

PHYSICS SYLLABUS: Ordinary level

Physics syllabus for secondary schools form I-IV in Tanzania, 2010 Edition.

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Form one

1. Introduction To Physics

1. Concepts of Physics
 1. Explain the concepts of physics
 2. Establish the relationship between physics and other subjects
 3. State the importance of studying physics
2. Applications of Physics in Real Life
 1. Explain the applications of physics in real life
 2. Apply physics in daily life

2. Introduction To Laboratory Practice

1. Laboratory Rules and Safety Guidelines
 1. State rules in physics laboratory
 2. Explain the safety measures in physics laboratory
 3. Use the First Aid Kit to render first aid
 4. Identify warning signs
 5. Use warning signs in daily life
2. Basic Principles of Science Investigation
 1. Explain the concept of scientific investigation
 2. Identify the steps of scientific investigation
 3. Use the scientific investigation methods in solving problems

3. Measurement

1. Concepts of Measurement
 1. Explain the concepts of measurement
 2. State the importance of measurement in real life
2. Basic Fundamental Quantities
 1. Define a fundamental quantity
 2. Mention three basic fundamental quantities of measurement
 3. State the S.I unit of fundamental quantities
 4. Use appropriate instruments for measuring fundamental quantities
3. Derived quantities
 1. Explain derived quantities
 2. State the S.I. units of derived quantities
4. Basic Apparatus/equipment's and their uses

1. Describe basic apparatus/equipments used for measurement
2. Identify sources of errors in measurement
5. Density and Relative Density
 1. Explain the concept of density of a substance and its S.I unit
 2. Determine the density of regular and irregular solids
 3. Determine the density of a liquid
 4. Define the relative density of a substance
 5. Interpret applications of density and relative density in real life

4. Force

1. Concept of Force
 1. Explain the concept of force
 2. State the S.I unit of force
2. Types of Force
 1. Identify fundamental types of forces
 2. Describe the properties of each type of the fundamental forces
3. Effects of Force
 1. Identify effects of forces
 2. Justify the effects of forces on materials

5. Archimedes' Principle And Law Of Flotation

1. Archimedes' Principle
 1. Explain the concept of upthrust
 2. Verify the archimedes principle
 3. Apply the archimedes principle to determine relative density
2. Law of Flotation
 1. Distinguish floating and sinking of objects
 2. Explain the conditions for a substance to float in fluids
 3. Relate upthrust and weight of floating body
 4. State the law of flotation
 5. Apply the law of flotation in everyday life
 6. Describe the mode of action of a Hydrometer
 7. Construct a simple Hydrometer
 8. Use Hydrometer to determine the relative density of different liquids

6. Structure And Properties Of Matter

1. Structure of Matter
 1. Explain the concept of matter
 2. Justify the particulate nature of matter
 3. Explain the kinetic theory of matter
 4. Classify three states of matter
2. Elasticity
 1. Explain the concept of elasticity
 2. Justify the relationship between tension and extension of a loaded elastic material
 3. Identify the applications of elasticity in real life
3. Adhesion and Cohesion
 1. Explain the concept adhesion and cohesion

2. Identify the applications of adhesion and cohesion in daily life
4. Surface Tension
 1. Explain the concept of surface tension
 2. Identify the applications of surface tension in daily life
5. Capillarity
 1. Explain the concept of capillarity
 2. Identify the applications of capillarity in daily life
6. Osmosis
 1. Explain the concept of osmosis
 2. Identify the applications of osmosis in daily life

7. Pressure

1. Concept of Pressure
 1. Explain the concept of pressure
 2. State the S.I unit of pressure
2. Pressure due to Solids
 1. Explain dependence of pressure on surface of contact
 2. Identify the applications of pressure due to solids
3. Pressure in Liquids
 1. Describe the characteristics of pressure in liquids
 2. Examine the variation of pressure with depth in liquids
 3. Solve problems involving Pressure in Liquids
 4. Explain the principle of a hydraulic pressure
 5. Measure pressure of a liquid
4. Atmospheric Pressure
 1. Describe the existence of atmospheric pressure
 2. Identify the applications of atmospheric pressure
 3. Measure atmospheric pressure

8. Work, Energy And Power

1. Work
 1. Explain the concept of work
 2. State the S.I unit of work
 3. Determine the work done by an applied force
2. Energy
 1. Explain the concept of energy
 2. State S.I unit of energy
 3. Identify different forms of energy
 4. Distinguish between potential energy and kinetic energy
 5. Explain the transformation of energy
 6. State the principle of conservation of Energy
 7. Explain the uses of mechanical energy
3. Power
 1. Explain the concept of power
 2. State the S.I unit of power
 3. Determine the rate of doing work

9. Light

1. Sources of Light
 1. Explain the concept of light
 2. Identify sources of light
 3. Distinguish luminous from non-luminous bodies
2. Propagation and Transmission of Light
 1. Explain the concept of rays and beam of light
 2. Verify that light rays travels in straight line
 3. Identify transparent, translucent and opaque materials
3. Reflection of Light
 1. Explain the concept of reflection of light
 2. Distinguish regular from irregular reflection of light
 3. Apply the laws of reflection of light
 4. Describe image formed by a plane mirror

Form Two

1. Static Electricity

1. Concept of Static Electricity
 1. Explain the concept of static electricity
 2. Explain the origin of charges
 3. Identify the two types of charges
 4. State the fundamental law of static electricity
 5. Charge bodies using different methods
2. Detection of Charges
 1. Describe the structure of a gold-leaf electroscope
 2. Determine the sign of charges
 3. Identify steps of charging and discharging of a gold-leaf electroscope
3. Conductors and Insulators
 1. Distinguish between a conductor and insulator
4. Capacitors
 1. Explain mode of action of a capacitance
 2. Explain the action of a capacitor
 3. Describe the construction of an air-filled capacitor
 4. Determine equivalence capacitance of a combination of capacitors
5. Charge Distribution Along the Surface of a Conductor
 1. Recognise that charge on a conductor reside on its outer surface
 2. Show that charge on a conductor is concentrated on sharply curved surfaces
6. Lightning Conductor
 1. Explain the phenomenon of lightning conductor
 2. Describe the structure and mode of action of lightning conductor
 3. Construct a simple lightning conductor

2. Current Electricity

1. Concept Of Current Electricity
 1. Define current electricity
 2. Identify different sources of current electricity in everyday life
2. Simple Electric Circuits
 1. Identify simple circuit components
 2. Identify simple electric symbols
 3. Explain the concept of Current, Voltage and Resistance
 4. State the SI units of Current, Voltage and Resistance
 5. Connect simple electric circuits
 6. Measure electric current and voltage
 7. Analyse simple electric circuits

3. Magnetism

1. Concept of Magnetism
 1. Explain the origin of magnetism

2. Identify magnetic and non-Magnetic material/substances
3. State the properties of magnets
4. Identify types of Magnets
5. Identify application of magnets
2. Magnetisation and Demagnetisation
 1. Explain the concept of magnetisation and demagnetisation
 2. Demonstrate magnetisation and demagnetisation
 3. Design methods of storing magnets
3. Magnetic Fields of a Magnet
 1. Explain the concept of magnetic fields of a magnet
 2. Illustrate the magnetic lines of force around a magnet using iron fillings or compass needle
 3. Explain the methods of magnetic shielding
4. Earth's Magnetic Field
 1. Explain the phenomenon of earth's magnetism
 2. Determine direction of earth's magnetic field
 3. Locate the earth's magnetic lines of force about a bar magnet
 4. Measure the angle of inclination (dip) and angles of declination
 5. State the application of earth's magnetic field

4. Forces In Equilibrium

1. Moment of a Force
 1. Explain the effects of turning forces
 2. Determine the moment of force
 3. State the principle of moments
 4. Apply the principle of moment in daily life
2. Centre of Gravity
 1. Explain centre of gravity
 2. Determine centre of gravity of regular shaped body
 3. Determine centre of gravity of irregular shaped body
3. Types of Equilibrium
 1. Explain the condition for equilibrium
 2. Explain Stable, Unstable and Neutral equilibrium
 3. Apply conditions of stable, unstable and neutral equilibrium in daily life

5. Simple Machines

1. Concept of Simple Machines
 1. Explain the concept of a simple machine
 2. Explain the terms applied in simple machine
 3. Identify the different kinds of simple machines
2. Levers
 1. Identify the three classes of levers
 2. Determine the mechanical advantage, velocity ratio and efficiency of lever
 3. Use of levers in daily life
3. Pulleys
 1. Identify different pulley systems
 2. Determine mechanical advantage, velocity ratio and efficiency of pulley system

3. Use of pulley in daily life
4. Inclined Plane
 1. State the concept of inclined plane
 2. Determine mechanical advantage, velocity ratio and efficiency of inclined plane
 3. Apply inclined plane in daily life
5. Screw Jack
 1. Describe the structure of a Screw Jack
 2. Determine the mechanical advantage, velocity ratio and efficiency of a Screw Jack
 3. Use the Screw Jack in daily life
6. Wheel and Axle
 1. Describe the structure of a wheel and axle
 2. Determine the mechanical advantage, velocity ratio and efficiency of a wheel and axle
 3. Use the wheel and axle in daily life
7. Hydraulic press
 1. Describe the structure of Hydraulic Press
 2. Determine mechanical advantage, velocity ratio and efficiency of a Hydraulic Press
 3. Use the Hydraulic Press in daily life

6. Motion In Straight Line

1. Distance and Displacement
 1. Distinguish between Distance and Displacement
 2. State the SI units of Distance and Displacement
2. Speed and Velocity
 1. Distinguish between Speed and Velocity
 2. State the SI unit of Speed and Velocity
 3. Determine average velocity of a body
3. Acceleration
 1. Interpret velocity time-graph
 2. Determine the acceleration of a body
 3. Explain the concept of retardation
4. Equations of Uniformly Accelerated Motion
 1. Derive equation of uniformly accelerated motion
 2. Apply equations of accelerated motion in daily life
5. Motion under Gravity
 1. Explain the concept of gravitational force
 2. Determine acceleration due to gravity
 3. Explain the application of gravitational force

7. Newton's Law Of Motion

1. 1st law of Motion
 1. Explain the concept of inertia
 2. State Newton's first law of Motion
 3. Verify Newton's first law of Motion
2. 2nd law of Motion

1. Explain concept of linear momentum
2. State the SI unit of linear momentum
3. Determine linear momentum
4. State Newton's second law of Motion
5. Verify Newton's second law of Motion
3. Conservation of linear Momentum
 1. Distinguish between Elastic and Inelastic Collisions
 2. State the principle of conservation of linear Momentum
 3. Apply the principle of conservation of linear momentum in solving problems
4. 3rd law of Motion
 1. Distinguish between Action and Reaction Forces
 2. State Newton's third Law of Motion
 3. Apply Newton's third Law of Motion

8. Temperature

1. Concept of temperature
 1. Define the term temperature
 2. State the SI unit of temperature
2. Measurement of Temperature
 1. Identify measurable physical properties that change with temperature
 2. Define the fundamental interval of a thermometer
 3. Describe the 'mode' of action of liquid-in-glass thermometer
 4. Measure accurately the temperature of a body

9. Sustainable Energy Sources

1. Water Energy
 1. Explain the generation of electricity from water
 2. Explain the importance of water energy
 3. Construct a model of Hydro Electric power plant
2. Solar Energy
 1. Explain the sun as a source of energy
 2. Explain the conversion of Solar energy to electric Energy
 3. Construct a model of solar panel
3. Wind Energy
 1. Explain wind as a source of energy
 2. Construct a model of a Wind Mill
 3. Apply Wind Mill in daily life
4. Sea Wave Energy
 1. Explain sea wave as a source of energy
 2. Explain the conversion of sea wave energy to electric energy
5. Geothermal Energy
 1. Explain Geothermal as a source of energy
 2. Explain the conversion of Geothermal energy to electric energy

Form Three

1. Applications of Vectors

1. Scalar and Vector Quantities
 1. Distinguish between scalar and vector quantities
 2. Add vectors using graphical method
 3. State the triangle and parallelogram laws of forces
2. Relative Motion
 1. Explain the concept of relative motion
 2. Calculate the relative velocity of two bodies
 3. Apply the concept of relative motion in daily life
3. Resolution of Vectors
 1. Explain the concept of components of a vector
 2. Resolve a vector into two perpendicular components
 3. Apply resolution of vectors in solving problems

2. Friction

1. Concept of Friction
 1. Explain the concept for friction
 2. Realize the advantages and disadvantages of friction in daily life
 3. Describe methods of reducing friction
2. Types of Friction
 1. Identify types of friction
 2. Determine limiting friction
3. Laws of Friction
 1. State laws of friction
 2. Determine the coefficient of friction
 3. Apply laws of friction in solving problems

3. Light

1. Reflection of Light from Curved Mirrors
 1. Distinguish between concave and convex mirrors
 2. Explain the terms principle, axis, pole, principle focus and radius of curvature as applied to curved mirrors
 3. Locate the images formed by a curved mirror
 4. Determine practically the focal length of a concave mirror
 5. Use Convex and concave mirrors in daily life
2. Refraction of Light
 1. Explain the concept of refraction of light
 2. Measure the angle of incidence and angle of refraction
 3. State the laws of refraction
 4. Determine the refraction index of a material
 5. Explain the concept of critical angle and total internal reflection of light
 6. Explain the occurrence of mirage
3. Refraction of Light by Rectangular Prism

1. Trace the passage of light through a triangular prism
2. Demonstrate the dispersion of white light
3. Determine the angles of deviation and minimum deviation
4. Construct a simple prism binocular
4. Colours of Light
 1. Explain the component of white light
 2. Recombine colours of white light
 3. Explain the appearances of coloured object under white light
 4. Identify primary, secondary and complementary colours of light
 5. Distinguish between additive and subtractive combination of colours
5. Refraction of Light by Lenses
 1. Distinguish between convex and concave lenses
 2. Explain the terms focal length, principle focus, principle axis and optical centre as applied to lenses
 3. Determine practically the focal length of a lens
 4. Locate the image formed by a lens
 5. Determine the position, size and nature of the image formed by lens
 6. Determine the magnification of the lens camera
 7. Determine the relationship between focal length (f) object distance (u) and image distance (v) as applied to Lenses

4. Optical Instruments

1. Simple Microscope
 1. Describe the structure of the simple microscope
 2. Describe the mode of action of a simple microscope
 3. Construct a simple microscope
2. Compound Microscope
 1. Describe the structure of a compound microscope
 2. Describe the mode of action of a compound microscope
 3. Determine the magnification of a compound microscope
 4. Mention uses of a compound microscope
3. Astronomical Telescope
 1. Describe the structure of an astronomical telescope
 2. Describe the mode of action of an astronomical telescope
 3. Determine the magnification of an astronomical telescope
 4. Mention uses of an astronomical telescope
 5. Construct a simple astronomical telescope
4. Projection Lantern
 1. Describe the structure of the projection lantern
 2. Describe the mode of action of a projection lantern
 3. Determine the magnification of a projection lantern
 4. Mention uses of a projection lantern
 5. Construct a simple projection lantern
5. The Lense Camera
 1. Describe the structure of the lens camera
 2. Describe the mode of action of the lens camera
 3. Determine the magnification of the lens camera

4. Construct a simple lens camera
6. The Human Eye
 1. Describe the structure of the human eye
 2. Explain accommodation power of the human eye
 3. Identify the defects of the human eye
 4. Describe the correction of the defects of human eye
 5. Compare the human eye and the lens camera

5. Thermal Expansion

1. Thermal Energy
 1. Explain the concept of heat
 2. State the source of thermal energy in everyday life
 3. Distinguish between heat and temperature
2. Thermal Expansion of Solids
 1. Demonstrate expansion of solids
 2. Explain expansion of solids in terms of kinetic theory of matter
 3. Identify expansivity of different solids
 4. Explain the applications of expansion of solids in daily life
3. Thermal Expansion of Liquids
 1. Explain the apparent expansion of liquids
 2. Demonstrate the effect of heat on liquids
 3. Verify the anomalous expansion of water
 4. Explain the applications of expansion of liquids in everyday life
4. Thermal Expansion of Gases
 1. Explain the concept of thermal expansion of gases
 2. Investigate the relationship between volume and temperature of fixed mass of air at constant pressure
 3. Investigate the relationship between pressure and volume of a fixed mass of air at constant temperature
 4. Investigate the relationship between pressure and temperature of a fixed mass of air at constant volume
 5. Identify the general gas equation from the gas laws
 6. Explain absolute scale of temperature
 7. Convert temperature in degrees centigrade (celsius) to kelvin
 8. Explain standard temperature and pressure (S.T.P)
 9. Apply expansion of gas in daily life

6. Transfer Of Thermal Energy

1. Conduction
 1. Explain the concept of conduction of Heat
 2. Identify good and bad Conductors of Heat
 3. Explain how to minimise Heat losses due to Conduction
 4. Apply knowledge of conduction in daily life
2. Convection
 1. Explain the concept of convection of heat
 2. Explain convection in fluids in terms of kinetic theory of matter
 3. Explain how to minimise heat losses due to convection to daily life
 4. Apply knowledge of convection to daily life

3. Radiation

1. Explain the concept of radiation
2. Identify good absorbers and emitters of radiant heat
3. Minimize heat losses due to radiation

7. Measurement Of Thermal Energy

1. Heat Capacity

1. Explain the factors which determine heat capacity of a substance
2. Determine the heat capacity
3. Determine the specific heat capacity

2. Change of State

1. Explain the behaviour of particles of matter by applying kinetic theory
2. Determine experimentally the melting point of a substance from its cooling curve
3. Demonstrate the effect of impurities on the freezing point and the boiling point of a substance
4. Demonstrate the effect of pressure on the boiling point and freezing point of a substance
5. Explain the phenomenon of regulation
6. Give the concept of boiling and evaporation in respect to the kinetic theory of matter
7. Demonstrate latent heat of fusion and vaporisation
8. Describe the mechanism of refrigeration

8. Vapour And Humidity

1. Vapour

1. Explain the process of evaporation of liquid
2. Identify factors affecting evaporation of a liquid
3. Distinguish between saturated and evaporation of a liquid
4. Explain the effect of temperature on saturated vapour pressure (S.V.P) of a liquid

2. Humidity

1. Explain the concept of humidity
2. Explain the formation of dew
3. Measure relative humidity
4. Apply the knowledge of humidity in daily life

9. Thermal Current Electricity

1. Electromotive force (emf) and potential difference (pd)

1. Explain the concept of electromotive force (emf) and potential difference (pd)
2. State the SI units of electromotive force and potential difference
3. Measure electromotive force of a cell and potential difference across a conductor

2. Resistance to Electric Current

1. Explain the concept of electric current in a conductor
2. Describe factors which determine the resistance of a conductor

3. Determine the relationship between potential difference across the conductor and current
4. Identify types of resistors
5. Determine the equivalent resistance of more than two resistors in series and parallel
6. Explain the mode of action of a Wheatstone bridge.
7. Connect and analyse a simple electric circuit
3. Effects of an Electric Current
 1. Explain the mechanism of heating by electric current
 2. Describe factors which determine the quantity of heat generated in a conductor due to a current
 3. Determine electrical power
 4. Interpret the power rating of electrical appliances
4. Electric Installation
 1. Explain the meaning of the letter E (Earthing) L (Live) and N (Neutral) in Electrical Wiring
 2. Describe the function of a fuse and a circuit breaker
 3. Perform wiring on a board
 4. Check and rectify electrical faults in domestic appliances
5. Cells
 1. Describe the mode of action of a dry cell (Leclanche)
 2. Determine voltage of combination of cells in series and parallel
 3. Identify the cell defects
 4. Describe the mode of action of lead-acid accumulator
 5. Explain the charging and discharging phenomenon of an accumulator
 6. Use cells and accumulators in daily life

Form Four

1. Waves

1. Introduction to Waves
 1. Explain the concept of a wave
 2. Explain the terms wave length, frequency and velocity of a wave
 3. Identify types of waves
2. Behaviour of Waves
 1. Explain Reflection, refraction, diffraction and interference of waves
 2. Mention the application of reflection, refraction, diffraction and interference of waves in daily life
 3. Demonstrate the behaviour of waves
3. Propagation of Waves
 1. Describe the propagation of mechanical waves
 2. Explain the propagation of electromagnetic waves
 3. Determine the relationship between frequency, speed and wavelength of a wave
 4. Determine the refractive index of a medium
4. Sound Waves
 1. Identify source of sound waves
 2. Explain the concept of audibility range
 3. Describe the perception of hearing
 4. Explain the concept of echo and reverberation
 5. Determine the speed of sound in air
5. Musical Sound
 1. Explain the concept of a musical sound
 2. Identify factors affecting loudness, pitch and quality of a musical sound
 3. Identify the different musical instruments
 4. Explain the terms stationary wave, nodes and antinodes
 5. Determine the frequency of a musical note
 6. Distinguish between the fundamental note and overtones
 7. Explain the concept of resonance as applied to sound
 8. Construct a simple musical instrument
6. Electro Magnetic Spectrum
 1. Explain the concept of the electro Magnetic spectrum
 2. Identify the main bands of the electro Magnetic spectrum
 3. Detect infra-red, visible and ultra-violet rays
7. Application of Electro Magnetic Wave in daily life
 1. Identify the application of micro Waves, radio-Waves, Infra-red, gamma rays and x-rays
 2. Explain the importance of electro Magnetic waves in agriculture and climate

2. Electromagnetism

1. Magnetic Fields due to a Current-carrying Conductor

1. Explain how electric current produces a magnetic field
2. Identify the pattern of the magnetic field lines around a straight conductor
3. Determine the direction of magnetic field around a current-carrying conductor
4. Determine the presence and direction of a force on a current carrying Conductor in a magnetic field
5. Determine the direction of force due to two current 'air-carrying conductors when the current flowing in the same or opposite direction
2. Electro Magnetic Induction
 1. Explain the concept of electro Magnetic induction
 2. State the laws of electro Magnetic induction
 3. Explain the concepts of self and mutual induction
 4. Describe the mode of action of induction coil
 5. Describe the mode of action of a.c and d.c generator
 6. Construct a simple step-up and step-down transformer

3. Radioactivity

1. The Nucleus of an Atom
 1. Describe the structure of the nucleus of an atom
 2. Explain the atomic number, mass number and isotopes of an element and their symbols
 3. Mention forces holding the nucleus
2. Natural Radioactivity
 1. Explain the concept of radioactivity
 2. Describe properties of the radiations emitted by radio-active substances
 3. Explain the nuclear changes due to the emission of Alpha (${}^4_2\text{He}$), Beta (${}^0_{-1}\text{e}$) and Gamma (${}^0_0\gamma$) radiations
 4. Explain the detection of ${}^4_2\text{He}$, ${}^0_{-1}\text{e}$ and ${}^0_0\gamma$ radiations
 5. Describe half-life as applied to a radioactive substance
 6. Determine the half-life of a radioactive element
 7. Identify the applications of a natural radioactive Substances
3. Artificial Radioactivity
 1. Distinguish between natural and artificial radioactivity
 2. Describe methods of producing artificial radioactive isotopes
 3. Mention the applications of artificial radioactivity
4. Radiation Hazards and Safety
 1. Explain the effects of nuclear radiation on human body
 2. Protect himself/herself from nuclear radiation hazards
5. Nuclear Fission and Fusion
 1. Explain the nuclear fission and fusion
 2. Mention the applications of nuclear fission and fusion

4. Thermionic Emission

1. Cathode Rays
 1. Explain the production of cathode rays
 2. State the properties of cathode rays
 3. State the application of cathode ray tube
2. X-Rays

1. Describe the structure and mode of action of the x-ray tube
2. Distinguish between soft and hard x-rays and their production
3. State the properties of x-rays
4. Identify the applications of x-rays in daily life

5. Electronic

1. Semi Conductors
 1. Explain the concept of energy bands in solids
 2. Distinguish between conductors, semiconductors and insulators
 3. Describe the effect of temperature on the conductivity of conductors, semiconductors and insulators
 4. Identify types of Semiconductors
 5. Describe the mechanism of doping intrinsic semiconductors
2. Diodes
 1. Describe the construction of P-N junction
 2. Explain the mode of action of a P-N junction
 3. Identify the types of diodes
 4. Construct a half-wave and full-Wave rectifier
3. Transistor
 1. Describe the construction of a PNP transistor
 2. Explain the mode of action of a PNP transistor
 3. Identify the types of transistors
 4. Outline the applications of transistors in daily life
4. Single Stage Amplifier
 1. Explain the concept of analogue signals
 2. Explain the concept of digital signal
 3. Design a single-stage amplifier

6. Elementary Astronomy

1. Introduction to Astronomy
 1. Explain the concept of astronomy
 2. Explain the importance of astronomy in everyday life
2. Solar System
 1. Distinguish between a star and a planet
 2. Explain the force of gravitation which maintains celestial bodies in their Orbits
3. Constellations
 1. Explain the concept of constellation
 2. Identify constellation
 3. Uses of constellation in everyday life
4. The Earth and the Moon
 1. Describe the surface features and temperature of the moon
 2. Explain the causes of ocean tides

7. Geophysics

1. Structure and Composition of the Earth
 1. Describe the structure of the earth
 2. Describe the composition of the layers of the earth

3. Explain the importance of the layers of the earth
2. Earthquake and Volcanoes
 1. Explain the origin of volcanoes
 2. Describe effects of volcanoes
 3. Explain the origin of earthquake
 4. Describe the principle of measurement of earthquake
 5. Identify precaution against earthquake hazards
3. Structure and Composition of the Atmosphere
 1. Describe the vertical structure of the atmosphere
 2. Describe the composition of the atmosphere
 3. Explain the importance of various layers of the atmosphere
4. The Greenhouse Effect and Global Warming
 1. Explain the greenhouse effect
 2. Identify sources of greenhouse
 3. Explain the occurrence of global warming
 4. State the consequences of global warming