Anant Publication
"An imprint of Wave International"
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6

Chapter 1 : Food and its Resources

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (a) **2.** (b) **3.** (a) **4.** (b) **5.** (c)

(B) Answer the following questions in very short :

1. Name the roots we eat—Carrot, Radish, Beetroot.

2. Name the seeds we eat—Mustard, Soyabean.

3. Name the leaves we eat—Cabbage, Mint, Coriander, Spinach.

4. Name the stems we eat—Potato, Sugarcane, Onion, Garlic.

(C) Short Answer Questions:

1. The food item consumed by most of the people in a region is called Staple food. In Southern India rice is the staple food.

2. There are varieties of things in our day-to-day food items like Dhokla, Chapatti, cake, rice, etc. The method of cooking a particular food is called a recipe.

3. The materials needed to prepare those recipes are called ingredients. Food items can be made with single or many ingredients for cooking boiled rice we need water and rice.

4. The food protects our body

(i) From the diseases and keep it fit and healthy

(ii) For repairing the body cells.

(iii) For reproduction.

(iv) To provide energy to the body for various activities.

(D) Long Answer Questions :

1. **Photosynthesis :** Green plants prepare their own food by the process of photosynthesis in the presence of sunlight, air, water and minerals. The word photo means light and synthesis means to combine.

(i) **Sunlight :** Sun is the only source of sunlight for the process of photosynthesis. The rate of photosynthesis depends upon the sunlight.

(ii) **Air :** Carbon dioxide is absorbed and oxygen gas is released during the process of photosynthesis.

(iii) **Water and Minerals :** Water and Minerals are absorbed by the roots from the soil and transported to the leaves or other parts of the plant through pipe like structure.

2. There are many plants parts which are used as a food are fruits, seeds of plants, roots of plants, stems, leaves of plant and flowers of a plant as food.

(i) Fruits like apple, oranges, mango, pineapple, guava, tomato, bottle guard, etc.

(ii) Seeds of plants like wheat, gram, barley, maize, peas, pulses, grams used as food grain and mustard, soyabean etc. are used to extract oil.

(iii) Roots of plants like carrot, radish, beetroot etc.

(iv) Cabbage, mint, coriander, spinach are the leaves of the plant.

(v) Stems of plants like potato, sugarcane, onion and garlic.

(vi) Flowers of some plants like cauliflower, broccoli.

3. On the basis of food habitats the animals have three categories which are – Herbivores, Carnivores and Omnivores.

(i) **Herbivores:** Herbivores are the animals who feed on plants only and whole diets of these are based on different parts of plants only. The word herbivores is made up of two words, herb means plant and vores means eater. Examples are elephant, goat, buffalo, deer, etc.

(ii) **Carnivores:** Carnivores are the animals who hunt other animals and feed on them. The word carnivores is made up of two words, carne means flesh and vores means eater. Examples are lion, tiger, bear, wolf, eagle, etc. Such animals have sharp teeth or beak to tear the flesh.

(iii) **Omnivores:** Omnivores are the animals that have the ability of feed on both plants and other animals. The word omnivores is made up of two words, omni means all and vores means eater. Human is the best example. Cockroaches, crow, bear and many others are also from this type.

4. The food has many functions like :

(i) For energy (ii) For protection

(iii) For good health (iv) For reproduction

(v) For growth and healing.

5. There are several things we get from different parts of plants:

(i) **Vegetables:** Tomato, potato, radish, brinjal and spinach.

(ii) **Pulses:** Moong, masoor, urad, arhar and channa.

(iii) **Fruits:** Banana, guava, water melon, mango.

(iv) **Oils:** Mustard oil, coconut oil, sunflower oil, soyabean oil.

(v) **Spices:** Cardamom, red chilli, cinnamon etc.

(vi) **Cereals:** Corn, barley, oats, rice, etc.

(E) Fill in the blanks with suitable (given) words :

1. energy **2**. milk **3.** plants **4.** carnivores **5.** human

(F) Say whether the following statements are True or False :

1. True **2.** True **3.** False **4.** True **5.** True

(G) Match the Following :

1. Honey—honey bees **2.** Egg—hen **3.** Meat—fish

4. Stem—sugarcane **5.** Flower—broccoli

(H) Activity :

Do yourself.

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (b) **2.** (a) **3.** (a) **4.** (c) **5.** (c)

(B) Answer the following questions in very short :

1. Lack of vitamin A causes Night Blindness.

2. Lack of vitamin D causes Rickets.

3. Lack of vitamin K causes Excess Bleeding.

4. Lack of vitamin B12 causes Anemia.

(C) Short Answer Questions :

1. The five essential nutrients required by the body are

(i) Carbohydrates (ii) Proteins (iii) Fats

(iv) Vitamins (v) Minerals

2. Water and dietary fibers are not nutrients, but they are helpful in digestion of food so we also include them in components of food.

3. Balanced Diet contains an appropriate amount of vitamins, minerals, fats, fibers, carbohydrates, in the daily diet so that body can remain in healthy state and free from diseases.

4. Obesity is the state in which person has larger number of food (calories) than required in his daily diet or we can simply say the habit of overeating.

(D) Long Answer Questions :

1. The role of Carbohydrates and Vitamins are :

(i) **Carbohydrates** are called energy giving food. They are the main source of energy for our body. Carbohydrates rich foods are also called energy giving foods. Sugar and starch are two main types of carbohydrates. Some examples of Carbohydrates are rice, sweet potatoes, banana, mango, glucose.

(ii) **Vitamins** are required by our body in very small quantity in comparison to carbohydrates. The food rich in vitamins are also called protective foods. There are different kinds of Vitamins namely Vitamin A, B complex, C, D, E, K and B12.

Vitamin	Function	Deficiency disease
A	Keep eyes and skin healthy	Night blindness
B Complex (B1, B2, B12)	Growth and development of body, Healthy skin growth, In normal functioning of brain and nervous system	Beriberi
C	For healthy growth and blood vessels	Scurvy
D	For formation of strong bones and teeth	Rickets
E	For fertility, balance hormones, repair damaged skin	
K	Helps in clotting of blood	Excess bleeding from cut

2. **Water** makes up about 70% of our body weight. It is one of the most essential nutrients which helps in maintaining balance of the body fluid. It helps in absorption of food, excretion of waste products as urine and sweat from the body and to maintain a constant body temperature
3. **Obesity** is the state in which person has larger number of food (calories) than required in his daily diet. We can simply say the habit of overeating due to this he/she gets obese and starts to suffer from lack of activeness, dull behavior and slowly starts to become incapable of doing daily activities due to heavy muscle weight and with time gets different kinds of diseases and cardiac problems.
4. **The Mineral deficiency diseases caused in human body :**
   (i) Iron-anemia (less hemoglobin produced in blood)
   (ii) Iodine-goitre.
   (iii) Calcium-bone and tooth decay
5. **Proteins :** Proteins are the main building blocks of our body. They are needed for the growth and repair of the body. Proteins are also called body-building food. The building-blocks of proteins are amino acids. The main sources of proteins are plants and animals both. They are the most important components of our daily meal. The main sources of proteins are beans, nuts, pulses, cereals, milk, egg, fish and meat.

(E) Fill in the blanks with suitable (given) words :

1. ingredients **2**. energy **3.** oils **4.** obesity **5.** vitamins

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** True **4.** True **5.** False

(G) Match the Following :

1. Keeps our eyes and skin healthy—Vitamin A
2. Helps in clotting blood—Vitamin K
3. Meat, cheese and eggs—Vitamin B12
4. Citrus fruits—Vitamin C
5. Bowl and tooth decay—Calcium

(H) Activity :

Do yourself.

Chapter 3 : Fibre to Fabric

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (c) **2.** (c) **3.** (a) **4.** (b) **5.** (c)

(B) Answer the following questions in very short :

1. Fibre is the basic filament from which yarn is spun.
2. Fabric from yarn is called weaving.
3. Removal of sheep hair is called as sheering.
4. Natural fibre : Obtained from Plants & Animals. Synthetic fibre : Made from Chemical and Manufactured in Lab.

(C) Short Answer Questions :

1. Plants and Animals are the main source for getting natural fibers.

2. **Flax :** The Flax plant is used to obtain linen in fibers. The plants are uprooted and submerged in water, when they are about to mature. Flax is used for making ropes and good quality paper.
3. **Hemp :** Hemp fibers are obtained from the seeds of Hemp plants. These fibers are used to make Carpets, Nets, Cloths and Ropes.
4. **Silk :** Silk is obtained from the silk worm. The life cycle of a silk worm involves the following stages where a silk worm is going to turn into the moth and make a protective wall around it which is a cocoon. The cocoon shell is used as raw material to make silk.

(D) Long Answer Questions :

1. Plants and animals are the main source for getting natural fibers. We get cotton from plant, wool and silk are obtained from the animals.
   Cotton—Cotton fibre is obtained from cotton plant. Cotton crop needs humid and warm climate and temperature of over 25°C and black and alluvial soil to grow.
   Wool and Silk—The source of extracting wool is sheep and the silk is obtained from the silk worm.
2. **Synthetic Fibers** are those fibers which are made from chemical and manufactured in labs. Synthetic fibers are waterproof in nature and cheap in making. A fiber called Rayon is made out of natural material but has been put under the category of Synthetic Fiber because it is completely synthesized in factories.
3. **Mixed Fibers** are those fibers made of the combination of Natural and Synthetic Fiber and these fibers are mixed together in special proportions to get a desired result to make extra strong and soft fiber and to make heat resisting fiber. Terry-cotton is an example of this fiber.
4. **The process of cultivation of Jute** is done between February and May in India and cultivated in rainy season. Jute grows in alluvial soil having some quantity of silt in it and humid and warm climate. Temperature best suited for production of jute is 24 to 37 degree celsius and rainfall should not be less than 150 cm.
5. **Short Notes on :**
   (i) **Spinning:** The process of making yarn from fiber is called spinning. It is the twisting together of drawn-out strands of fibers to form yarn. This is done because the fibers of cotton are short.
   (ii) **Weaving:** In weaving, the yarn is crossed over one another in a set method in order to weave the required type of fabric. A machine designed to accomplish this task is called loom. One set of yarn is placed lengthwise called warp and another set of yarn is called weft. A device which is used to weave the weft across warp is called the shuttle.
   (iii) **Knitting :** The process of making fabric from yarn by interlocking loops of single yarn with knitting needles or a knitting machine. Knitting of sweaters is a good example.

(E) Fill in the blanks with suitable (given) words :

1. eight **2**. spun **3.** wool **4.** cotton **5.** polyester

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** False **4.** True **5.** True

(G) Match the Following :

1. Cotton—ginning

2. Wool—sheep

3. Hemp—seeds of hemp plant

4. Silk—silk worm

5. Jute—patsan

(H) Activity :

Do yourself.

Chapter 4 : Sorting the Materials into Groups

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (b) **2.** (a) **3.** (b) **4.** (a) **5.** (c)

(B) Answer the following questions in very short :

1. Tightly packed particles, definite shape and volume : Solid State Properties

2. Materials allow light to pass through them : Transparent Materials.

3. Smooth materials lack bumps on them.

4. Different types of material are Transparent, Translucent and Opaque.

(C) Short Answer Questions :

1. **Material :** A substance or a thing used in making different objects is called as material. Some objects are made of only one material and some are made of two or more materials.

2. **Object :** A thing that can be touched or seen is called an object. We arrange or classify the items in a group which belongs to each other.

3. **The handles of utensils are not made up of metal** because metals get heated very easily whereas materials like plastic and wood takes a lot of time to get heated.

4. **Miscible Material :** Liquids that are soluble in water and form single layer with water are said to be miscible in water.

Immiscible Material: Whereas liquids that are insoluble in water and form distinct layers are said to be immiscible in water.

(D) Long Answer Questions :

1. **Metallic Objects :** Those objects which are made for heavy and rough use and mostly made up of metals are called as metallic objects. Metals are mostly strong and durable. Metals have certain properties due to which they are used for heavy purpose.

Non-metallic Objects: Non-metallic Objects are comparatively less hard than the metallic objects. They are not equally durable to objects made up of metals. Non-metals can be hard or brittle. Non-Metallic Objects break in pieces when we hit it hard.

2. **On the basis of Conduction of Heat** the objects are of two types which are good conductors and bad conductors of heat.

(i) Materials that allow the heat to pass through them are called good conductors of heat. Generally metals are good conductors of heat.

(ii) Materials that do not allow the heat to pass through them are called bad conductors of heat. Generally, non-metals like plastic, rubber etc. are bad conductors of heat.

3. **On the basis of Conduction of Electricity** the material objects are of two types. We get electricity in our homes through cables and wires. The metal wires conduct or transmit electricity whereas the plastic covering does not.
   (i) **Conductors:** Materials that let electricity to pass through them are called conductors. For Example: Metals are conductors of electricity.
   (ii) **Insulators:** Materials that do not let electricity to pass through them are called Insulators. For example: wood, plastic are insulators of electricity.
4. **On the basis of Transparency** the material objects allow different amount of light to pass through them depending on the property called Transparency. Materials are of three types on the basis of transparency.
   (i) Transparent : Materials that allow all light to pass through them are called transparent material. Glass, water, acrylic sheet are transparent. Windows are made of glass so that light pass through and lights our room.
   (ii) Translucent : Materials that allow some light to pass through them are called Translucent. Oiled paper and coloured glass are translucent materials.
   (iii) Opaque : Materials that do not allow light to pass through them are called opaque material. Wood, metals and cardboards are opaque materials.
5. All substances are made up of matter. On the basis of State the classification of objects, matter exists in three states—Solid, Liquid and Gas which are grouped on the properties of matter.
   (i) **Solid State:** Solid has definite shapes, volume and not compressible. The particles are closely packed.
   (ii) **Liquid State:** Liquid does not have definite shapes. Liquid take the shapes of the containers and have definite volume.
   (iii) **Gaseous State:** Gases have no definite shape. Particles of a gas are very loosely packed and are highly compressible.

(E) Fill in the blanks with suitable (given) words :

1. buildings **2**. lustrous **3.** matter **4.** cables **5.** wood

(F) Say whether the following statements are True or False :

1. False **2.** True **3.** False **4.** True **5.** True

(G) Match the Following :

1. Light passes—transparent
2. Some light passes—translucent
3. No light passes—opaque
4. Shiny material—lustrous
5. Rough material—have bumps

(H) Activity :

Do yourself.

Chapter 5 : Separation of Substance

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (b) **2.** (b) **3.** (a) **4.** (c) **5.** (b)

(B) Answer the following questions in very short :

1. Method suitable for separating solid from liquid is called filtration.

2. Method suitable for separating solid from solid is sieving

3. The method in which wind is used for separation of substances is called Winnowing.

4. Grains from husk are separated by Threshing.

(C) Short Answer Questions :

1. **Mixture :** A mixture is defined as the substance made by the combination of two or more substances. Air, salt water, smog are examples of the mixture.

2. **There are two types of mixture :**

(i) **Homogeneous Mixture :** The mixtures in which the particles of the substances present cannot be seen are called homogeneous mixtures. For example, solution of sugar and water, air in cold drinks.

(ii) **Heterogeneous Mixture :** The mixtures in which the particles of the substances present can be seen easily are called heterogeneous mixtures. For example, water in oil and dust in air.

3. **The Common methods of Separation are :**

(i) Handpicking
(ii) Threshing
(iii) Winnowing
(iv) Sieving
(v) Sedimentation or decantation
(vi) Filtration
(vii) Evaporation
(viii) Condensation

4. Substances containing more than one type of constituent particles are called Impure Substances. Some of the impure substances are pond water, milk etc.

(D) Long Answer Questions :

1. The need of separation of mixtures are as follows :

(i) **To separate two dissimilar but useful elements:** Before using a substance, we need to separate harmful or non-useful substances that may be mixed with it and we separate even useful components if we need to use them separately. For example: Milk is churned in order to obtain butter.

(ii) **To segregate useless elements from the useful ones :** We remove the useless materials from the useful ones also. For example: We make a cup of tea by boiling tea leaves in water and then adding sugar and milk. Used tea leaves are an undesirable component of the mixture in tea.

(iii) **To remove and discard impurities of potentially harmful substances :** Drinking of impure water which is having different types of impurities we fall sick. Cereals and pulses such as rice and dals have small stones, soil, etc. For example: drinking water is filtered to remove harmful bacteria and impurities, the picking out small pieces of stone and impurities from rice and dals before cooking by hand picking method.

2. **The difference between Condensation, Evaporation and Sublimation are :**

Condensation : The changing of water vapour into liquid water on cooling is called Condensation. It is a process in which water vapour (gaseous form) in the air changes

into liquid water when it touches a cooler surface and it condenses to form water droplets.

Evaporation : The changing of a liquid into vapour is called Evaporation. It is a process of removing water (or moisture) from a mixture either by heating on flame or direct sunlight.

Sublimation : The changing of solids directly to vapor form, without forming the liquid state is called sublimation. Solid carbon dioxide known as Dry ice sublimates at room temperature. Freeze drying : Water can be sublimated in a food product by using a vacuum.

3. Short Notes on :

(a) Winnowing : Before the wheat grains can be used, a mixture of wheat grains and husk has to be separated by method of Winnowing. The mixture of chaff and grain is taken in a winnowing basket. The grains being heavier, fall almost vertically whereas the chaff is carried away by the wind and separated away from the grain.

(b) Sieving : Sieving is used when two components of a mixture have different size particles. Sieving allows the fine particles to pass through the holes of the sieve, while the bigger particles remain on the sieve.

(c) Hand picking : The method of hand picking is used to separate undesirable substances such as small pieces of stones from those mixtures where one of the components is in small quantity.

4. Sedimentation and Decantation : The process of separating insoluble substances which are heavier than liquid by allowing them to settle down on their own due to gravity is called Sedimentation and follows by Decantation. In this process the clear upper liquid is poured out from the container without disturbing the sediments. The method of decantation can also be used for separating two immiscible liquids. A mixture of sand, soil and water can be separated by sedimentation and decantation. For example muddy water.

5. The process by which two substances are separated by a filtering device is called filtration. Filtration is commonly used in our homes. Two examples of filtration are

(i) Water may contain solid impurities, which can be removed by filtration by using Filter Paper. The solid which remains on the filter paper is called residue. The liquid which passes through the filter paper is called filtrate.

(ii) Mixture of chalk and water is separated by filtration. When mixture of chalk and water is poured on the filter paper fixed in a funnel, then clear water passes through filter paper and collects as filtrate. The chalk particles remain behind on filter paper as residue.

Magnetic Separation : Magnetic Separation is the process in which magnet is moved over such a mixture; the magnetic materials stick to it and are removed, and rest of the material lies due to their non-magnetic property.

(E) Fill in the blanks with suitable (given) words :

1. Mixture **2**. milk **3.** liquid **4.** sea **5.** chalk

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** True **4.** True **5.** True

(G) Match the Following :

1. Removing stone particles from pulses—Hand picking

2. Conversion of vapours back into liquid—Condensation

3. Separating chaff from wheat flour—Winnowing

4. Conversion of liquid into vapours—Evaporation

5. Beating of dried stalks—Threshing

(H) Activity :

Do yourself.

Chapter 6 : Changes Around Us

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (c) **2.** (a) **3.** (b) **4.** (b) **5.** (c)

(B) Answer the following questions in very short :

1. Outer appearance changes. It is a physical change.

2. The properties change and new substance formed. It is a Chemical Change.

3. The change beyond the control of man. It is natural change.

4. Example : Growth of Living Organism.

(C) Short Answer Questions :

1. Change : Change is the rule of nature and we cannot deny it. Changes take place all around us and inside us as well. Changes take place all the time from day to night. Some examples of changes around us are the moving fan after switching it on, burning of matchsticks, ice cubes melting into water, growth and development of plant, animal and human beings etc.

2. The classification of changes are Man-made and Natural change:

(i) Man-made Changes : The changes occurred by man are known as Man-made changes. Cooking food, boiling egg, making furniture out of wood etc. are examples of man-made changes.

(ii) Natural Changes : The changes which are beyond the control of man and occurred by nature itself are known as Natural Changes. Changing of day and night, changing in season, revolution and rotation of planet are examples of natural changes.

3. Slow and Fast Changes : The pace of change is different in different objects or things. Some changes occur within second, some take few days or hours and some changes may take years to complete. For example, Ice changes into water very fast whereas milk changes into curd in 6 to 8 hours. Water evaporates quickly while boiling on gas in comparison of wet clothes hang out in sunlight for evaporation.

4. Periodic Changes : Changes which occur again and again at regular interval of time and whose occurrence can be predicted are called Periodic changes. Some of the examples are the sun rises each morning and sets in the evening, changes in seasons, the phase of moon, the rotation and revolution of planets etc.

D. Long Answer Questions :

1. The natural change is beyond our control because of the reason for any kind of change that we don't want to occur is probably that it will cause some harm to us. The undesirable changes include natural calamities like flood, landslide, earthquake, flood, drought etc.

2. A substance can be changed by the changes occurred around us like change in position, change in colour, change in temperature, change in size and shape and change in state. These changes can be Man-made or natural, slow or fast, desired or undesirable change, physical or chemical, reversible or irreversible, periodic or non-periodic changes and exothermic or endothermic. All changes are not of the same kind.

3. There is no such difference between periodic and natural changes. Yet the changes which are repeated after regular intervals are known as periodic change and the changes which take place during a given time period (usually one year)are known as natural change.

4. Short Notes on :

(i) **Chemical Change :** The change in the composition and chemical properties of the substance where new substance is formed is known as chemical change.

(ii) **Endothermic Change :** Endothermic changes are the changes during which heat is taken in or absorbed.

5. The factors responsible for changes around us are some kinds of efforts put in directly and indirectly. Changes occur on heating and cooling, applying pressure and mixture of substance

(i) **Changes due to applying pressure :** Pressure causes change in shape and size of an object. Pressure doesn't affect solid substance to a great extent. Pressure affects liquid substance but gases are highly affected.

(ii) **Changes due to mixture :** We can observe changes on mixing of two or more substances together. Physical and chemical changes occur on mixing of substances.

(iii) **Changes due to heating and cooling :** On heating or cooling of a substance many different types of changes take place. On heating and cooling substance becomes hot or cold, it expands or contracts, it changes its state or it starts burning.

(E) Fill in the blanks with suitable (given) words :

1. changes **2**. same **3.** man **4.** desirable **5.** shape

(F) Say whether the following statements are True or False :

1. **2.** **3.** **4.** **5.**

(G) Match the Following :

1. Natural change—day and night

2. Reversible change—folded paper cap

3. Heating—expansion

4. Man-made change—beyond the control of man

5. Chemical change—new substance formed

(H) Activity :

Do yourself.

Chapter 7 : About Plants and Their Functions

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (b) **2.** (c) **3.** (a) **4.** (b) **5.** (b)

(B) Answer the following questions in very short :

1. Female reproductive part of a flower is called Pistil.
2. Stalk of a flower is called as Pedicel.
3. Grapevine and money plants are called as Tendrils.
4. Tiny pores on leaves are called as Stomata.

(C) Short Answer Questions :

1. **Herb :** Herb is the shortest kind of plant. They have soft delicate green and tender stems. They usually survive for one or two seasons only. Crop plants like tomato, potato, wheat etc. are examples of herbs.
2. **Climbers and Creepers :**
    1. **Climbers :** Climbers are, as the name suggests, the plants which can climb. Climbers grow with the support of other trees or walls. Example of climbers are grapevine, money plant etc.
    2. **Creepers :** Creepers are the plants which creep on the ground. The stem of the creeper plant is very weak. Watermelon and muskmelon are examples of creepers.
3. **Roots :** The part of the plant under the ground is known as root. There are two types of roots—Tap roots and Fibrous root.
    (i) **Tap root:** The single main primary root growing down from the stem is known as tap root. Tap root grows very deep in the ground.
    (ii) **Fibrous root:** There is no main root but several roots growing down from the stem are known as fibrous root. Fibrous roots do not grow too deep in the ground.
4. **Veins** are like pipelines through which transportation of water and food takes place. There are one main vein and many sub-veins running through a leaf. Design formed by the vein is called Leaf Venation which is of two types—Reticulate Venation and Parallel Venation.
    (i) **Reticulate Venation:** In the reticulate venation midrib is not prominent and produces lateral veins which form a network. For example mango, neem, rose etc.
    (ii) **Parallel Venation:** In parallel venation midrib is not prominent. The veins are parallel to each other. For example sugarcane, barley, grass etc. have this type of venation.

D. Long Answer Questions :

1. **The importance of plants :** Human and animals depend directly or indirectly on plants for their food. Green plants prepared their own food by the process of photosynthesis in the presence of sunlight using carbon dioxide and water. Thus green plants help in maintaining the adequate supply of oxygen for us.
2. **The difference between shrubs and trees :**
    Shrubs : They are larger than herbs but smaller than trees. They have hard and flexible stem. They are busy and have many branches which grow in every direction. Shrubs survive for several years. Examples of shrubs are rose, sunflower etc.
    Trees : They are larger than herbs and shrubs. Trees are very big, strong and tall plants. A tree has woody and thick stem which is called trunk. The branches grow on the upper part of the trunk. Trees can survive for hundreds of years. Examples of trees are banyan, mango, neem, so on.

3. The Flowers servemany functions which are as follows:

(i) Flowers are source of foods for many insects such as bees. They collect nectar from flowers and make honey.

(ii) Flowers are reproductive organs of a plant and lead to the formation of fruits and seeds. Seeds on germination give rise to new plants.

(iii) Some flowers like cloves are used as spices as well as medicine.

(iv) Flowering plants add beauty to the environment. Flowers are also used for decoration purpose in marriages and other functions.

(v) Flowers like rose, lavender, jasmine etc. are used for making perfumes.

4. Short Notes on :

1. Flowers : A flower is the most beautiful, colourful and attractive part of a plant. Flowers are developed from floral buds. Flowers play a very important role for a plant reproduction. The shape, size, colours and fragrance are different but all flowers have a basic structure.

2. Leaf : A leaf is a thin, flattened, green and broad structure which is attached to the stem or branch. The point from where leaf grows on stem or branch is called leaf base. The flattened part is called lamina or leaf blade which is green in colour due to the presence of green pigment known as chlorophyll. The part of leaf which attaches the leaf blade to the stem or branch is known as petiole or leaf stalk.

5. Modification of Stem : Stems of some plants are modified for specific functions like storages of food. Photosynthesis provides protection and giving support.

(i) In climbers like grapevines, a cucumber stem, some thread like structures which are called tendrils give support to plant for climbing by coiling around the object as the stem of climbers are soft and weak.

(ii) In desert plants like citrus and bougainvillea the leaves are reduced to spines so as to avoid water loss. Buds present on the stems are modified into hard pointed and sharp structures called spines or thorns. So the function of preparing food of the leaves is carried out by the green stem.

(iii) Stems of some plants are found under the ground and are modified to store food and known as underground stems. Potatoes, onion and ginger are some kinds of such stems.

(E) Fill in the blanks with suitable (given) words :

1. plants **2**. herb **3.** nodes **4.** protection **5.** petals

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** False **4.** True 5. False

(G) Match the Following :

1. Tap root—vertically downward

2. Pea plant—tendrils

3. Onion—fleshy leaves

4. Nectar—bees

5. Cactus—spines

(H) Activity :

Do yourself.

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (c) **2.** (b) **3.** (c) **4.** (c) **5.** (b)

(B) Answer the following questions in very short :

1. An adult human body has—206 Bones.

2. Skull bone is made up of—22 Bones.

3. Axial skeleton consists of—80 Bones.

4. Backbone is made up of—33 Bones called Vertebrae.

(C) Short Answer Questions :

1. Human Body : Human body is structure of a human being. It is composed of many different types of cells that together create tissues and then subsequently forms organ system.

2. Joints : The places where two or more bones are joined tighter are called a joint.

3. Cartilages : The ends of the bones covered with soft cartilages to reduce the friction between the bones and due to its softness, the pressure on the edges would be absorbed. Cartilages are flexible. It is a form of a sheet of elastic and flexible tissue.

4. Locomotion : There are two kinds of movements:

(i) The organisms move their body parts without changing their position.

(ii) Animals move from one place to another. This kind of movement is called locomotion.

D. Long Answer Questions :

1. Human Skeletal System : The bones in our body make superb framework called a skeleton. The skeletal system or the framework is made of bones and cartilage. Bones are made of hard tissues. It gives a rigid support system that protects body parts and gives definite shape and size to the body. There are fibrous connective tissue, ligaments and the tendons in the relationship with parts of the skeleton. Human body has 206 bones. Human body is made up of Endoskeleton because the skeletal system is naturally occurs inside the body. The skeletal system (Artificially manufactured and used) outside the body is called Exoskeleton. The functions of Human Skeletal System are:

(i) Support the body

(ii) Facilitates movement

(iii) Protects internal organs

(iv) Produce blood cells

(v) Store and release minerals and fats.

2. Backbone or Vertebral Column : The backbone is a low hollow, rod like structure running from the neck to the hips inside our body. Backbone is made up of 33 small bones and they are called vertebrae.

The major function of the vertebral column is protection of the spinal cord and also provides stiffening for the body and attachment of many muscles. In human beings an additional function is to transmit body weight in walking and standing.

3. The different types of Joints are :

(i) Immovable Joints: Immovable joints allow no movement because the bones at these joints are held securely together. The bones of the skull are connected by immovable joints.

(ii) Slightly Movable Joints : Partly movable joints allow only very limited movement. Bones of these joints are held in place by cartilage.

(iii) Freely Movable Joints: Bones at these joints are connected by ligaments. Movable joints allow the most movements. Movable joints are the most common type of joints in the body. There is a lot of number of movable joints. These joints usually are classified by their movements.

4. Human Muscular System : Muscle is the fibrous tissue in the body that has the ability to muscles attached to bones contracts; it pulls the bone due to which the bone moves at the joint. When one muscle of the pair contracts or shortens then the other muscle of the pair is stretched or relaxed.

5. Short Notes on :

(i) Rib Cage : There are 12 pairs of ribs. These are curved bones which make a protective cage for heart, lungs and liver. The first 10 pairs in the back are joined to backbone, the last 2 pairs of the bones are not joined to it and they are called floating ribs.

(ii) Pivotal Joints : In Pivotal Joint, a bone which is more of cylindrical shape turns into a ring type bone or just being at its place just rotate left and right in an axis. A pivot joint exists between our skull and the top vertebra of backbone and allows us to move our heads left and right. Pivot joint also occurs in the forearm which has two bones radius and ulna near the elbow that enables us to turn palms of our hand up and down.

(E) Fill in the blanks with suitable (given) words :

1. structure **2**. respiration **3.** 206 **4.** leg **5.** hip

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** True **4.** False **5.** True

(G) Match the Following :

1. Birds—hind limbs and fore limbs modified

2. Snail—secretes mucus

3. Earthworm—bristles

4. Cockroach—2 pairs of wings and 3 pairs of legs

5. Snakes—wavy motion

(H) Activity :

Do yourself.

Chapter 9 : Living Organism and Their Habitat

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (a) **2.** (a) **3.** (a) **4.** (c) **5.** (a)

(B) Answer the following questions in very short :

1. Process of producing young ones is known as reproduction.

2. Getting rid of waste is known as excretion.
3. Habitat covered with water is known as aquatic habitat.
4. Terrestrial word is derived from Latin word terra which means earth or land.

(C) Short Answer Questions :

1. **Living Organisms :** Some of the things possess life in them are called living things or living organisms.
2. **Characteristics of Living Organisms:** Some of the characteristics of living organisms are :

(i) Formation	(ii) Nutrition
(iii) Movement	(iv) Reproduction
(v) Response to stimuli	(vi) Growth
(vii) Excretion	(viii) Respiration

3. **Surrounding :** Surrounding or Habitat is a place where a living being can live naturally and adjust accordingly. A surrounding or habitat is a part of environment of the region.
4. **Adaptation :** In order to survive we have to adjust according to our surrounding. The ability to adjust ourselves according to the given environment is known as adaptation.

D. Long Answer Questions :

1. **Living Organisms :** Some of the things possess life in them are called living things. Growth and development of living things are affected by both living and non-living things. These living things are called organisms and are made of basic structural units called cells. The five characteristics of Living Organism are:
   - **(i) Formation :** All living organisms are made up of cells. A cell is a basic unit of life. Some organisms are made up of a single cell and are known as unicellular organism. Some examples of unicellular organisms are Bacteria, yeast, amoeba. However most of the living organisms are made up of millions of cells and are called multicellular organisms. Cats, dogs, neem tree are some examples of multicellular organisms.
   - **(ii) Movement :** The movement is another important characteristic of Living Organism. All living organisms move in some way, plants cannot move from one place to another but they show their movements by various parts. Plants show movement by growing towards light. Movement of animals can be seen clearly as they move from one place to another in search of food, water, shelter and to protect themselves from enemies.
   - **(iii) Reproduction :** The process by which living organisms produce their young ones of their own kind are called reproduction. For example some organisms lay eggs while other gives birth to their babies. Plants produce through seed whereas some plants can grow from their stem, root or leaves.
   - **(iv) Response to stimuli :** All living organisms respond and adjust themselves to the happening of their surroundings. The changes occurred in the body of a living organism where there is a change in the environment is called stimuli and the reaction to the situation or the change is called response of the organism.
   - **(v) Growth :** All living things grow but the pattern of growth in plants and animals is different from each other. Growth is a permanent and irreversible change. For example, a germinating of seed grows into a plant or a chicken hatched from an egg grows into a cock or hen.

2. **Components of Surrounding:** There are two types of components in our surrounding – living things and non-living things.
   (i) The living organisms of any Habitat are known as biotic components. Plants and animals are part of biotic component.
   (ii) The non-living things of any habitat are known as abiotic components. Light, temperature, water, air and soil are parts of abiotic components.
3. **The Aquatic and Terrestrial habitats :**
   (i) Aquatic habitat : The habitat covered with water is known as aquatic habitat. It is also known as water habitat.
   (ii) Terrestrial habitat : The word Terrestrial is derived from the Latin word 'terra' which means earth or land. Terrestrial habitat covers the area of land which includes forest, mountain, valley, grassland and desert.
4. The habitats are grouped into two categories: Aquatic or water habitat and Terrestrial or land habitat.

   Aquatic habitat: The habitat covered with water is known as aquatic habitat. It is also known as water habitat. Aquatic habitat includes water bodies like ponds, lake, ocean, seas and rivers. Aquatic animals include octopus, shark, whale, fish etc. Aquatic habitat or water habitat are further divided as :
   (i) Marine Habitat : The word marine is derived from Latin word 'mare' which means sea or ocean. The water of marine habitat is saline in nature. It is not possible for sunlight to reach the depth of ocean so organisms living there have leant to live without sunlight. Seahorse, sharks, whale etc. are some examples.
   (ii) Freshwater Habitat : Freshwater habitat contains very small amount of salt. These types of habitat include lakes, rivers, swamps, ponds, etc. Because of low amount of salt it supports a wide variety of creatures like fish, turtles, ducks, dolphins etc.

   Terrestrial habitat: The word Terrestrial is derived from the Latin word 'terra' which means earth or land. Terrestrial habitat covers the area of land which includes forest, mountain, valley, grassland and desert. Terrestrial habitat includes human beings, plants, animals and birds. Terrestrial habitats are further divided as:
   (i) Desert Habitat : Hot, dry and sandy areas are known as desert habitat. In desert there is very little rainfall due to which there is scarcity of water and the temperature is very high. Animals like camel, snake and plant like cactus and acacia are found here in desert habitat.
   (ii) Mountain Habitat : The life of organism living in mountain habitat is very difficult and rough. There is very low temperature and dry chilly winds.
   (iii) Forests and Grasslands Habitat : Forests and Grasslands are covered with wide variety of trees, herbs, shrubs and grasses. In this habitat there is moderate temperature due to which it gets moderate rainfall.
5. **Adaptation of Plants and Animals in Aquatic habitat :**
   (i) **Plant:** In aquatic habitat there are two kinds of plants : the first one are those which floats on water and other one are submerged plants. Roots of aquatic plants are poorly developed. Air cavities in the stems and leaves of floating plants help them to float and make them light. Water lily, Lotus and Hyacinth plants are examples of floating plants. Submerged plants are hydrilla and vallisneria.

(ii) **Animals :** Some common features of aquatic animals are there streamlined body, presence of gills, scale and fins. Fins help in maintaining the balance of the body, scales protect their body from decay, gills help in respiration wheras streamlined body allows fast locomotion in water.

(E) Fill in the blanks with suitable (given) words :

1. cells **2**. aquatic **3.** salt **4.** desert **5.** hyacinth

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** False **4.** True **5.** False

(G) Match the Following :

1. Fishes—gills

2. Submerged plant—hydrilla

3. Floating plant—lotus

4. Camel—ship of desert

5. Dolphin—streamlined body

(H) Activity :

Do yourself.

Chapter 10 : Motion and Measurement of Distance

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (a) **2.** (b) **3.** (c) **4.** (a) **5.** (a)

(B) Answer the following questions in very short :

1. The unit of force is newton.

2. The unit of mass is kilogram

3. The unit of length is metre.

4. The unit of weight is kilogram.

(C) Short Answer Questions :

1. Measurement : The method of comparing the known quantity with an unknown quantity is called the measurement. Measurement has two parts; one part is the number and another part is the unit. For example: measuring height, length of a table etc.

2. The problem we face while using non-standard way of measurement is lack of precision and uniformity. It may be more difficult or confusing to communicate with others.

3. Arbitrary Units : Before the development of standard units of measurements, people use unscientific units of measurement. These kinds of measurements are called as the arbitrary units. Some examples of arbitrary units are Hand-span, Foot span and Cubit.

4. Stationary Objects : Objects which remain fixed at a place e.g. tree, house, school factory etc. are called stationary objects. These objects are also called objects in rest.

D. Long Answer Questions :

1. Motion : The movement of an object is called motion. Men, women, animals, birds, car etc. do not remain stationary all the time they can move from one place to another.

It is a state of objects in which they are moving, that is they are changing their place with the changing time. There are three types of motions :

(i) Linear Motion : In linear motion the particle moves from one point to another in either a straight line or a curved path. The linear motion depends on the path of the motion.Examples are Motion of vehicle on a straight road, blades of electric fan etc.

(ii) Periodic Motion : The motions which repeat itself after regular intervals of time are called periodic motions. Examples are Swinging of pendulum, motion of child swing etc.

(iii) Rotational Motion : Motion in which a whole body moves about an axis is called a rotational motion. For example: motion of top, spinning of earth on its axis etc.

2. In early days there were no standards of measurements or things were not measured in units. A flower seller sells flowers in bunches. The arbitrary units of measurement are Hand-span, finger-length, cubit; foot-length and arms-length are some examples of unscientific units of measurement.

(i) Hand Span : The distance between thumb's tip and the tip of the last (little) finger of stretched palm.

(ii) Foot Span : The distance between the heel and toe-tip was used as foot-span.

(iii) Cubit : Ancient Egyptians used cubit to measure length. It was the distance between elbow and tip of the middle finger.

3. Short Note on :

Standard Unit of Measurement : Measures that are the same all over the world are known as standard measures. The standard unit for measuring weight was used in France for the first time. In October 1960, the 12th general conference on weight and measures adopted the International system of units. The System International Units is the set of units to maintain uniformly all over the world. SI unit is the short form of French word "Systeme Internationale Unit".

4. Prefixes : Prefix is a kind of word used before the name of an SI unit to get a bigger value or a smaller value of the unit. Three common prefixes are: kilo, centi and milli.

(i) Kilo is a prefix which denotes one thousand or 1000.

(ii) Centi is prefix which denotes hundredth or 1/100.

(iii) Milli is prefix which denotes one thousandth or 1/1000.

5. Steps of measuring the length with the help of Measuring Scale are:

(i) The scale should be placed along the length of the object to be measured.

(ii) The zero mark of the scale should be taken as the beginning point.

(iii) If the scale has a damaged zero mark or broken left end, measure the length of an object starting from 1cm mark of scale and then subtract 1 cm from the reading taken at the right end to get the actual length of object.

(iv) Correct eye position should be maintained.

(E) Fill in the blanks with suitable (given) words :

1. unit **2**. second **3.** rectilinear **4.** centimetre **5.** France

(F) Say whether the following statements are True or False :

1. True **2.** True **3.** False **4.** True **5.** False

(G) Match the Following :

1. Hand span and foot span—unscientific unit of measurement

2. Milli prefix—one thousandth

3. Kilo prefix—one thousand

4. SI unit—MKS

5. 1 centimetre—10 millimetre

(H) Activity :

Do yourself.

Chapter 11 : Light, Shadow and Reflection

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (a) **2.** (c) **3.** (c) **4.** (b) **5.** (b)

(B) Answer the following questions in very short :

1. The objects which emit light of their own—are known as luminous objects.

2. Region of total darkness—total absence of light

3. Speed of light—is 30,00,00,000 m/s or 3×10^8 metre / second

4. Light always travels in—straight line.

(C) Short Answer Questions :

1. Man-made source of Light : Humans developed lots of sources of light by which we enable ourselves to utilize the dark period which is night at its optimum. For that many lightening devices have been discovered. Flashlights, table lamps and neon signs are some sources of artificial lights.

2. Parallel beam of Light : More than one beam of light coming from a point source and travelling in a straight path, parallel to each other are known as the parallel beam of light.

3. Reflection of Light : The process of sending back light rays which fall on the surface of an object is called reflection of light. Most of the objects reflect light which falls on them. Some objects reflect more light whereas other reflect less light.

4. Shadow : A dark area or shape appears on a surface when someone or something moves between the surface and a source of light or coming between the rays of light.

D. Long Answer Questions :

1. Extended source of light : The source which is bigger than the point of source of light is called as extended source of light. For example, if you are having torch and suddenly a truck headlight turns on, that would be known as extended source of light.

2. The two images which can be formed by light are :

Real Image : Real images are those where light actually converges. Real images occur when objects are placed outside the focal length of a converging lens or outside the focal length of a converging mirror.

Virtual Image : Virtual images are locations from where light appears to have converged. Virtual image is formed when the outgoing rays from a point on an object always diverge. The image appears to be located at the point of apparent divergence.

3. Difference between Translucent, Transparent and Opaque Objects :

(i) Translucent Object : Those materials which allow only some of the light to pass through them are called translucent materials. We can see things clearly through them. For example: Smoke, wax, fog, mist, etc.

(ii) **Transparent Object :** A transparent object is an object which allows most of the light to pass through them. We can see clearly through them. For example: Clear glass, air, water, etc.

(iii) **Opaque Object :** Those materials which never allow the light to pass through them are called opaque objects. We cannot see anything which is kept behind them because no light will pass or come to either side of the objects. For example: Wall, wood, stone, metal, etc.

4. Difference between Image and a Shadow :

(i) **Image :** Image is the reflection of light rays by an object or a virtual reflection which can be created from different lenses and mirrors, with the help of the reflection or refraction phenomenon of the light rays. Image contains colour.

(ii) **Shadow :** Shadow is formed when light is obstructed by an opaque object or a patch of darkness on a surface which is created by the blocking of the light rays by a solid opaque object. Shadow does not contain colour.

5. Natural sources of Light are sun, star, fire, thunder bolt of lightning or charge in storms, and auroras. There are even some animals and plants that can create their own light such as fireflies, jellyfish etc. and this is called as bioluminescence.

(E) Fill in the blanks with suitable (given) words :

1. sun **2**. light **3.** light **4.** ray **5.** beam

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** True **4.** True **5.** False

(G) Match the Following :

1. Sun is the main source—of light for us.

2. The image in a pinhole—camera is real

3. Moon—non-luminous object

4. Beam of light—collection of rays

5. Speed of light—3,00,000 km/sec

(H) Activity :

Do yourself.

Chapter 12 : Magnet

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (a) **2. (a)** **3. (a)** **4. (c)** **5. (b)**

(B) Answer the following questions in very short :

1. Natural magnet—magnet which occurs naturally.

2. N-pole indicates— The North Pole.

3. Opposite poles of two magnets attract each other.

4. Same poles of two magnets repel each other.

(C) Short Answer Questions :

1. Natural Magnet : A magnet which occurs naturally is called a natural magnet. Natural magnets generally have lower magnetic power. Magnetite is the only natural magnet.

2. Magnet has two very important properties :
   (i) **Attractive property :** Magnet attracts iron towards itself.
   (ii) **Directive property :** If a needle shaped magnet is suspended freely, it always points in the north and south direction.
3. **Magnetic Substance :** The substances or materials which are attracted by a magnet and can be converted into a magnet are called Magnetic substances such as iron, steel, nickel and cobalt.
4. **Non magnetic Substance :** The substances or materials which are not attracted by a magnet are called Non magnetic substances. Non-magnetic materials include copper, plastic, silver, paper, brass etc.

D. Long Answer Questions :

1. **Magnets were discovered by Magnes.** Magnet is found by chance to an old shepherd. He had an iron casting on this stick at the bottom of it to manage his herd of sheep and goats. Magnes suddenly felt that something was pulling his stick away from him. He felt that the bottom of his stick is somewhere got stuck on a big rock and when he was pulling his stick away from the stone, the stone again attracted the bottom part of his stick, Magnes had to pull hard to free the iron end of stick from the rock. That rock was a natural magnet, because of its magnetic property it behaved like a magnet and attracted the iron stick and given the name magnetite.
2. **The Poles of magnet :** The power of magnet is strongest at its ends. These two strongest ends of magnet are known as magnetic poles. Due to its directive property one end pointing in the north direction is North Pole and the other end which is pointing in the south direction is South Pole. The North and South Poles cannot be separated from each other. The North Pole is referred to as N-pole and South Pole is referred to as S-pole.
3. **Usefulness or Uses of Magnet :**
   (i) Magnet compasses are also used to find directions.
   (ii) In computers magnets are used in hard disk and floppy disk to store data. Magnets are also used for making recording devices.
   (iii) Magnetic tapes used in audio and video cassettes have a layer of magnetic material on them.
   (iv) Magnets are used in speakers, headphones and microphones. The membrane used in speakers and headphones is moved by magnets and they start working by the vibration produced by the membrane.
   (v) Magnets are used in MRI machine : doctors use to scan patient's body.
   (vi) Electrical appliances like television, refrigerators, vacuum cleaners, washing machines and generators have powerful magnets.
   (vii) Magnet produces electricity if a metal wire is moved around the magnet.
   (viii) The dark magnetic strip on the back side of Credit or Debit or ATM cards helps in storing data. These cards are called as meg-strip cards.
4. **Artificial Magnet :** The magnets which can be prepared artificially by transferring the natural properties of a natural magnet into substance are known as artificial magnets. Artificial magnet can be made using iron by giving them different shapes like a bar needle, dumb-bell, horse-shoe or U-shaped magnet and cylindrical magnet.
5. **Demagnetization :** Magnets lose their property if not handled with care. Losing of magnetic property is called demagnetization. Magnets can lose their properties if

they are dropped from some height, heated or hit it with a hard object. Magnets should not be placed near television, computer, cassette, mobile, and other electrical appliances.

(E) Fill in the blanks with suitable (given) words :

1. Magnes **2**. Natural **3.** audio **4.** South **5.** natural

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** True **4.** False **5.** True

(G) Match the Following :

1. Natural magnet—magnetite

2. Arificial magnet—man made magnet

3. Magnetic poles—N-S poles

4. Opposite poles—attract

5. Finding direction—compass

(H) Activity :

Do yourself.

Chapter 13 : Water

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (a) **2. (c)** **3. (a)** **4. (c)** **5. (c)**

(B) Answer the following questions in very short :

1. Water cycle starts with the process—of Evaporation.

2. States of water can be changed on—Heating and Cooling.

3. Excess rainfall brings—Flood.

4. Water vapour turns into water on cooling—by the Process of Condensation.

(C) Short Answer Questions:

1. Surface Water : The water present on the surface of the Earth is known as surface water. Water bodies like lakes, rivers, streams etc. are the main source of surface water which are also known as freshwater source.

2. Underground Water : The water which is present inside the earth surface is called as underground water. The rainwater is collected under the earth surface. Underground water is safe for drinking. We get underground water by digging wells and tube wells and hand pumps.

3. Transpiration : Transpiration is a process which is carried out by plants. For preparing their food plants need water, which they absorb from the soil with the help of their roots and transfer it to the other parts of the plants. Remaining part of the water is released by the plants into air as water vapour through the process of transpiration.

4. The water is present on earth in three different forms that are solid, liquid and gas. In solid state we can see water in form of ice, in liquid state it is present in form of water and in gaseous state it is present in form of water vapour or steam.

D. Long Answer Questions :

1. Flood : Excess rainfall brings flood. Excess rain for long time results in rise of water levels in water bodies and water overflows their banks. Floods take away lives of

humans, animals and plants and destroy their properties. Flood causes devastation, trees are uprooted, communication and transportation get disturbed and property gets damaged. Flood washes away upper layer of soil. There is severe scarcity of food and drinking water. Water borne diseases like diarrhea and jaundice affect the people.

2. **Drought :** The condition of having no rainfall or very little rainfall in an area over a particular period of time is known as drought. Without water soil dries up and becomes too hard. Drought affected land cannot be further used for agriculture purpose. Water bodies like ponds, rivers, lakes and wells dry up. Plants do not get water but transpiration goes on. In the absence of water crops fail, grass does not grow and there is no food for animals and humans. There is shortage of drinking water too. There is a massive loss of life.

3. **Evaporation and Condensation :**
   1. **Evaporation :** When the water is heated it changes into gaseous form that is water vapour. This is known as evaporation. There is no fixed point required for the process of evaporation. It takes place at all temperatures.
   2. **Condensation :** In condensation the water vapours present in air after coming in contact with cooler surface or low temperature turns into water.

   Example of Evaporation and Condensation. The water present in water bodies like rivers, lakes and ponds is evaporated by the heat of the sun and collected in the form of water vapour to form the clouds. As we go higher the air gets cooler and cooler and the water in the clouds gets cold. On cooling the water vapour turns into water. Many droplets of water come together to form larger size drops of water which becomes heavy and began to fall as rain and bringing back water to the earth's surface.

4. **Precipitation :** The water falls from the sky as rain, sleet, snow or hail. The process of bringing back water to the earth's surface in the form of rain, snow, hail or sleet is known as precipitation.

5. We can conserve water in the following ways :
   (i) The waste materials garbage and sewage should not be thrown out in the water bodies.
   (ii) Say no to shower and use bucket for bathing.
   (iii) Serve the required amount of water to the guest and avoid wastage.
   (iv) Don't keep tap running while washing hands.
   (v) Avoid overflowing of overhead water storage tanks.
   (vi) Use sprinklers for irrigation purpose.
   (vii) Water harvesting techniques should be used for the collection of rainwater.

   It is important to conserve water because of increase in population demands, increase in supply of water directly and indirectly. By directly we mean to say the water we use for drinking purpose and cleaning ourselves whereas indirect consumption means water used for growing crops which we need for survival and growth.

(E) Fill in the blanks with suitable (given) words :

1. survive **2.** growth **3.** rain **4.** transpiration **5.** garbage

(F) Say whether the following statements are True or False :

1. False **2.** True **3.** True **4.** False **5.** True

(G) Match the Following :

1. Evaporation—on heating

2. Transpiration—in plants

3. Condensation—on cooling

4. Precipitation—rain and snow

5. Water cycle—continuous process

(H) Activity :

Do yourself.

Chapter 14 : Air

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (b) **2.** (b) **3.** (c) **4.** (c) **5.** (a)

(B) Answer the following questions in very short :

1. Protect from meteroids. In Mesosphere.

2. Weather changes recorded here. In Troposphere.

3. Space Shuttle Orbit around this layer. In Thermosphere.

4. Thin layer of ozone is present here. In Stratosphere.

(C) C. Short Answer Questions:

1. **Atmosphere :** The layer of air that surrounds the earth surface is called atmosphere. Air is thick near the earth surface but it becomes thinner as we go up. Atmosphere extends upto the height of hundreds of kilometres above the earth.

2. **Wind :** Moving air is called wind. We cannot see or touch air but we can feel its presence. For example flying kites in the sky.

3. The components of air are oxygen, argon, carbon dioxide, nitrogen, water vapour and dust.

4. **Uses of Air :** Air is useful in many ways and the four uses of air are :

(i) Air is essential for the survival of human beings, plants and animals as well.

(ii) Air plays an important role in water cycle.

(iii) Air plays an important role in the process of photosynthesis also.

(iv) It helps in dispersal of grains and seeds.

D. Long Answer Questions :

1. **Properties of Air:** Air has some properties which are as follows :

Mixture of Gases : Air is mixture of many gases.

Air has Weight : Air has weight and it takes up space. For understanding this, take two balloons, a thread and a stick. Blow air in one balloon. Tie both the balloons with the help of string to each end of the stick and hold the stick from the middle. Now you observe that the balloon which is filled with air is lying downwards. Hence it proves that air has weight.

Air exerts Pressure : Air has weight and exerts pressure on all things and in all directions. Flying kites, blowing of hairs in wind, air pumped into tires shows air exerts pressure.

Air occupies Space : The balloons filled with air are best example which proves air occupies space. Air cannot be seen but it is present all around us.

Air is Colourless and tasteless : Air has no colour and no fragrance.

2. **Nature's balance of Oxygen (O_2) and Carbon dioxide (CO_2):** The balance of oxygen and carbon dioxide is maintained in the atmosphere by the plants which consume oxygen for respiration as well as carbon dioxide in the process of photosynthesis for making food. They consume carbon dioxide and produce oxygen. Human beings and animals inhale oxygen and produce carbon dioxide in the air.
3. **Composition of Air :** Air is a mixture of many gases and a number of other substances also. The components of air are nitrogen, oxygen, argon, carbon dioxide, nitrogen, water and dust.

   Nitrogen : Nitrogen is a major component of air. About 77% of air is nitrogen. All living beings need nitrogen. Plant takes nitrogen for the soil. Animals and humans cannot get nitrogen from soil and air. They get nitrogen by eating plants and food such as meat.

   Oxygen : Without oxygen life on planet earth is not possible. It is needed by all living beings for breathing. The second largest portion of air is oxygen and it is about 21% of air.

   Argon : It makes up hardly 1% of air.

   Carbon dioxide : The carbon dioxide present in air is about 0.03%. We inhale oxygen and give out Carbon dioxide. Plant needs carbon dioxide in the process of photosynthesis.

   Other Gases : Hydrogen, neon, helium and other gases are present in very small amount in air.

   Water Vapour, Smoke and Dust Particles : These are present in very small quantity in air. The amount of water vapour present in air is called humidity.Air contains smoke and dust particles also.
4. The atmosphere is divided into five layers which are as follows :

   Troposphere : This is the lowermost layer and it is extended up to 15 kilometres above the earth surface. As we go higher or the altitude increases the air becomes thinner and that is the reason why it becomes difficult for the people to breathe properly. All the weather changes can be recorded in this layer.

   Stratosphere : This layer is extended from 15 kilometres above the earth's surface to 50 kilometres. The thin layer of ozone is present in this, which is called an ozone layer. Ozone is the form of oxygen which absorbs the harmful ultraviolet rays and prevents them from reaching the earth's surface.

   Mesosphere : This layer extends up to 50 kilometres to 85 kilometres above the earth surface. It is the coldest layer of the atmosphere. It also protects the earth from meteoroids. When meteors enter this layer they burn up due to the friction.

   Thermosphere : This layer extends from 85 kilometres to more than 500 kilometres above the earth surface. The air in this layer is very hot and due to which it is known as hot layer. Mesosphere and thermosphere are together referred to as ionosphere where the transmission of radio signals is possible. Space Shuttle also orbit around this layer.

   Exosphere : Finally the upper most layer of the atmosphere. The air is very thin where satellites can freely orbit the earth. There is vast empty space without any air beyond this layer.

5. We can control Air pollution by various methods :
(i) Cutting of trees should be banned and more of more trees should be planted.
(ii) Smoking should be banned completely.
(iii) Burning of rubber and plastic items should be stopped.
(iv) Industries should use fuel with lower sulphur content.
(v) Dumping of garbage in open ground should be banned.
(vi) Proper waste disposal system should be adopted by everyone.

(E) Fill in the blanks with suitable (given) words :

1. wind **2**. atmosphere **3.** ultraviolet **4.** 0.03% **5.** oxygen , carbon dioxide

(F) Say whether the following statements are True or False :

1. True **2.** False **3.** True **4.** True **5.** False

(G) Match the Following :

1. Atmosphere—5 layers
2. Windmill—generates elecricity
3. CO_2—fire extinguisher
4. Moving air—wind
5. Nitrogen—77%

(H) Activity :

Do yourself.

Chapter 15 : Garbage and its Disposal

(A) Multiple Choice Questions :

Tick (✓) the correct answer :

1. (c) **2. (c)** **3. (c)** **4. (a)** **5. (b)**

(B) Answer the following questions in very short :

1. Local government works for sanitation of—Garbage Disposal.
2. Garbage cannot be decomposed into simpler substances.
3. Waste disposed by burning—is called Incineration.
4. Composting by red earthworms—is called Vermicomposting.

(C) Short Answer Questions :

1. Garbage : The materials which are no longer needed and discarded, become useless and are meant to be thrown can be categorized as garbage. Or after consuming or using any substance the leftovers of that substance are treated as garbage.

2. Composting : Conversion of biodegradable garbage into manure is called composting. Composting is the oldest method of obtaining plants and animals waste including the waste from kitchen. Composting can be done on small as well as large scale.

3. Biodegradable Waste : Garbage which can be decomposed into simpler substance by the natural action of microorganism and does disappear into the environment is called biodegradable waste.

4. Landfill : The disposal of waste material by burying or dumping or a method especially by filling in reclaiming excavated pits or a site for the disposal of waste materials is called Landfill.

D. Long Answer Questions :

1. **Non-Biodegradable Waste :** Garbage which cannot be decomposed into simpler substance by the natural action of microorganism is known as non-biodegradable garbage. Non-biodegradable garbage includes plastic products like bags, mugs, toys, buckets and metals, glass, metallic oxides etc.
2. **Short Note on 3 R's :** 3 R's means reduce, reuse and recycle in decomposing non-biodegradable waste.

   Reduce : We reduce the wastage, the amount of waste generated by consuming and throwing away less.

   Reuse : Use of an item in each and best possible way before throwing it is known as reuse. We should use any item as many times as it can be used.

   Recycle : Recycling is a good way to reduce the amount of garbage. Material which was once a waste and can be reused by processing is known as recycle.
3. **Vermi Composting :** Composting with the help of red earthworms is called vermi composting. Red worms are a particular species of earthworms and they help in composting the garbage fast. Vermi composting takes 3 to 4 weeks. It breaks down the biodegradable matter into nutrient rich manure which increases soil fertility.
4. While discussing about the requirement of garbage disposal we got to know how municipality workers collect the garbage and take it to the landfill. These landfills are situated far away from cities but still open garbage is not good for environment attracts much kinds of insects and bacteria which cause disease. So the garbage in dumping areas should be covered. Decomposition of garbage of such quantity will take a very long time. The area of landfill will be used for the construction of public parks and plant nurseries.
5. **The benefits of garbage disposal**. By following the 3 R's we can live a healthy and beautiful life. We should encourage others to do so and make them aware of the situation. Garbage disposal benefits us in many ways. It reduces the waste from our houses and neighbours. It gives us clean and fresh environment as it controls air, water and land pollution. It saves our money. It helps us in conserving our natural resources which can use for a long period. Most importantly garbage disposal saves our lives directly and indirectly.

(E) Fill in the blanks with suitable (given) words :

1. cow **2**. plastic **3.** recycle **4.** 50% **5.** sewage

(F) Say whether the following statements are True or False :

1. True **2.** True **3.** True **4.** True **5.** True

(G) Match the Following :

1. Solid waste—trash
2. Water waste—sewage
3. Plastic product—non-biodegradable waste
4. Green garbage bin—recyclable waste
5. Blue garbage bin—non-recyclable waste

(H) Activity :

Do yourself.

❑