THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

SCHEME OF WORK

TEACHER'S NAME:

SCHOOL NAME:

SUBJECT: PHYSICS

FORM: SIX

YEAR: 2024/25

TERM: 1ST AND 2ND

COMPETENCE	OBJECTIVE	MONTH	WEEK	MAIN TOPIC	SUB TOPIC	PERIOD	TEACHER'S ACTIVITIES	LEARNER'S ACTIVITIES	REFERENCE	T/L AIDS	ASSESSMENT	REMARKS
By the end of Form Six, the student should have the ability to: - Apply theories, laws and principles of electromagnetism, current electricity, electronics, atomic physics and environmental physics in daily life. - Apply laboratory skills in solving daily life problems. - Use sustainable energy conversion systems for environmental conservation. - Use ICT tools in accessing information, simulating and modelling physical phenomena.	By the end of this sub-topic the student should be able to: - distinguish between magnetic flux density, B and Magnetic field intensity, H. - investigate the magnetic field density due to a conductor carrying current - analyse the motion of a charged particle moving in a magnetic field			**ELECTRO-MAGNETISM**	**Magnetic Fields**		- Teacher to guide students to deduce relationship between B and H - Teacher to guide students to deduce the magnetic flux density B for a long straight conductor, circular coil and solenoid, using Biot-Savart law and Ampere's law - Teacher to assist students in groups to demonstrate movement of a charged particle in a uniform magnetic field.	- Students in groups to discuss the difference between magnetic flux density B and magnetic field intensity H. - Students in groups to discuss the structure of the magnetic field for long straight conductor, a circular coil and a solenoid. - Students to derive relationship between magnetic flux density and force acting on the charged particle in a magnetic field	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.	Conductors Coil Solenoid Galvanometer Battery Helmholtz coils Charged oil drop	Is the student able to investigate the magnetic field density due to a conductor carrying a current and analyse the motion of a charged particle moving in a magnetic eld?	
	Student should be able to: - investigate magnetic permeability of materials. - examine magnetization of different materials - interpret the hysteresis loop for B and H				**Magnetic Properties of Materials**		- Teacher to guide students to deduce the permeability from graph of B and H. - Teacher to guide students to deduce relative permeability and susceptibility of a material.	- Students in groups to perform experiment to determine the relationship between B and H - Students to drive the relationship between intensity of magnetization M and magnetic flux density B - Students to discuss in groups the distinction between magnetically soft and magnetically hard materials		Magnet Search coil Ballistic galvanometer Ammeter Solenoid	Is the student able to investigate magnetic permeability of materials and interpret the hysteresis loop for B and H??	
	- distinguish among Ferromagnetic, Paramagnetic and diamagnetic materials.						- Teacher to guide students to brainstorm and discuss about atomic magnetism and magnetic domains. - Teacher to guide student to distinguish among ferromagnetic, paramagnetic and diamagnetic materials by using concepts of the magnetic domain theory	- to demonstrate domains alignment under the influence of an external magnetic field - to distinguish among ferromagnetic, paramagnetic and diamagnetic materials by using concepts of the magnetic domain theory		Iron filings Helmhotz coil Hard paper Charts for magnetic domain	Is the student able to distinguish among Ferromagnetic, Paramagnetic and diamagnetic materials?	
	Student should be able to: - investigate the factors which determine the magnetic force on a current carrying conductor in a magnetic field - determine the torque on a current loop in a magnetic field. - identify applications of magnetic forces				**Magnetic Forces**		- To guide students to perform experiment to determine relationship between magnetic force and magnetic flux density, current and length of a conductor. - To guide students to discuss relationship between the Ampere and the force acting between two parallel current carrying conductors placed in air	- Students to perform experiment to determine relationship between magnetic force and magnetic flux density, current and length of a conductor. - Students to discuss relationship between the Ampere and the force acting between two parallel current carrying conductors placed in air		• Solenoid • Rheostat • Insulator • Battery • Magnets • Ammeter	Is the student able to investigate the factors which determine the magnetic force on a current carrying conductor in a magnetic eld? Is the student able	
							- To guide students in groups to deduce the torque acting on a rectangular coil carrying a current. - To guide students in groups to brainstorm on applications of magnetic forces in daily life	- Students in groups to deduce the torque acting on a rectangular coil carrying a current. - Students in groups to brainstorm on applications of magnetic forces in daily life		Chart	to determine the torque on a current loop in a magnetic eld?	
	Student should be able to: - Explain the concept of flux linkage. - investigate factors which determine the induced *emf*.				**Electromagnetic Induction**		- Students in groups to perform experiment to determine the factors which affect magnitude of induced *emf*. - Teacher to guide students to state Lenz's and Faraday's laws of electromagnetic induction.	- Students in groups to perform experiment to determine the factors which affect magnitude of induced *emf*. - Students to state Lenz's and Faraday's laws of electromagnetic induction.		•Galvanometer • Magnetic • Set of solenoids	Is the student able to investigate factors which determine the induced *emf*?	
By the end of Form Six, the student should have the ability to: - Apply theories, laws	Student should be able to determine the energy stored in an inductor.			**ELECTRO-MA**			- Teacher to guide students to demonstrate self-induction and mutual-induction. - Teacher to guide students to derive an expression for energy stored in an inductor.	- Students to derive expressions for self-induction and mutual induction. - Students to discuss importance and applications of back-*emf* in practice.	Mehta.V.K, & Rohit, M. (2009). *S.Chandi's Principles of Physics for class XI.* New	Galvanometer Battery Lamp Switch Rheostat	Is the student able to Distinguish between self induction and mutual induction?	

and principles of electromagnetism, current electricity, electronics, atomic physics and environmental physics in daily life. - Apply laboratory skills in solving daily life problems. - Use sustainable energy conversion systems for environmental conservation. - Use ICT tools in accessing information, simulating and modelling physical phenomena.	student should be able to: - explain the origin of the Earth's magnetic field - describe structure of Earth's magnetic field. - explain variations of Earth's magnetic field - analyse components of the Earth's magnetic field.			**GNETISM**	**Magnetic Field of the Earth**		- Teacher to guide students to use the self-dynamo theory to explain the origin of the earth's magnetic field. - Teacher to guide students to discuss the three variations; secular variation, polar wondering and magnetic field reversal - Teacher to guide students to analyse the components of the earth's magnetic field.	- Students to use the self-dynamo theory to explain the origin of the earth's magnetic field. - Students to discuss the three variations; secular variation, polar wondering and magnetic field reversal - Students to analyse the components of the earth's magnetic field.	Delhi: S.Chand & campany LTD. Nelkon, & parker. (1995). *Advanced Level Physics.* New Delhi: CBS.	Computer simulation Charts Global	Is the student able to explain the origin of the Earth's magnetic field?	
							- Teacher to guide students to brainstorm and discuss in groups about the origin of the earth's magnetic field - Teacher to guide students in groups to discuss the structure of the earth's magnetic field and compare with field on a bar magnet - Teacher to guide students in groups to perform experiment to determine the components of the earth's magnetic field.	- Students to brainstorm and discuss in groups about the origin of the earth's magnetic field - Students in groups to discuss the structure of the earth's magnetic field and compare with field on a bar magnet - Students in groups to perform experiment to determine the components of the earth's magnetic field. .		Dip needle Compass	Is the student able to describe structure of Earth's magnetic field and components of the Earth's magnetic field?	
	Student should be able to: - describe the mechanism of electric conduction in metals - determine the resistivity of a conductor. - investigate the temperature coefficient of resistance - analyse electrical networks.			**CURRENT ELECTRICITY**	**Electric Conduction in Metals**		- Teacher to guide students to derive expression for current in metallic conductor - Teacher to guide students to compute resistivity of a given conductor - Students to perform experiment to determine temperature coefficient of resistance. - Teacher to guide students to establish relationship between temperature coefficient of resistance of the conductor and temperature.	- Students to discuss mechanism of electric conduction in metals - Students to perform experiments to determine resistivity of a wire by using Wheatstone Bridge and Meter Bridge Students to perform experiment to determine current at a junction of electrical network. - Students to apply the laws in electrical networks. - Students to establish relationship between temperature coefficient of resistance of the conductor and temperature.		Connecting wires • Graph paper • Tungsten wire •Galvanometer • Battery Battery Galvanometer Potentiometer Ammeters Connecting wires Jockeys	Is the student able to describe the mechanism of electric conduction in metals and investigate the temperature coefficient of resistance?	
	Student should be able to: - investigate the conduction of electricity in gases. - explore optical spectra for gases. - identify applications of conduction of electricity in gases.				**Electric Conduction in Gases**		- To guide students to demonstrate conduction of electricity in gases. - Teacher to guide students to interpret various bands observed in the discharge tube. - To guide students to perform experiment to determine spectra of gases. - Teacher to guide students to use spectral data to identify types of gases. - To guide students in groups to discuss applications of conduction of electricity in gases, e.g. fluorescent tube, vapor lamps.	- Students to demonstrate conduction of electricity in gases. - Students to interpret various bands observed in the discharge tube. - Students to sketch and interprete the ionization curve. - Students to perform experiment to determine spectra of gases. - Students to use spectral data to identify types of gases. - Students in groups to discuss applications of conduction of electricity in gases, e.g. fluorescent tube, vapor lamps.		• Gas tubes • Prism spectrometer • Induction coil • Diffraction grating	Is the student able to explore optical spectra for gases and identify applications of conduction of electricity in gases?	
	Student should be able to: - measure alternating current using appropriate instruments. - establish the mean and r.m.s values of alternating current and voltage.				**Alternating Current(ac)**		- Teacher to guide students to perform experiment to measure a and discuss difference between ac and dc meters. - Teacher to guide students to derive expression for mean and root-mean square values of alternating current and voltage.	- Teacher to guide students to perform experiment to measure a and discuss difference between ac and dc meters. - Teacher to guide students to derive expression for mean and root-mean square values of alternating current and voltage.		• Moving coil meter • Hot Wire meter • Oscilloscop • Digital meter	Is the student able to establish the mean and r.m.s values of alternating current and voltage?	

By the end of Form Six, the student should have the ability to: - Apply theories, laws and principles of electromagnetism, current electricity, electronics, atomic physics and environmental physics in daily life. - Apply laboratory skills in solving daily life problems. - Use sustainable energy conversion systems for environmental conservation. - Use ICT tools in accessing information, simulating and modelling physical phenomena.	The student able to: - analyse conduction of a.c through different circuit elements. - establish the resonant frequency for R, L, C circuits. - determine power in R, L and C circuits.			**CURRENT ELECTRICITY**			- To guide students to demonstrate the passage of ac through resistor, inductor and capacitor and sketch graphs of I and V against time for resistor, inductor and capacitor and their phasor diagram. - To guide students to deduce expressions for capacitive and inductive reactance and demonstrate ac through CR, LR, LC and LCR in series and parallel circuits.. - Teacher to guide students to derive expression for power in R, L and C circuits.	- Students to demonstrate the passage of ac through resistor, inductor and capacitor and sketch graphs of I and V against time for resistor, inductor and capacitor and their phasor diagram. - Students to deduce expressions for capacitive and inductive reactance and demonstrate ac through CR, LR, LC and LCR in series and parallel circuits.. - Students to derive expression for power in R, L and C circuits.	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.	• ac source • Oscilloscope • Inductor • Capacitor • Resistor	Is the student able to analyse conduction of a.c through different circuit elements and establish the frequency band with and resonant frequency for R, L, C circuits?	
MID –TERM EXAMINATION AND SHORT BREAK												
	Student should be able to: - explain the significance of the Fermi level and energy gap in solids - analyse the effect of temperature on the electrical conduction of solids.			**ELECTRONICS**	**Band Theory of Solids**		- To guide students to brainstorm on energy bands in solids. - To guide students in groups to explain the significance of the Fermi level and the energy gap. - To guide students in groups to discuss the effect of temperature on the electrical conduction of solid conductor, semiconductors and insulators	- Students to brainstorm on energy bands in solids. - Students in groups to explain the significance of the Fermi level and the energy gap. - Students in groups to discuss the effect of temperature on the electrical conduction of solid conductor, semi conductors and insulators		• Electrical sources • Conductor • Semiconductor • Insulator	Is the student able to explain the significance of the Fermi level in solids and analyse the effect of temperature on the conduction of solids?	
	Student should be able to: - distinguish between intrinsic and extrinsic semiconductors. - examine applications of semiconductors.				**Semiconductors**		- To guide students in groups to brainstorm on difference between intrinsic and extrinsic semiconductors. - Teacher to guide students to discuss the process of doping. - Students in groups to conduct projects on the applications of semiconductors	- Students in groups to brainstorm on difference between intrinsic and extrinsic semiconductors. - Students in groups to conduct projects on the applications of semiconductors		• Silicon • Germanium • Computer simulation	Is the student able to distinguish between intrinsic and extrinsic semiconductors and examine applications of semi conductor sensors?	
	Student should be able to: - explain the mode of operation of a pnp and npn junctions. - interpret transistor characteristics. - determine the amplification and power gain in transistor circuits - assess the effect of temperature on transistor circuits. - design and construct basic transistor switching circuits.				**Transistor**		- Teacher to guide students to discuss the construction and the mode of action of the *npn* and *pnp* junctions. - To guide students in groups to perform experiment to determine transistor characteristics for CE, CB and CC configuration. - Teacher to guide students to derive expression for amplification and power gain. - To guide students in groups to perform experiments to demonstrate effect of temperature on transistor circuits and explain it. - To guide students in groups to design and construct a transistor switching circuit.	- Students in groups to perform experiment to determine transistor characteristics for CE, CB and CC configuration. - Students in groups to perform experiment to measure amplification, using CE transistor. - Students to discuss applications of current and voltage amplification and power gain by transistors circuits. - Students to demonstrate how to control temperature variation in transistor circuits. - Students in groups to design and construct a transistor switching circuit.		• Capacitor • Resistor • Battery • Transistor • Oscilloscope • Signal source • CE transistor circuit • Signal source • Heat source	Is the student able to determine the amplification and power gain in transistor circuits and assess the effect of temperature on transistor circuits?	

	Student should be able to: - identify basic types of logic gates - create logical truth tables of logic gates. - apply Boolean Algebra to analyze logic circuits.				**Logic Gates**		- To guide students in groups to discuss the various types of logic gates and demonstrate action of the various gates - Teacher to guide students to create truth tables for NOT, AND, NAND, NOR and OR gates - Teacher to introduce principles of Boolean algebra and students to analyze logic circuits by using Boolean algebra.	- Students in groups to discuss the various types of logic gates and demonstrate action of the various gates - Students to create truth tables for NOT, AND, NAND, NOR and OR gates - Students to apply Boolean algebra to design logic circuits.		• AND gate • OR gate • NOR gate • NAND gate • Computer simulation • Chart showing logic gates	Is the student able to identify basic types of logic gates and apply Boolean Algebra to analyze logic circuits?	
By the end of Form Six, the student should have the ability to: - Apply theories, laws and principles of electromagnetism, current electricity, electronics, atomic physics and environmental physics in daily life. - Apply laboratory skills in solving daily life problems. - Use sustainable energy conversion systems for environmental conservation. - Use ICT tools in accessing information, simulating and modelling physical phenomena.	Student should be able to: - describe the properties and mode of action of operational amplifiers - identify applications of operational amplifiers			**ELECTRONICS**	Operational Amplifiers		- To guide students to describe the mode of action of an operational amplifier. - To guide students in groups to discuss transfer characteristics of operational amplifiers. - To guide students in groups to demonstrate and discuss OP amp as voltage amplifier, voltage comparator, oscillator and as integrator.	- Students in groups to discuss properties of operational amplifiers. - Students in groups to discuss transfer characteristics of operational amplifiers. - Students in groups to demonstrate and discuss OP amp as voltage amplifier, voltage comparator, oscillator and as integrator.	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.	• OP amp • Oscilloscope • Signal generator • Power source	Is the student able to describe the properties and mode of action of operational amplifiers?	
	Student should be able to: - explain Amplitude Modulation (AM) and Frequency Modulation (FM). - identify basic components of a communication system. - describe the methods of reception and transmission of radio and TV signals.				Telecommunication		- To guide students to distinguish between AM and FM. - To guide students, through question and answers, to discuss the basic components of a communication system. - To arrange for study visit to a radio and TV transmission station. - To guide students to summarize the methods of transmitting and receiving radio and TV signals.	- Students to brainstorm on the meaning of amplitude modulation and frequency modulation. - Students to summarize the methods of transmitting and receiving radio and TV signals. - Students in groups to carry out projects to design simple radio receiver, transmitter and TV antennas		• Radio set • TV set • MP3 system • Computer • Internet	Is the student able to identify the basic components of a communication system and design simple telecommunication devices?	
	Student should be able to: - describe the Rutherford and Bohr models of the atom. - analyse atomic energy levels.			**ATOMIC PHYSICS**	Structure of the Atom		- Teacher to guide students to summarize the main components of the Rutherford and Bohr models of the atom.. - Teacher to guide students to discuss the hydrogen energy levels, and derive expressions for the energy levels. - To guide students to perform experiment to determine wavelengths in the Balmer series of the hydrogen spectrum.	- Students in groups to discuss the Rutherford and Bohr models of the atom. - Students to state Bohr postulates. - Students to discuss the hydrogen energy levels, and derive expressions for the energy levels. - Students to perform experiment to determine wavelengths in the Balmer series of the hydrogen spectrum.		• Charts • Computer simulation	Is the student able to describe the Rutherford and Bohr models of the atom and to analyse atomic energy levels?	
	Student should be able to: - describe failures of classical physics - explain Planck's quantum theory of blackbody radiation - explain Einstein quantum theory of light.				Quantum Physics		- Teacher to guide students to discuss the quantum theory according to Planck. - Students to discuss in groups spectral distribution of blackbody radiation according to Planck. - Teacher to guide students to discuss the quantum theory according to Einstein.	- Students to discuss the quantum theory according to Planck. - Students to discuss in groups spectral distribution of blackbody radiation according to Planck. - Students to discuss the quantum theory according to Einstein.		• Photocell • Light source • Prism	Is the student able to explain Planck's quantum theory of blackboard radiation?	

	- account for the photoelectric effect phenomenon. - deduce de Broglie wavelength for the electron. - describe production and uses of x-rays.						- To guide students to deduce stopping potential, threshold frequency and work-function of a metal. - Teacher to guide students to explain the photoelectric effect - To guide students in groups to discuss the wave-particle duality of the electron. - Teacher to guide students to derive de Broglie's wavelength for the electron. - To guide students to discuss uses of x-rays in medicine, industry and in sample analysis.	- Students to deduce stopping potential, threshold frequency and work-function of a metal. - Students to explain the photoelectric effect - Students in groups to discuss the wave-particle duality of the electron. - Students to derive de Broglie's wavelength for the electron. - Students to make a study visit to a laboratory or hospital with x-ray unit.		● X-ray tube ● Charts ● Computers simulation	Is the student able to deduce de Broglie wavelength for the electron and describe production and uses of x-rays?	
TERMINAL EXAMINATIONS AND LONG VACATION											
By the end of Form Six, the student should have the ability to: - Apply theories, laws and principles of electromagnetism, current electricity, electronics, atomic physics and environmental physics in daily life. - Apply laboratory skills in solving daily life problems. - Use sustainable energy conversion systems for environmental conservation. - Use ICT tools in accessing information, simulating and modelling physical phenomena.	Student should be able to: - describe production of LASER light. - explain properties of LASER light. - distinguish types of LASERS. - identify applications of LASER light.			**ATOMIC PHYSICS**	Laser		- Teacher to guide students to discuss how LASER light is produced. - Teacher to guide students to discuss methods of pumping in LASER production. - To guide students in groups to discuss different types of lasers. - Teacher to guide students to describe applications of LASER light in medicine, industry, military and domestic applications	- Students to discuss how LASER light is produced. - Students in groups to demonstrate properties of LASER light - Students to discuss methods of pumping in LASER production. - Students in groups to discuss different types of lasers. - Sstudents to describe applications of LASER light in medicine, industry, military and domestic applications	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.	● He-Ne laser ● screen	Is the student able to explain properties and identify applications of of LASER light?	
	Student should be able to: - describe the structure of the nucleus. - determine half life and the decay constant of a radioactive substance. - explain the relation of nuclear mass and binding energy. - identify criteria for stable and unstable nucleus.				Nuclear Physics		- Teacher to guide students to brainstorm and discuss the structure of the nucleus and review the Rutherford experiment - To guide students to discuss Einstein's mass-energy equation. - To guide students in groups to compute and analyse the Neutron (N) and Proton (Z) ratio and plot of N against Z for radioactive elements. - To guide students to establish criteria for stable and unstable nuclei	- Students in groups to brainstorm and discuss the structure of the nucleus and to review the Rutherford experiment - Students in groups to perform experiment to measure half-life and decay constant - Students in groups to apply Einstein mass- energy relation to determine the binding energy of nuclei - Students in groups to compute and analyse the Neutron (N) and Proton (Z) ratio and plot of N against Z for radioactive elements.		● Radioactive sources ● GM tube ● Scaler ● Timer ● Periodic table of elements ● Charts	Is the student able todetermine half life and the decay constant of a radioactive substance and to identify criteria for stable and unstable nucleus?	
	Student should be able to: - identify uses and hazards of radioisotopes. - distinguish between fission and fusion processes. - describe operation of a nuclear reactor.						- To guide students to identify hazards of isotopes. - To guide students in groups to discuss the meaning of fission and fusion. - To guide students to calculate the energy released in a nuclear fission. - To guide students in groups to calculate the energy absorbed in a nuclear fusion. - To guide students to discuss applications of nuclear fission and fusion processes. - To guide students in groups to do literature search on the construction and operation of a nuclear reactor for safe applications.	- Students in groups to brainstorm and discuss applications of isotopes. - Teacher to guide students to identify hazards of isotopes. - Students in groups to discuss the meaning of fission and fusion. - Teacher to guide students to calculate the energy released in a nuclear fission. - Students in groups to calculate the energy absorbed in a nuclear fusion. - Students to discuss applications of nuclear fission and fusion processes.		- Computer simulation - Internet - Library	Is the student able to identify uses and hazards of radioisotopes and describe operation of a nuclear reactor?	

	The student should be able to: - explain the influence of the radiation environment on plant growth. - explain the influence of the aerial environment on plant growth. - apply techniques for improvement of the plant environment.			**ENVIRONMENTAL PHYSICS**	Agricultural Physics		- Students in groups to discuss the components of solar radiation. - Students in groups to discuss the heating effect of solar radiation on plants - Students in groups to discuss how wind, rainfall, humidity and air temperature influence plant growth. - Students in groups to perform experiment to determine the rate of water flow in different soils. - Teacher to guide students to discuss the movement of water in soils. - Teacher to guide students to discuss heat transfer in soils. - Students to brainstorm and discuss the effect of shading, mulching, and wind breaks on the plant environment.	- Students in groups to discuss the components of solar radiation. - Students in groups to discuss the heating effect of solar radiation on plants - Students in groups to discuss how wind, rainfall, humidity and air temperature influence plant growth. - Students in groups to perform experiment to determine the rate of water flow in different soils. - Teacher to guide students to discuss the movement of water in soils. - Teacher to guide students to discuss heat transfer in soils. - Students to brainstorm and discuss the effect of shading, mulching, and wind breaks on the plant environment.		● Clay soil ● Sand soil ● Loam soil ● Cylindrical glass tube ● Water reservoir ● Measuring cylinder ● Time	Is the student able to explain the influence of the radiation environment on plant growth and apply techniques for improvement of the plant environment?	
MID-TERM EXAMINATIONS AND SHORT BREAK												
By the end of Form Six, the student should have the ability to: - Apply theories, laws and principles of electromagnetism, current electricity, electronics, atomic physics and environmental physics in daily life. - Apply laboratory skills in solving daily life problems. - Use sustainable energy conversion systems for environmental conservation. - Use ICT tools in accessing information, simulating and modelling physical phenomena.	Student should be able to: - describe the principles of a photovoltaic conversion system. - determine the amount of available and extractable wind energy. - examine methods of extracting geothermal energy - assess methods of extracting wave energy.			**ENVIRONMENTAL PHYSICS**	Energy from the Environment		- to guide students in groups to deduce the resultant of connecting several photocells in series. - To arrange field visit to study photovoltaic systems in practical use. - To guide students in groups to discuss amount of energy for a given wind speed. - To guide students to derive the amount of available and extractable wind energy. - To guide students in groups to brainstorm and discuss methods of extracting wave energy from sea waves	- Students in groups to deduce the resultant of connecting several photocells in series. - Students in groups to analyse the efficiency of a photovoltaic system. - Students in groups to discuss amount of energy for a given wind speed. - Students in groups to discuss methods of extracting geothermal energy. - Students in groups to brainstorm and discuss methods of extracting wave energy from sea waves	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.	• Computer simulation • Charts • Sea waves	Is the student able to describe the principles of a photovoltaic conversion system and to assess methods of extracting wave energy?	
	Student should be able to: - describe the elastic rebound theory of earthquake formation. - identify types of seismic waves. - describe the propagation of seismic waves. - locate the centre of an earthquake.				Earthquake		- To guide students to discuss formation of an earthquake according to the elastic rebound theory. - To guide students in groups to brainstorm and discuss types of seismic waves and their characteristics. - To guide students to discuss the propagation of seismic waves. - To guide students to discuss how the centre of an earthquake can be located.	- Students to discuss formation of an earthquake according to the elastic rebound theory. - Students in groups to brainstorm and discuss types of seismic waves and their characteristics. - Students to discuss the propagation of seismic waves. - Students to discuss how the centre of an earthquake can be located.		● Charts ● Computer simulation ● Seismometer	Is the student able to describe the elastic rebound theory of earthquake formation and locate the centre of an earthquake?	

	Student should be able to: - explain the concept of pollution. - identify sources and types of pollutant in the environment. - classify particulate matter in the atmosphere. - explain the transport mechanisms of atmospheric pollutant. - identify nuclear wastes and their methods of disposal. - explain the effects of pollution on visibility and optical properties of materials and the environment				Environmental Pollution		- Teacher to guide students to state the meaning of pollution - To guide students to brainstorm and discuss the types and sources of pollutants in the environment. - To guide students to identify the classes of particulate matter in the atmosphere. Teacher to guide students to examine transport mechanisms of atmospheric pollutants. - To guide students in groups to identify types of nuclear waste. - Teacher to guide students to describe how nuclear waste is disposed. - To guide students in groups to discuss the effect of pollution on the visibility and optical properties of materials and the environment.	- Students in groups to brainstorm on the meaning of pollution - Students to state the meaning of pollution - Students to brainstorm and discuss the types and sources of pollutants in the environment. - Students to identify the classes of particulate matter in the atmosphere. Teacher to guide students to examine transport mechanisms of atmospheric pollutants. - Students in groups to identify types of nuclear waste. - Students to describe how nuclear waste is disposed. .		• Motor vehicle • Industries smoke • Dumps • Charts • Computer simulation	Is the student able to explain the transport mechanisms of atmospheric pollutant and to explain the effects of pollution on visibility and optical properties of materials and the environment?	
REVISION & NECTA												