagnetic induction using Faraday's laws. ● Explain induced EMF and current. ● State and explain Lenz's law. ● Describe self and mutual induction.
6	OCT	ALTERNATING CURRENTS	DIVERSITY AND TOGETHERNESS Togetherness, responsibility, logical thinking	Numericals for practice	<p>Student was able to</p> <ul style="list-style-type: none"> ● Describe the nature of alternating currents. ● Derive and explain peak and RMS value of alternating current/voltage. ● derive expressions of LC oscillations and LCR circuit and explain resonance. ● explain the working of AC generator and transformer. ● explain power factor and wattless current.
7	NOV	ELECTRONICS	GENDER SENSITIVITY Sharing and caring, problem solving ability	Experiments in lab and Numericals for practice	<p>Student was able to</p> <ul style="list-style-type: none"> ● Draw and explain the energy bands in conductors, semiconductors and insulators. ● Explain the I-V characteristics in forward and reverse bias. ● Explain the working of diode as a rectifier.

					<ul style="list-style-type: none"> Describe LED, photodiode and solar cell. Describe about zener diode and its characteristics and how it acts as a voltage regulator.
8	DEC	ATOMS	<p>PERSEVERANCE</p> <p>Sharing and caring, dependability and responsibility</p>	Classroom discussion	<p>Student was able to</p> <ul style="list-style-type: none"> Describe alpha scattering experiment and Bohr's model and energy levels. Explain the hydrogen spectrum and solve numericals on it.
9	JAN	NUCLEI, EM WAVES.	<p>EFFECTIVE COMMUNICATION</p> <p>Sharing and caring, dependability and responsibility</p>	Classroom discussion	<p>Student was able to</p> <ul style="list-style-type: none"> Explain the composition and size of nucleus. Explain radioactivity and types of decay and its properties. State and derive radioactive decay law and solve numericals based on it. Describe the mass-energy relation and hence explain mass defect. Explain binding energy per nucleon and its curve. Explain and illustrate nuclear fission and fusion.