APPENDICES

APPENDIX - 1
CONTENT ANALYSIS

CONCEPTS/FACTS/THEORIES	PRACTICALS/ACTIVITIES
UNIT: 1 **LIGHT** **Reflection in Plane Mirrors** A light ray falling on a plane mirror will return to the medium from which it came. It is known as reflection.	Throwing a ball on a plain surface and observing the direction in which the ball bounces. Facilities needed: a ball and a plane surface.
Laws of Reflection **Law 1**: The incident ray, the reflected ray and the normal lie in the same plane. **Law 2**: The angle of incidence is equal to the angle of reflection.	Verification of laws of reflection - activity. Facilities needed: A cardboard, plane mirror strip, white paper and pins.
Characteristics of Plane Mirror Images The image in a plane mirror is virtual, erect, laterally inverted, and equal to the object in size and at the same distance as that of the object from the mirror.	1. Standing in front of the mirror and observing the characteristics one by one. 2. Placing an object in front of the mirror and observing the properties. Facilities needed: Plane mirror, candle, objects like word card etc.,
Uses of Plane Mirrors 1. Plane mirror is used as looking glass. 2. Plane mirrors are used in the Kaleidoscopes. 3. Plane mirrors are used in the Periscopes. 4. Plane mirrors are used in typesetting in printing.	Construction of Kaleidoscope and observing the designs formed by it. Construction of Periscope and observing the usage. Facilities needed: Cardboard pieces, plane mirror strips, broken bangle pieces, cello tapes etc.,
Curved Mirrors 1. Since the mirrors are part of a spherical surface, they are called as spherical mirrors. 2. Spherical mirrors of two types. a) Concave mirrors	1. Viewing the nature of the images through the concave and convex mirrors. 2. Viewing the nature of the images through the front and

(silvered outside) b) Convex mirrors (silvered inside)	backside of the stainless teaspoon. Facilities needed: Concave and convex mirror, stainless teaspoons etc.,
Definitions: 1. The geometric center of the spherical surface of the mirror is called the **Pole (P)** of the mirror.	Display of the figure in a flash card followed by a discussion.
2. The center of the sphere of which the spherical mirror is a part is called **Center of curvature(C).**	Display of the figure in a flash card followed by a discussion.
3. The radius of the sphere of which the mirror is a part is called **Radius of curvature**.	Display of the figure in a flash card followed by a discussion.
4. The line joining the pole and the center of curvature is called **the principal axis**.	Display of the figure in a flash card followed by a discussion.
5a. In a concave mirror the light rays coming parallel to the principal axis after reflection will converge at a point on the principal axis. This point is called **Principal focus** (F).	Display of the figure (ray diagram) in a flash card followed by a discussion.
5b. In a convex mirror the light rays coming parallel to the principal axis after reflection will appear to come from a point on the principal axis. This point is called **Principal focus** (F).	Display of the figure (ray diagram) in a flash card followed by a discussion.
6. The distance between the principal focus and the pole is called **Focal length**.	Display of the figure in a flash card followed by a discussion.
Images Formed in Spherical Mirrors 1.Parallel rays of light are reflected through the principle focus. 2.Rays of light passing through the principal focus are reflected parallel. 3.A ray of light passing through the centre of curvature along after reflection will return its own path.	1. Display of figure using flash cards and simple experiment. 2. Display of figure using flash cards and simple experiment. 3. Display of figure using flash cards and simple experiment. Facilities needed: torch or candle, flash cards, spherical mirrors, scale etc.,
Images Formed by a Concave Mirror 1. If the object is at infinity- the image is at F, real, inverted,	1. Simple experiments using natural objects like tree, building etc.,

smaller than the object. 2. If the object is beyond C-the image is between C and F, real, inverted, smaller than object. 3. If the object is at C- the image at C, real inverted, as same size as object. 4. If the object is between F and C the images is beyond C, real, inverted, larger than object. 5. If the is at F- the image is at infinity. 6. If the object is between F and P-the image is behind the mirror, virtual and erect.	2. Simple experiments with candle/torch. 3. Simple experiments with candle/torch. 4. Simple experiments with candle/torch. 5.Display of figure using flash cards. 6.Direct view in front of concave mirror. Facilities needed: Concave and convex mirrors, scale, candles, mirror, stands, screens etc.
Images Formed by a Convex Mirror A convex mirror forms only a virtual image for any position of the object. The image is erect, situated behind the mirror between P and F and always smaller than the object.	Direct view in front of convex mirror.
Uses of Spherical Mirrors 1. Concave mirrors are used as shaving mirrors, doctor's head mirrors, reflectors in torches, headlight of vehicles etc., 2. Convex mirror is used as driver's mirror.	
Refraction **Definition** When a ray of light travels from one medium into another, it bends or changes its direction. This is called refraction.	Observing the bending of light from air to water using stick, torchlight, coins and a tray with water.
Laws of Refraction 1. The incident ray, the refracted ray and the normal lie in the same plane. 2. The ratio of the sine of the angle of incidence to the sine of angle of refraction is a constant for a given pair of media (Snell's law).	Verification of laws of refraction - activity. Facilities needed: Glass slab, pins white sheet, cardboard, torch, tray with water, coin, stick etc.,

Refractive Index **Definition** It is the ratio of the sine of the angle of incidence to the sine of the angle of refraction, which is a constant.	Calculation of refractive index of glass for different incident angles.
UNIT: 2 MAGNETISM **Magnetic Field** 1) The space around the magnet where the magnetic effect is felt is called magnetic field. 2) The magnetic field is found up to a certain limit around a bar magnet. 3) The strength of field is greater near the poles of the magnet.	1) Observing the force of attraction of nails by a magnet by increasing or decreasing the distance between them. 2) Observing the pattern of magnetic field on a cardboard using the magnet and iron filings.
Mapping the Magnetic Field of a Bar Magnet 1.Compass needle is a small magnetic needle pivoted at the center of a glass case with brass wall. 2.A line of force is considered to be the path of a unit north pole placed in a magnetic field. The lines show the field around a magnet.	Observing the compass needle. Also observing the deflection near the magnet.
Properties of Lines of Force 1.The lines of force start at the north pole and end at the south pole. 2.The lines of force are found in all the planes of the magnet. 3.They are crowded near the poles. 4.They do not cross each other.	Placing bar magnet on a sheet of paper with north pole facing northern direction of earth -Drawing the lines of force using compass needle. Drawing the lines of force in another sheet placing south pole facing north. Facilities needed: Bar magnets, compass needle, white paper and wooden table (or) drawing board.
Magnetisation Magnetic substances can be magnetized either by rubbing them with a magnet (or) by magnetic induction. Substances, which acquire permanent magnetism, are called hard magnetic substances. E.g. steel. Substances, which are magnetized temporarily, are called soft magnetic substances. E.g. iron.	Rubbing an iron piece with a bar magnet- observing the polarity. Holding the center of bar magnet with hand and bringing steel pen nib near north pole and iron clip near south pole-observing magnetization.

Molecular Theory of Magnetisation Each molecule of a magnetic substance behaves like a tiny magnet having north and south poles at the two ends. These molecular magnets are called Weber elements. **Earth's Magnetism** 1. The magnetic behavior of the earth is due to the magnetic substances on the earth. 2. The space around the earth where the magnetic effect is felt is called magnetic field of the earth. 3. The line passing through the geographic north and south poles of the earth is called the geographic axis of the earth. 4. The line passing through the magnetic north and south poles of the earth is called magnetic axis of the earth. 5. The magnetic axis of the earth is inclined to its geographic axis. 6. The intensity and direction of the magnetic field due to earth's magnetism vary from place to place.	Cutting magnetized steel rod in to many pieces and testing the polarity of the magnets. Filing the test tube with iron filings - Striking many times with north pole of a magnet. Observing the tube with compass needle. Display of chart showing the magnetic axis of the earth followed by discussion. Facilities needed: Bar magnets, steel nibs, iron clips.
UNIT: 3. ELECTRICITY **Static Electricity** 1.There are two kinds of charges in nature. 2.There is attractive force between unlike charges. Between like charges there is repulsive force. Unlike charges attract each other.	1.Rubbing the plastic ruler with wool and bringing near bits of paper - observing before and after rubbing. 2.Inflating a rubber balloon -rubbing it against woolen material and place it against a wall - observing before and after rubbing. 3.Two glass rods rubbed with silk and brought together- observing the repulsive forces. 4.Two ebonite rods rubbed with fur brought together-observing the

Like charges repel each other **Structure of Atom** 1. Matters are made up of molecules and molecules are in turn made up of atoms. 2. Atoms have electrons, protons and neutrons. 3. Electrons are negatively charged; Protons are positively charged; neutrons do not have any charges. 4. Protons and neutrons are present in nucleus. Electrons revolve round the nucleus in elliptical orbits. 5. The number of protons in an atom is equal to the electron. Hence an atom as a whole is neutral. 6. Glass and fur have free electrons in the outer orbital. These free electrons can be transferred from one body to another. 7. When glass rod is rubbed with silk, free electrons from glass get transferred to silk. Hence silk becomes negatively charged and glass becomes positively charged. 8. When ebonite rod is rubbed with fur, free electrons from fur get transferred to ebonite. Thus ebonite becomes negatively charged and the fur becomes positively charged. **Production of Electricity** Electric current is nothing but motion of electrons.	repulsive charges. 5. Glass rod rubbed with silk and ebonite rod rubbed with fur brought together - observing the attractive forces. Facilities needed: Plastic ruler, bits of paper, piece of wool, glass rod, piece of silk, ebonite rod, piece of fur and thread. Displaying the structure of an atom in a flash card -discussion. Display of disc chart (or) model and discussion.

The dry cell, copper wires and the electric bulb constitute and electric circuit. The dry cell is the source of electricity in the circuit.	Formation of electrical circuit using dry cell, copper wire and bulb. Facilities needed: Dry cell, copper wire, and electric bulb.
A Simple Electric Cell 1. Two electrodes, one positive and the other negative kept dipped in an acid is called a cell. 2.In an electric cell the chemical energy is converted in to electrical energy. 3.In the voltaic cell copper plate acts as positive electrode and zinc rod acts as negative electrode.	Inserting zinc and carbon rod (taken from the old cell) in a fresh juicy lemon and connect them with copper wire to a sensitive galvanometer - observing the electric current produced from it.
Electric Circuits There are two types of circuits, series and parallel.	
In series circuit if one bulb is removed other bulbs do not glow.	a) Formation of series circuit.
In parallel circuit if any bulb is removed from the circuit other bulbs continue to glow.	b) Formation of parallel circuit. Facilities needed: Dry cell, three torch bulbs, bulb holders, and copper wire.
Magnetic Effects of Electricity When electric current flows through the wire it produces a magnetic effect around it.	1) Display of deflection of magnetic needle when electric circuit closed 2) Observing the change in the direction of deflection of magnetic needle when connection is interchanged. 3) Facilities needed: Dry cell, copper wire, torch bulb, bulb holder, magnetic needle and switch arrangement.
Direction of Electric Current Electrons flows from the negative terminal of a cell to the positive terminal.	
But due to convention it is considered that electric current in a circuit to be flowing from positive terminal of the cell to the negative terminal.	Displaying a flash card showing the direction of electric current - discussion.
Ampere's Swimming Rule Imagine a man swimming along the wire in the direction of the current is	Display of the figure using chart and demonstrating the experiment.

a circuit facing a magnetic needle. The north pole of the needle will be deflected towards his left hand.	
Electromagnet An object of iron magnetised using electricity is called electromagnet It is only a temporary magnet.	Experimenting the attraction of iron filings when the electric circuit is closed as the iron filings are dropped When the circuit is open. Facilities needed: Dry cell insulated copper wire and a switch arrangement. Formation of electromagnet using nail, copper wire and dry cell. Observing the attraction of pins by the nail when circuit is closed and the pins are dropped when it is switched off. Facilities needed: Dry cell, iron nail about 6 or 8cm long, insulated copper wire and a switch.
Electric Bell An electric bell works on the basis of electromagnet effect.	Demonstrations of an electric bell followed by discussion. Facilities needed: Electric bell, copper wires and dry cells.

UNIT: 4 ACIDS BASES AND SALTS **ACIDS:** **Definition** The substances, which give hydrogen in aqueous solutions, are called acids. (Or) An acid is a substance, which contains hydrogen, which may be replaced by a metal to form a salt. **Classification of Acids**	
1. **Organic or natural acids**: The acids contain carbon in them and can also be prepared chemically.	Collection of some natural substances, which are the sources. Vinegar -acetic acid Citrus fruits - citric acid Grapes - tartaric acid Sour milk - lactic acid Tomato - oxalic acid
2. **Inorganic or mineral acids:** Mostly the acids do not have carbon in them.	Displaying the chart contain mineral acids and their formulae.
Properties of Acids **Physical Properties** 1. Acids have sour taste.	Tasting the juices of the above natural sources. Tasting a drop of very dilute solution of Hydrochloric acid.
2. All acids are colourless.	Observing the glass bottles containing HCl, H_2SO_4 and HNO_3. Note: H_2SO_4 may sometimes brown due to impurities and HNO_3 bottle has brown fumes over it due to NO_2.
3. Most of the acids dissolve in water to form dilute acids.	Taking a hard glass tube half-filled with water and adding one or two drops of the acid.
4. Acids turn blue litmus in to red.	Testing the blue litmus paper in dilute acids.

Chemical properties Acids liberates hydrogen when react with metals.	Testing dilute acids with zinc or magnesium. Observing the pop sound when the gas burns.
Acids react with alkali (base) to neutralize it and forms salt and water.	Reacting NaOH solution with HCl, H_2SO_4 and HNO_3. Testing the neutralization with litmus paper or phenolphthalein.
Acids react with carbonates to give out carbon dioxide gas.	Reacting sodium carbonate with dilute acids. Testing the evolution of CO_2 using glowing splinter and passing the gas into lime water.
BASES **Definition** Bases are defined as the compounds containing hydroxyl groups (OH), which in aqueous solution form hydroxyl ion (OH^-).	
Properties of Bases Most bases are soluble in water to form alkalis.	Dissolving pellets of NaOH, KOH in water. Observing the change.
The solution is soapy in touch.	Touching the solution and rubbing the fingers together.
Bases are bitter in taste.	Dilute the basic solution of NaOH with water and tasting a drop of solution.
Bases turn red litmus into blue.	Placing a drop of the solution of NaOH in red and blue litmus papers.
Bases change yellow turmeric to brown.	Applying NaOH solution to a wet yellow turmeric stain or piece of cloth. Observing the change.
Bases turn phenolphthalein solution to pink.	Adding a drop of phenolphthalein solution to caustic soda solution and observing the change.
Chemical properties: Aqueous solution of bases reacts with acids to give salt and water.	Neutralizing the base with acid to form salt and water.

Salts Salts are formed by the neutralization of acids and bases. **Classification of salts:** **1. Normal/simple salt:** They are formed by the complete neutralization of an acid by a base. **2. Acid salt:** They are formed by the partial neutralization of an acid by base, which contain a replaceable hydrogen atom. **3. Basic salt:** They are formed by the partial neutralization of a base by an acid, which contain one replaceable hydroxy1 group. **4. Double salt:** They are prepared by mixing equimolar solution of two different salt solutions and the solution is crystallized. **5. Complex salts:** These contain one or more complex ions. **Manufacture of Na_2CO_3:** It is manufactured by reacting ammoniacal brine with CO_2 and heating. Manufacture of $CuSO_4$: It is prepared by treating CuO or $CuCO_3$ with H_2SO_4.	Display of chart containing different types of salts followed by discussion. Reacting HCl and NaOH to get simple salt NaCl. Tasting the salt solution. Performing the following reaction. $NaOH + H_2CO_3 \longrightarrow NaHCO_3 + H_2O$ Performing the following reaction. $Mg(OH)_2 + HCl \longrightarrow Mg(OH)Cl + H_2$ Preparation ferrous ammonium sulphate salt using ferrous sulphate and ammonium sulphate. Displaying potassium Ferro cyanide salt. $K_4[Fe(CN)_6]$ Displaying the chart containing the manufacture of sodium carbonate followed by discussion. Preparation of copper sulphate.
UNIT-5 **CARBON** **Carbon in Nature:** Carbon is found in nature both in the elementary state and also in the combined state such as sugar, wood, food materials etc., **Different forms of carbon:** Carbon exists in crystalline as well as amorphous state.	Testing the presence of carbon by heating these materials and observing the evolution of CO_2 due to the presence of carbon. Displaying the flow chart followed by discussion.

Crystalline forms of carbon: **Diamond** The purest form of carbon is diamond. It is the hardest substance in the world. Structure of diamond: In diamond each carbon atom is connected to four different carbon atoms in a tetrahedral form. Therefore it attains a hard, three dimensional structure.	Displaying the structure of diamond - model as well as diagram followed by discussion.
Graphite: Graphite is one of the softest minerals obtained in nature. **Structure of graphite:** Each carbon atom in graphite is linked with three different carbon atoms by covalent bonding. They are in the form of layers. The layers can easily slip on one another.	Displaying the structure of graphite - model as well as diagram followed by discussion.
Amorphous forms of carbon **1. Coal** It is a high temperature product of burned plants and trees due to earth -quake and volcanoes. **2. Coke** Coke is obtained by the destructive distillation of coal.	Displaying the chart slowing the carbon content of different types of coal.
Types of charcoal. **1. Wood charcoal** When wood is subjected to combustion with limited supply of air or oxygen wood charcoal is formed. 2. **Animal charcoal** It is obtained by heating bones in the absence of air. **3. Sugar charcoal** It can be prepared treating sugar with con. H_2SO_4.	Pouring con. H_2SO_4 drop by drop into a watch glass containing sugar. Observing the change.
Lamp black: It is obtains by burning petroleum or kerosene in a limited supply of air.	Preparation of lampblack using kerosene burner.
Carbon cycle: A carbon cycle, which is essentially	Displaying the figure of carbon cycle

a carbon dioxide cycle, which operates in nature. This cycle maintain about 0.3% CO_2 in nature.	followed by discussion.
Combustion: It is a process in which heat and light are produced.	Igniting matchstick, candle etc., and observing the heat and light.
Combustible substances: Materials, which catch fire, are called combustible substances.	Introducing burning sticks or splinters in to watch glasses contain spirit, petrol, kerosene, oil and candle -observing the heat and light.
Non-combustible substances: Materials, which do not catch fire, are called non-combustible substances.	Introducing splinters into watch glasses containing sand, water etc., - Observing that they do not ignite.
Types of combustion 1. Explosion.	Ignition of crackers
2. Spontaneous combustion	Ignition of match stick
3. Rapid combustion	Ignition of cooking gas, petrol and spirit.
4. Slow combustion	Burning of firewood.
Conditions necessary for combustion: 1. Presence of combustible material 2. Presence of oxygen 3. Low ignition temperature.	Ignition of camphor, petrol or alcohol Ignition of kerosene Ignition piece of cloth wood soaked in kerosene. Distinguishing the difference in ignition.
Fire extinguishers **Soda - acid extinguishers.** The CO_2 produced by the reaction of sodium carbonate solution with sulphuric acid is used. It is used to put out fire on solid only. Foam type is used on solid and liquid fires. Carbon tetrachloride is used on solid, liquid, gases and electrical fires.	Demonstration of soda- acid fire extinguishers- Displaying the chart followed by discussion.
Preparation of CO_2 When calcium carbonates reacts with dil. HCl, CO_2 is produced.	Preparation of CO_2 -activity.

Test for CO_2 1. It put out the burning splinter. 2. It turns limewater milky.	Displaying the chart containing the preparation of CO_2 - followed by discussion. Testing CO_2 using glowing splinter and limewater.
Physical properties: 1. The gas is colorless and odourless.	Observing the gas jar/ test tube containing CO_2 / smelling the gas.
2. Soluble in water.	Inverting the gas jar/test tube containing CO_2 into a trough containing water. Observing the rise in water level due to solubility.
Chemical properties: 1. The solution of CO_2 in water is a weak acid.	Pouring a little water into the jar containing CO_2 -Introducing moist blue litmus paper. Observing the change.
2. It turns limewater milky due to the formation of $CaCO_3$.	Testing the CO_2 gas by passing through clear limewater.
3. Magnesium wire burns in CO_2 to give MgO and C.	Lighting a piece of magnesium ribbon. Holding it well down in a gas jar of CO_2.
Hydro carbons: Hydrocarbons are compounds consisting of carbon and hydrogen only	Displaying the chart containing the primary structure of hydrocarbons.
1. Hydrocarbons that contain 1 to 5 carbon atoms are gaseous at room temperature. 2. Hydrocarbons with 6 and more carbons are liquids. 3. Higher hydrocarbons are solids.	Displaying the chart /table containing hydrocarbons and their molecular formula
Petroleum: Petroleum is mixture of hydrocarbons. It occurs below the surface of the earth.	Displaying the chart showing the petroleum oil wells followed by discussion.
Fractional distillation of petroleum: The process of separating various useful fractions from curdle oil using the different boiling ranges is called fractional distillation.	Displaying the chart showing fractional distillation followed by discussion.

Carbohydrates: The compounds produced by plants during photosynthesis are called carbohydrates. They contain carbon, hydrogen and oxygen. **Classification of carbohydrates:** **Sugars:** Sugars are crystalline solids, sweat and readily soluble in water. **Non sugars:** Non-sugars are amorphous powders with no taste and are insoluble in water.	Displaying the chart showing the classification of carbohydrates followed by discussion. Displaying – testing the taste and solubility of glucose, sugars, starch, and cellulose.
UNIT-6 GYMNOSPERMS **Definition:** Gymnosperms are the naked seed bearing plants. **Classification** Class: coniferophyta Order: coniferales Family: Pinaceae Genus: Pinus. **Habitat:** Pinus usually grows on the slopes of hills in the temperate regions. **External Features:** **Root:** The pinus tree is a sporophyte. The primary root forms the taproot. The taproot is short and develops numerous lateral roots forming massive root system. **Stem:** The stem is stout and branched. The branches are arranged in whorls. There are two kinds of branches. 1. Long shoots 2. Dwarf shoots. The long shoots bear only scale leaves and the dwarf shoots possess scale leaves as well as foliage leaves.	Field trip/nature walk to the area where pinus trees are planted. Collection of pinus root system. Observing the feature of the root system. Collection of pinus stem. Observing the features like long shoots, dwarf shoots, scale leaves, foliage leaves etc.,

Reproduction: Pinus produces two kinds of spores, microspores and megaspores. Microspores are librated from the male cone and megaspores are liberated from female cone.	Collection of male and female cones and observing the features. Drawing the male and female cones.
Pollination: Pollination takes place by wind. The pollen grains (microspores) are yellow in colour.	Displaying the yellow pollen grains and the chart showing then pollination followed by discussion.
The floating pollen reaches the ovule easily. The female cone remains closed till fertilization.	Displaying the chart contains the L.S of pines ovule and follows by discussion.
Fertilization: The microspores germinate and reach the arch gonium and fertilization takes place. The fertilization egg becomes a zygote. The ovule develops into seed.	Displaying the flow chart followed by discussion.
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UNIT-7 ANGIOSPERMS **Definition:** The plants, which reproduce through the flowers, are called angiosperms.	
Root system: The brown portion that grows under the ground is called root system. Root system has roots, root hairs and root tip.	Collecting young flowering plants with root and observing the root system and shoot system.
Shoot system: The green portion that grows above the ground level is called the shoot system. The shoot system comprises of stem, branches, leaves flowers and fruits.	
Function of the root: 1. It fixes the plant firmly to the soil. 2. It absorbs water and minerals from the soil.	Uprooting different types of plants - observation. Balsam plant experiment - absorption and conduction of colour water.

3. The absorbed water is conducted to the stem and leaves. 4. In some plants, roots store food. They are known as tubers, e.g. Radish and carrot.	Collecting the plants like carrot, beet-root and radish with root system and observation.
Stem: 1. The leaves join in the stem at nodes. The portion between two nodes is called internodes. 2. Stem has an auxiliary bud and terminal bud. 3. In some plants, stem is also present under the ground. This are called under ground stem. E.g. Potato.	Collecting the shoot system of young flowering plants and observing the parts of the stem and its functions. Observing the growth of small leaves after some times from the 'eye' of the potato tuber when it is partly immersed in water. Collection of potato and onion plants with root and observing the storage of food in them.
Leaves: 1. Green leaves have chlorophyll. 2. Leaves have petiole, lamina and midrib. 3. Leaves are arranged in an orderly form to receive the sunlight. 4. Stomata are presentation the upper and lower surfaces of the leaves. 5. Some succulent plants store water in leaves. E.g. Aloe, Agaves.	Collecting the stem with leaves and observing the features. Collection of aloe and agaves leaves and observing the storage of water.
Photosynthesis: It is the process by which green plant prepare starch, with the help of chlorophyll, sunlight, water and CO_2.	Test tube and funnel experiment – using hydrilla/valisnaria.
Testing: **Starch test:** The leaf to be tested is put in boiling water for some time. Then it is put in 90% warm alcohol. Then it is washed with water. Iodine solution is dropped on the leaf. If it turned into violet, it confirms the presence of starch.	Testing the presence of starch on green leaves using starch test.

Sunlight is necessary for photosynthesis.	Covering the black paper partly on the leaf. Expose to sunlight. After few hours test for starch.
Chlorophyll is necessary for photosynthesis:	A croton plant is kept in darkness for a day. The green portion of the leaf is marked. Then the plant is kept under the sunlight. After few hours the leaf is removed and tested for starch.
Carbon dioxide is necessary for photosynthesis.	A potted plant is kept in darkness for a day. Then one of the leaves is inserted through a split cork, so that the tip of the leaf is inside the bottle contains KOH solution and the leaf stalk portion is out side the bottle. This set up is kept under sunlight. After a few hours the leaf is tested for starch.
Transpiration: The removal of abundant water received by the plant in form of water vapor through evaporation through the stomata in leaves is known as transpiration.	Performing the bell jar experiment. Polyethylene bags can be used instead of bell jars.
Respiration: A lot of energy is released when the prepared food is oxidized. The energy is utilized for all the activities of plants.	Previously soaked seeds in a bottle and boiled seed in another bottle are taken. The lids are closed. After some time limewater is added into the bottles separately. Observing the changes in the two bottles.
UNIT - 8 NUTRITION AND HYGIENE NUTRITION: Procurement of food by animals according to their feeding habits is known as nutrition.	Displaying the chart containing plants and different types animal. Classifying them according to their nutrition.
Types of nutrition: **Autotrophic nutrition:** In this type, organisms synthesise their own food like plants.	Displaying the flash cards followed by discussion.

Holozoic nutrition: In this type, organisms feed on solid materials through the mouth.	Displaying the flash cards followed by discussion.
Saprophytic nutrition: In this type, organisms absorb dissolved organic materials through the entire body surface.	Displaying the flash cards followed by discussion.
Parasitic nutrition: In this type, organisms depend partially or wholly on other living origanisms for their food.	Displaying the flash cards followed by discussion.
HYGIENE: **Health:** Health is a stage of complete physical, mental and social well-being and not merely an absence of disease or infirmity.	Collecting information/cuttings regarding air, water land, sound and thermal pollution on human health. Tabulating the causes for pollution.
Personal hygiene: Hygiene depends on protected food, water and dress. Protecting our external organs and avoiding bad habits provides personal hygiene.	Displaying charts (or) samples for personal hygiene followed by discussion.
Domestic hygiene: To have the residential area clean is called domestic hygiene.	Tabulating the procedure for domestic hygiene.
Public hygiene: To have the cleanliness of public places like roadsides, bus and railway stations, hospitals etc.	Field trip to the difference public places and collecting the posters / photographs regarding the public hygiene. Collecting information from doctors. Tabulating the diseases and the mode of transmission.
Industrial hygiene: Treating industrial effluents, wastages and fumes properly so that they should not affect nearly residents.	Displaying the posters and photographs regarding the industrial hygiene. Writing reports regarding the posters and photographs.
Mental hygiene: Person with mental health should be	Displaying the posters containing

free from internal conflicts, well adjusted with others, process good self control, know his needs, problem and goals.	different situations regarding mental hygiene followed by discussion.
Adulteration of food:	
Adulteration deprives the food of its nutritional value.	Displaying the table containing the adulterants and their ill effects.
There are simple tests to detect adulteration of foodstuffs. Intake of adulterated food affects health.	Demonstrations and individual activities to detect the adulteration of foodstuff.
Adulteration in medicines: Some of the medicines are reported to be adulterated. Some times distilled water is adulterated with plain water. Tablets are adulterated with starch and chalk powder. Capsules are also filled with spurious drugs.	Displaying the prerequisite of foodstuffs and commercial products given by ISI (Indian standard institution) or Agmark. Collecting information from doctor about the health hazards caused by adulterated medicines.