Lesson 1

Sources of Food

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (i) 2. (ii) 3. (ii) 4. (ii) 5. (ii)

B. Fill in the blanks :

Ans. 1. **Butterfly** (Butterfly/Bear) is a herbivore.
2. **Herbivores** (Herbivores/Omnivores) only eat plants.
3. Carrot and **turnip** (turnip/potato) are roots.
4. Eggs of **chicken** (goat/chicken) are eaten by human beings.
5. Spinach is a **leafy** (leafy/flower) vegetable.

C. Write 'T' for true and 'F' for false statements :

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

D. Match the following :

	Column A	Column B
Ans. 1.	Tiger	(i) Carnivore
2.	Goat	(iii) Herbiore
3.	Vulture	(iv) Scavenger
4.	Human beings	(v) Omnivores
5.	Egg	(i) Chicken

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Cow, goat, horse, giraffe and butterfly are the examples of five herbivores.
2. Lion, tiger, snake, owl and vulture are the examples of five carnivores.
3. Stem (potato), root (carrot), leaf (spinach) and flower (broccoli).
4. Carrot and turnip.
5. Onion and ginger.

B. Short Answer Questions :

Ans. 1. Animals which feed directly on plants are called herbivores. Examples are cow, buffalo, goat, elephant, etc.
2. Animals which eat the flesh of other animals are called carnivores. Examples are lion, tiger, etc.
3. Various foods such as meat, eggs, milk, cheese , honey butter, and curd are eaten by human beings.
4. Many products can be made from milk. These products are known as dairy products.

5. Cheese : Cheese is a solid food made from curdled milk of buffalo, goat, sheep, or cow.

C. Long Answer Questions :

Ans. 1. Special Characteristics of Herbivores
   (a) Some herbivores (e.g., cow, horse, and goat) have wide , blunt teeth. These teeth are suitable for pulling plants off the ground and grinding them.
   (b) Herbivores such as cow and camel have the ability to bring back previously swallowed food to the mouth for a second chewing. This helps them get the most out of hard-to-digest foods such as grass.
2. Based on their feeding habits, animals can be divided into three groups: herbivores, carnivores, and omnivores.
3. A fruit is that part of the plant which develops from the flower and flower and has seeds. Thus, tomatoes, peas, and bean are fruits and not vegetables, as we commonly call them. Scientist consider non-seed-containing plant parts such as roots and leaves as vegetables.
4. Some rodents, such as this squirrel, have a pair of broad, sharp-edged front teeth (incisors) in each jaw. These teeth are used to gnaw food such as nuts.
5. Sprouting involves soaking and draining sees and then leaving them till they germinate.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Due to lack of energy, he is feeling tired and exhausted. Because he has missed his breakfast and food provide us energy to work and play.
2. India is the second populous country in the world. Due to its large population, our country is facing food problem. To solve this problem we should control our population and also should not waste food items.

Fun Time

E. **1. Students can make a chart on herbivores, carnivores, and omnivores.**

Ans. Do yourself

2. Students can make a list of everything they have eaten in a particular week. They can be asked to record the information related to each foodstuff in the format given below :

Ans. Do yourself

Foodstuff	Source	Plant part/Animal
Apple	Plant	Fruit
Egg	Animal	Chicken

Outdoor Activities

3. Students can visit a zoo and collect information about the feeding habits of different animals.

Ans. Do yourself

Lesson 2 Components of Food

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (iii) 2. (iv) 3. (i) 4. (iii) 5. (iii)

B. Write 'T' for true and 'F' for false statements :

Ans. 1. False 2. False 3. False 4. False
5. True 6. True 7. True

C. Fill in the blanks :

Ans. 1. Protective foods include **Vitamins** and **minerals**.
2. Sea food is a rich source of **iodine**.
3. Processed foods are rich in **carbohydrates**.
4. Loss of vision or night blindness is caused due to the deficiency of **vitamin A** in our diet.
5. **Rickets** is caused due to the deficiency of vitamin D.
6. Proper functioning of our digestive system is due to the presence of **water** in our diet.

D. Match the following :

	Column A	**Column B**
Ans. 1.	Starch	(i) Potato
2.	Protein	(v) Pulses
3.	Vitamin D	(vi) Rickets
4.	Sea food	(iv) Iodine
5.	Vitamin B_{12}	(iii) Anaemia
6.	Fat	(ii) Butter

Summative Assessment

A. Short Answer Questions :

Ans. 1. (a) Carbohydrates : Rice, bread, table sugar, honey, wheat.
(b) Fats : Meat fish, milk products as ghee, butter.
(c) Proteins : Nuts, almonds, grains, pulses.
(d) Dietary fibre : carrot, cabbage, apple, wheat, pulses.
2. Potato and rice are the two foods rich in starch.
3. Three major food groups are :
(i) Energy giving foods : wheat, rice, potato
(ii) Body building foods : pulses, meat, egg.
(iii) Protective foods : milk, spinach, apple
4. Our body required all type of nutrients. We should not eat only one type of food because it can not fulfill the demand of all nutrients of the body.

B. Long Answer Questions :

Ans. 1. (i) Carbohydrates contain carbon, hydrogen and oxygen are energy-giving compounds. Mainly our food consists of carbohydrates. The two types of carbohydrates are sugars and starches.

Foods rich in carbohydrates are rice , bread, table sugar (used in tea or coffee), honey, potato , wheat (chapattis), milk, jaggery (gur) and fruits like mango, banana and papaya.

(ii) Fat is composed of carbon, hydrogen and oxygen. They are also energy-giving compounds. But they give much more energy than carbohydrates.

Foods rich in fats include:

- meat (animal fat).
- milk products such as ghee , butter and cheese (animal fats).
- dry fruits like cashew nut and almond.
- vegetable oils such as groundnut oil and coconut oil.

(iii) Proteins contain nitrogen in addition to carbon, oxygen and hydrogen.

Foods rich in proteins are often called body-building foods. Proteins are required by the body:

- to protect the body from infections.
- for growth and repair of body tissues.
- to regulate body functions.

Proteins can be obtained from plant sources as well as animal sources.

Like carbohydrates and fats, proteins can also provide energy.

Proteins from plant sources Nuts, almonds, grains, pulses

Proteins from animal sources Paneer, eggs, milk, cheese, meat and fish.

(iv) Vitamins are essential for proper functioning of our body. These are required in very minute quantities in comparison to carbohydrates, fats and proteins. They are known as protective foods as they:

- help in keeping our bones, teeth, gums and eyes healthy.
- protect our body from diseases.

Our body needs vitamins in small quantities. Each vitamin plays a specific role in our body. For example,

- vitamin A keeps the skin and eyes healthy.
- vitamin B helps in releasing energy and formation of red blood cells.
- vitamin D makes our teeth and bones strong.
- vitamin E keeps our skin and body healthy.

(v) Just like vitamins, minerals are also protective foods. They help our body to remain healthy. They are also required in minute quantities like vitamins. Some important minerals include sodium, calcium, iron, phosphorus, potassium and iodine.

Sources of some minerals are shown in the given figure.

Calcium and phosphorus are essential for the proper formation of teeth and bones. Pulses, eggs, cheese and milk are rich in these two minerals.

Iron is necessary for the formation of haemoglobin (the red pigment present in the red blood cells). Deficiency of haemoglobin causes anaemia. Peas, green leafy vegetables, eggs, nuts, peas and liver are good sources of iron.

Iodine is essential for keeping the body healthy. Its deficiency leads to a disease called goitre (swollen neck condition). Iodised salt, sea food and fish are the sources of iodine.

(vi) We cannot digest cellulose, the carbohydrate which the walls of plant cells are made of. It is a necessary part of our diet. It is referred to as fibre.

Also known as roughage, fibre has no nutritive value. It is needed by our body because it performs the following functions.

- assists in the process of digestion
- prevents constipation
- helps to get rid of undigested food

Roughage is provided by the plant products in our foods. Its main sources are vegetables (carrots, cabbage), fruits (apples, peaches), whole grains (wheat, rice) and pulses (beans).

(vii) Water accounts for about 70% of the weight of an individual.

Do you think you can survive without water!

A person is unable to survive for more than three days without water, but can survive for many weeks without food, provided he has water.

Water performs the following functions:

- It helps to absorb nutrients from food.
- It helps in throwing out wastes, such as sweat and urine from the body.
- It helps to move (transport) substances inside the body.
- It helps to maintain a constant body temperature.

We get water from the things we drink—milk, juice and tea. Even the fruits and fresh vegetables we eat contain plenty of water. Even while cooking, a lot of water is added to food.

2.

Vitamins and minerals	Deficiency diseases	Symptoms
(i) Vitamin A	Loss of vision	Loss of vision in the dark
(ii) Vitamin B	Beri-beri	weak muscles, very little energy to work.
(iii) Vitamin C	Scurvy	Swelling of joints, swelling and bleeding of gums.
(iv) Vitamin D	Rickets	Weak bones, Decaying teeth

		bow lags and development of pigeon chest conditions.
(v) Calcium	Bones and tooth decay	Excessive bleeding, brittle bones
(vi) Iron	Anaemia	Body weakness, pale body colour, whitish nails.
(vii) Iodine	Goitre	Enlargement of thyroid gland.

3. (i) **Aim: To test fat in a food item.**

Materials required: A small amount of food item on a piece of white paper

Procedure:

- Rub a small amount of a drop of oil on a piece of white paper.
- Allow the paper to dry for some time.

Observations: Now observe the paper in front of a source of light. The part of the paper with the food item becomes oily and translucent.

Inference: Fat is present (no oily mark will be left if fat is not present).

(ii) **Aim: To test starch in a food item.**

Materials required: Food item to be tested dilute iodine solution, a small dish, a dropper

Procedure

- Take a piece of potato in a small dish.
- Put 2-3 drops of dilute iodine iodine solution on the piece of potato.

Observations: Observe what happens to the it. Is there any colour change?

You will see that a blue-black colour develops when the iodine solution is applied.

Inference: The development of a blue-black colour indicates that there is starch in potato.

(iii) **Aim:** To show protein in a food item.

Materials required: Food item to be tested, copper sulphate solution, sodium hydroxide solution, water, test tube, a dropper

Procedure:

- Take the food item in a test tube and add some water to it.
- Shake the test tube well.
- Add 2-3 drops of copper sulphate solution and then 10-12 drops of sodium hydroxide solution to the test tube.
- Shake well. Allow it to stand for a few minutes.

Observations: The colour of the solution changes to purple or violet.

Inference: Protein is present in the food item.

4. Proteins are essential body-building foods. Following symptoms appear if a person does not get enough proteins in the diet:
   - Swelling of face
   - Diarrhoea
   - Discolouration of hair
   - Stunted growth
   - Skin problems
   - Swollen abdomen

   In children, lack of proteins leads to severe malnutrition and diseases like kwashiorkor and marasmus develop.

   Kwashiorkor is a disease which occurs in children due to protein deficiency.

   Marasmus is a disease which occurs due to the lack of proteins as well as carbohydrates in children.

C. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Do yourself
2. Do yourself
3. If we have been given a meal of bread, butter and cheese, this meal provide us carbohydrate, fat and protein and little amount of vitamins and minerals but it lack of water, roughage etc.

Fun Time

A. Take any five food items (some may be cooked and others may be raw) and test these for the presence or absence of proteins, fats and starch. (Note: These food items should be different from those already tested for.) Record your observations in a table in given format.

Ans. Do yourself

B. Take a pizza and test its different components for the presence of proteins, starch and fats. Similarly, take a chocolate and test it for the presence of proteins, starch and fats.

Ans. Do yourself

Lesson 3 Sources of Food

Formative Assessment

A. Tick (3) the correct option :

Ans. 1. (i) 2. (iv) 3. (iv)
4. (iii) 5. (ii) 6. (i)

B. Complete the following :

Ans. 1. Mist is a **heterogeneous** mixture.
2. The constituents of a **mixture** can be separated by physical means.
3. Sugar candy is made by **crystallisation**.
4. An alloy is a **strong** solid mixture.

5.

Type of mixture	Example	Method of separation
(i) A heterogeneous solid-liquid mixture	Muddy water	Sedimentation and filtration
(ii) **A heterogeneous solid mixture**	Bran and flour	**Sieving**
(iii) A heterogeneous solid mixture containing one soluble constituent	**Salt and sand**	**Dissolution**
(iv) A heterogeneous liquid mixture	**Oil and water**	Using separating funnel

C. Match the columns :

Column A	Column B
1. A fizzy drink	(v) A gas- liquid mixture
2. Air	(i) A gaseous mixture
3. Smoke	(ii) A solid-gas mixture
4. A glucose solution	(iii) A homogeneous solid-liquid mixture
5. A chalk-water mixture	(iv) A heterogeneous solid-liquid mixture

D. What are the following called?

Ans. 1. Sediment
2. Homogeneous mixture.
3. Supernatant-liquid.
4. Heterogeneous-mixture.

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Winnowing : A method used to separate lighter components of a mixture from the heavier ones by wind or by blowing air

2. Yes, there can be both types of solid-liquid mixtures-homogeneous as well as heterogeneous. Sugar + water and salt + water are the examples of homogeneous mixtures while chalk + water and sand + water are the examples of the heterogeneous mixtures.

3. Cream is obtained by churning milk. When milk is churned, cream separates from it. As cream is lighter than milk, it floats over the liquid. Churning is done either a manually or by using mixi.

4. Sieving is a method used to separate the components of a mixture which are of different sizes and the mesh (usually fitted into a frame) is called a sieve.

   Small and fine sieves are used in the homes to separate bran and other impurities from flour. The impurities remain on the sieve and flour passes through. Bigger sieves are used at construction sites to separate stones from sand.

5. When a solution is not capable of dissolving any more solute at a given temperature it is called a saturated solution.

B. Short Answer Questions :

Ans. 1. If you move a magnet through a mixture of iron fillings and sand, the iron particles cling to the magnet. Iron is attracted by a magnet. Sand is not attracted by a magnet and so the particles of sand are left behind. A method in which a magnet is used to separate the components of a mixture, is called magnetic separation.

2. Decantation can also be used to separate immiscible liquids, i.e., which form separate layers in a mixture, e.g., oil and water.

Generally immiscible liquids are more easily separated by using a separating funnel. A separating funnel consists of a glass bulb to the stem of which is fitted a stopcock. A mixture of immiscible liquids is poured in a separating funnel and allowed to stand for sometime . The liquids form different layers. The heavier liquid, which forms the lower layer, is drawn into beaker by carefully opening the stopcock. The stopcock is closed when the upper layer reaches it. The lighter liquid can then be collected in another beaker.

3. You know, sea water contains salt. So we can call it a salt solution. Sea water is collected in shallow pits dug on the seashore. The heat of the sun makes the water evaporate. When enough water has evaporated, the solution becomes concentrated. After some time the salt begins to crystallise. The salt is again purified and mixed with sodium iodate. This mixture is called iodised table salt. Sodium iodate contains iodine. The lack of iodine in our diet might cause the disease such as, goitre

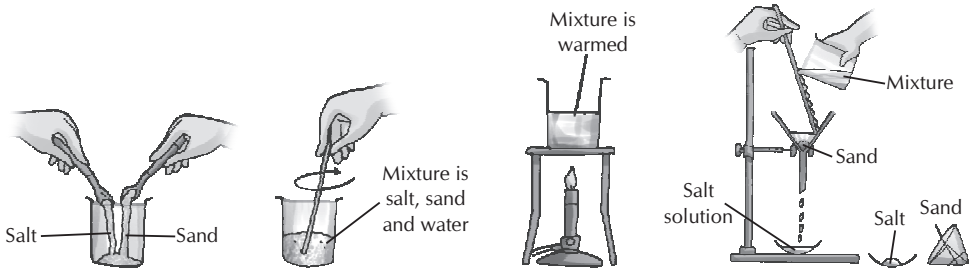
4. Heat some water in a vessel and dissolve some sugar in it. Go on adding sugar and dissolving it by stirring and heating until no more sugar dissolves. Filter the hot solution into a jar. Tie a string to a pencil and place the pencil on the rim of the jar. Now the string hangs in the solution. Leave the set-up untouched for two days. You will find that colourless crystals of sugar have appeared around the string.

C. Long Answer Questions :

Ans. 1. In distillation, a liquid is boiled, and the vapours are condensed and collected separately. When the liquid is mixed with solids, the solids do not vaporise. Thus, a liquid can be separated from a solid mixed with it. The process is used for separating a solid-liquid mixture- homogeneous (e.g., a solution of salt in water) or heterogeneous (e.g., a sand-water mixture).

Often distillation is done by setting up an apparatus as shown in given figure. A solution of salt 'or sugar' is taken in the flask. The flask is heated gently so that the liquid boils. In no time, water starts collecting in the test tube. The water thus collected does not have the taste of salt 'or sugar'. It is pure and is called **distilled water**. On distillation for some time, all the water is distilled out and a white residue of the salt 'or sugar' is left in the flask.

2. Take a mixture of salt and sand in a beaker. Add some water to the mixture and shake it for some time. Warm it from time to time so that all the salt dissolves in the water. Heating and shaking help dissolution. Filter, and wash the residue 4-5 times with hot water. Evaporate the filtrate to dryness. You will obtain a white solid, which is salt. The residue on the filter paper is sand, which can be dried in the sun.



Dissolving out salt from a salt-sand mixture

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Salt, sugar, oxygen, carbon-dioxide and water vapour are the five pure substances.

2. In water treatment plants. Water is allowed to stand undisturbed in large water tanks because by this impurities or heavy particles present in the water are settle down at the bottom of the tanks and the pure water will remain over it.

Fun Time

Visit a nearby field with your teacher and find how crop is threshed and winnowed. Make a report and present in your class.

And. Do yourself

Lesson 4 Cloth Materials-Fibre to Fabrie

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (ii) 2. (iii) 3. (iv) 4. (iii) 5. (iii)

B. Fill in the blanks :

Ans. 1. Nylon and polyester are **synthetic** fibres.
2. **Cotton** and **Jute** fibres are obtained from plants.
3. **Jute** is the second most important natural fibre.
4. **Ginning** is a process of removing seeds from cotton bolls.
5. In **weaving** two sets of yarn are woven.
6. Jute is harvested after **flowering** and before they turn into **seeds**.
7. To make fabrics, all fibres are first converted into **yarns**.

C. Match the following :

	Column A	Column B
Ans. 1.	Silk	(v) Animal fibre
2.	Jute	(vi) Cheapest plant fibre
3.	Cotton	(iv) Bolls
4.	Separating of cotton fibres from seeds	(ii) Combing
5.	Spinning	(iii) Charkha
6.	Handlooms	(i) Weaving

D. Write 'T' for true and 'F' for false statements :

Ans. 1. True 2. False 3. True 4. True
5. False 6. True 7. False

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. (i) Natural fibre (ii) Natural fibre (iii) Synthetic fibre
(iv) Natural fibre (v) Natural fibre (vi) Synthetic fibre
(vii) Natural fibre (viii) Synthetic fibre.
2. (i) Fruits of the plant (ii) Stem of the plant
3. (i) Spring season (ii) Rainy season

B. Short Answer Questions :

Ans. 1. Black soil has the ability to retain moisture and is best suited for the cultivation of cotton plant. Cotton plant is grown in fields as an annual crop. It grows best in warm weather. It requires temperature ranging from 21° C to 27° C. Rainfall between 50 cm to 80 cm is required for its adequate growth.

2. People all our the world wear clothes., but the kinds of clothes vary from place to place. Different kinds of clothes are used in different climates and occasions.

3. Jute is the cheapest natural fibre. It requires normal temperature range of 18° C to 33° C and humidity in the range of 70% to 80% to grow well.

4. During spring, cotton seeds are planted. The fruits of the cotton plant called bolls are about the size of a lemon.
When the crop grows to maturity, seeds with their fibres are harvested. Cotton is generally hand-picked from cotton bolls. Fibres are then separated from the seeds by combing. This process is called ginning of cotton.

5. All fabrics are made of yarns or threads woven together. Each yarns or thread is further made of still thinner strands called fibres.

6. Weaving : The process of arranging two yarns together
Knitting : The process of making a piece of fabric from a single yarn

C. Long Answer Questions :

Ans. 1. In ancient times early men used to cover their bodies with bark and big leaves of trees or animal skins and furs.

After early men began to settle down in different communities and with the development of agriculture, they learnt to weave twigs and grasses into baskets , mats and other utility items.

They also used to twist vines and animal fleece or hair into long strands. These long strands were then woven into fabrics.

In India, cotton was grown near the river Ganga during Harappan period. There are evidences showing flax (linen), a plant that gives fibres, which were used in Egypt 7000 years ago. In ancient Egypt, cotton and flax were grown near the river Nile and were used for making fabrics.

At that time, stitching was not known to people. They simply used to drape a big piece of cloth around them. This is how saris worn by women originated in India.

Even today, fabrics like lungi , dhoti , sari and turban are worn as unstitched clothes.

Invention of sewing needle led to the stitching of fabric into various types of dresses such as pants, shirts, suits, blouses and skirts.

2. Fabrics can be classified as natural fabrics and synthetic man-made fabrics.

Natural Fabrics

Fabrics woven from fibres obtained from natural sources are termed as natural fabrics. They are further classified into two categories: Plant fabrics and animal fabrics.

Plant Fabrics

The fabrics obtained from plants such as, cotton, jute, hemp, flare and ramie are called plant fabrics.

Coconut trees bear. Coconut fruits, which are used in their entirety. Coconut fibres are cleaned, smoothened and made into various toys and dolls with beads and coloured threads to give them a attractive appearance.

Animal Fabrics

Fabrics obtained from animal sources such as wool, cashmere, fur and silk are called animal fabrics. Wool is obtained from the fleece of sheep and the hair of yak and camel, alpaca, guanaco and vicuna. Cashmere, a clothing fabric is obtained from Kashmiri goats. Silk is obtained from silkworm, which is a large, white moth caterpillar. Fur of various animals such as rabbit beaver, mink and musk rat is also used as clothing.

Synthetic Fabrics

Fabrics developed in factories using chemicals are called synthetic fabrics. They are also termed as artificial fabrics. For example terylene, polyester, (polyvinyl chloride) and nylon.

3. **Uses of Cotton**

Since it is very light and a good absorbent, it is mainly used for making clothes for summer.

It is used to make a variety of clothing materials like cotton bags, shirts, saris, bad sheets, curtains and other upholstery items.

The cotton seed meal (khal) left after taking out oil is used to feed livestock.

Cotton seeds, left after separation of cotton bolls, are used to produce cotton seed oil. Cotton seed oil is refined and used like other vegetable oils for human consumption.

4. Cotton is grown in abundance in India, parts of USA, Brazil, Egypt, Mexico, Sudan, Turkey and China. In India, it is grown in Punjab, Gujarat, Haryana, Andhra Pradesh and Maharashtra.

   During spring, cotton seeds are planted. The fruits of the cotton planted. The fruits of the cotton plant called bolls are about the size of a lemon.

   When the crop grows to maturity, seeds with their fibres are harvested. Cotton is generally hand-picked from cotton bolls. Fibres are then separated from the seeds by combing. This process is called ginning of cotton. Ginning of cotton can be done by machines or manually.

5. Uses of Jute

   Jute is the second most important natural fibre after cotton. It is known to have a wide range of uses.

   - It used to make sacks, bags and other wrapping materials.
   - It is used to make cloth for wrapping bales of raw cotton.
   - It is woven into curtains, handbags, chair coverings, carpets and many other things.

6. Jute is obtained from the stem of jute plant. It is a rainy season crop and grows best in warm and humid weather.

   Almost 85% of the world's jute cultivation is done in Ganges delta. It is cultivated in Nepal, India, Myanmar (Burma), Bangladesh, Pakistan, Thailand and China. In India, jute is mainly grown in Assam, Andhra Pradesh and West Bengal.

   Jute plants are harvested after flowering and before they turn into seeds. The harvested plants are kept put in water for a some days. It leads to the rotting of the stem. It is done to soften the tissues so that fibres can be separated easily. This process is called retting.

   Later on, fibres are separated from the stalks in long strands, washed, dried and then woven into fabrics.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Fabrics woven from fibres obtained from natural secures like plants and animals, are termed as natural fabrics and such type of fibres are called natural fibres. Wool, silk are obtained from animals and cotton, jute are obtained from plants. So these fibres are called natural fibres.

2. We prefer to wear cotton clothes in summer because cotton clothes are light and they keep us cool in the hot summer season.

Fun Time

A. Collect information about cultivation of cotton and jute in India. Which cotton and jute fabrics and items are exported by India? How does it help us?

Ans. Do yourself

B. Write a report on history and evolution of spinning.

Ans. Do yourself

Formative Assessment 1

A. Tick (✓) the correct option :

Ans. 1. (i) 2. (ii) 3. (iv) 4. (iv)

B. Fill in the blanks :

Ans. 1. Sea food is rich source of **iodine**.
2. An alloy is a **strong** solid mixture.
3. **Ginning** is a process of removing seeds from cotton balls.
4. **Jute** is the second most important natural fibre.

C. Write true or false :

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

D. Match the following :

	Column A	**Column B**
Ans. 1.	Tiger	(i) Carnivore
2.	Goat	(iii) Herbivore
3.	Vulture	(iv) Scavenger
4.	Human beings	(v) Omnivores
5.	Egg	(i) Chicken

E. Answer the following questions :

Ans. 1. carrot and turnip
2. Animals which eat the flesh of other animals re called carnivores. Examples are lion, tiger, etc.
3. Rice and Potato
4. Cotton is obtained from the fruits of the cotton plant.

Lesson 5 Kinds of Materials

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (iii) 2. (iv) 3. (i) 4. (ii) 5. (ii)

B. Fill in the blanks :

Ans. 1. Silver **has** (has/doesn't have) a lustre.

2. Glass is a **bad** (good/bad) conductor of heat.
3. **Iron** (Iron/Wood) is a good conductor of electricity.
4. Objects made of **iron** (iron/wood) are attracted by a magnet.
5. A rock will **sink** (float/sink) in water.
6. Salt is **soluble** (soluble/insoluble) in water.
7. Air is **transparent** (transparent/opaque).
8. Plastic is a **bad** (bad/good) conductor of heat.

C. Write 'T' for true and 'F' for false statements :

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

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Arranging same types of things together is called grouping.
2. The process of sorting out and grouping things according to some basis or criteria is called classification.
3. Gold and silver are the two examples of materials having lustre.
4. Some materials conduct electricity. These materials are called conductors like iron, copped copper etc.
5. Wood is one example of insulator.

B. Short Answer Questions :

Ans. 1. Arranging some types of things together in called grouping. Grouping makes it easier for us to find things when we need them. If all textbooks had been kept at the same place, it would have been very easy to find the maths textbook. Similarly, it would be easy to find a particular pant if all clothes are kept together. Also, grouping things would make the room look much attractive.
2. The substances which conduct electricity are called good conductors of electricity or simply conductors whereas substances which do not conduct electricity are called bad conductors of electricity or insulators. For example, metals are good conductors of electricity; air, wood and plastic are insulators.
3. **Glass** window pane and jar **wood** chair and table **metal** utensils and needle.
4. Some types of materials float on water whereas others sink. This property is called **flotation**. Generally, materials such as leaves, wood, and feathers float on water whereas rocks and metals sink.
5. Aerogel, a new material developed by NASA, created by Steve Kistler in 1931, is a material with very interesting properties. All known as from smoke, it sonsists of 99.8% air. It is the best known insulator and can support 2000 times its own weight. The brick shown in the picture is kept aerogel.

C. Long Answer Questions :

Ans. 1. Surface of materials can be rough or smooth. Certain materials have

bumps or ridges on their surface, which can be felt by touching them. Such materials are said to be rough. Examples of rough materials are rocks, sandpaper and bark of a tree. Smooth materials lack these bumps. A glass sheet, flower petals, and surface of an apple are examples of smooth surfaces.

2. Materials that do not allow light to pas through them are called opaque materials. Some examples of opaque materials are wood, metal, sheet, leaf, stone and cardboard.
   Materials that allow light to pass through them are called transparent materials, Some examples of transparent materials are water, glass, acrylic sheet, and cellophane paper.
3. Substances which conduct heat are thermal conductions. If you observe the utensils kept in your kitchen, you will find that though most of them are made of metals, their handles are made of wood or plastic . Why aren't the handles made of metal as well? This is because metals get heated whereas materials such as wood and plastic do not. It would be difficult to handle metal utensils after cooking if the handles were made of metal.
4. Materials such as, metals that are attracted to magnet are called magnetic materials. This property is called magnetism. Objects made of iron are attracted to a magnet. In addition to iron, cobalt and nickel are also attracted to a magnet.
5. A thing that occupies space and has mass is called matter. Matter can be of a fixed shape and size or may not be so. All substances are made up of matter. Matter exists in three categories, which differ in the arrangement of particles they are made of.
   Solid state: Solids such as, table, chair have the following characteristics.
   1. The particles are closely packed.
   2. They have a definite shape and volume.
   3. They cannot be compressed.

   Liquid state: Liquids such as, water, milk have the following characteristics.
   1. The particles are not as closely packed as those of solids.
   2. They have a definite volume but no definite shape. They take the shape of the container they are poured in.
   3. They can only be compressed to as small extent.

   Gaseous state: Gases such as, oxygen, carbon dioxide have the following characteristics.
   1. The particles are loosely packed.
   2. They do not have a definite shape or volume.
   3. They are highly compressible.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Because sweater is made up of wool and thick woolen clothes keep us warm during winter. They present to release our body heat.

2. Wires are used to pass them electricity. Plastic is a good insulator of electricity. To prevent a shock metal wires are enclosed-inside a plastic cowering.

Fun Time

A. Students can be asked to collect pictures of various objects and paste them in their notebooks, classifying them into different groups (e.g., transparent and opaque).

And. Do yourself

B. Students can list the properties of different materials (such as wood, iron, plastic, and glass) in their notebooks (whether the material is transparent or opaque, it conducts electricity or not, etc.).

And. Do yourself

Lesson 6 Changes Around Us

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (ii) 2. (ii) 3. (i) 4. (i)

B. Fill in the blanks :

Ans. 1. In **irreversible** change, the initial substance cannot be obtained back.
2. Condensation of steam is a **reversible** change.
3. **Solute** is present in small amount in a solution.
4. Burning of paper is a **fast** change (fast/slow).
5. Solubility of gases **decreases** with increase of temperature.
6. **Solvent** is present in bulk amount in a solution.

C. Match the following :

	Column A	**Column B**
Ans. 1.	Colour change on ripening of fruit	(iii) Irreversible change
2.	Increase in the height of a child	(v) Slow change
3.	Solubility of gases	(i) Decreases with temperature
4.	Solubility of solids	(iv) Increases with temperature
5.	Solute	(ii) Present in small amount in solution

D. Write 'T' for true and 'F' for false statements :

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

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Change refer to the differences occurring in shape, size, colour or position of things around us.

2. Reversible change : A change in which you can get back the initial substance by reversing the action.
3. Physical changes : The changes in which the molecules present in the substance remain the same but the shape, size, or position of the substance change
4. Chemical changes : The changes that occur as a result of a chemical reaction between the molecules of substances and in which a new substance is formed

B. Short Answer Questions :

Ans. 1. No, the change in cement can not be reversed because due to the presence of water the molecules of element joint to each other tightly and become a hard solid substance like a stone.

2. The iron blade of some tools has a ring, into which the wooden handle is fixed. Normally, the ring is a little smaller in diameter than the wooden handle.

   For fixing the handle, the ring is heated. It expands and becomes slightly larger in size that is expansion takes place. The wooden handle in now fixed easily in the ring. On cooling, the ring takes its normal size, as takes place. The wooden handle fits tightly in the ring.

   Same principle is used for fixing a metal rim on a wooden wheel of a cart. Normally, the size of the metal rim is a little smaller than that of the wooden wheel.

3. Yes, these changes are reversible because a change in which we can get back the initial substance by reversing the action is called reversible change. In this case we can reverse our action easily.

4. No, it is not a reversible change because we can not get back the plaster of Paris in its original position.

C. Long Answer Questions :

Ans. 1. **Reversible Change**

The change which can be reversed is called a reversible change. Let us understand it better by performing the following Activity.

To understand the reversible change fill air in a balloon. a out then let the air escape form it.

- Take a big balloon and fill air into it.
- See what happens.
- You will see that the shape and size of the balloon changes.
- Now allow the air escape out from it.
- See what happens.

You will see that the balloon gets back to its original shape and size.

Irreversible Change

The change which cannot be reversed is called irreversible change. Let us understand it better by performing the following activity.

To understand the reversible change in balloon by first filling air in it and

then bursting it.

- Take the same big balloon you took in Activity 1 and fill air into it.
- Tie its mouth with a thread tightly.
- Prick it with a pointed object.
- See what happens.

You will see that the balloon bursts. Now it cannot get back to its original shape and size.

2. Solute : Component present in a small amount in a solution, for example salt.
   Solvent : Component present in a large amount in a solution, for example water.
   Solution : A uniform/homogenous mixture of solute and solvent, for example solution of salt and water.
3. To see that with increase in temperature, solubility increases.
   - Take 100 mL of water in a vessel and 250 g of sugar.
   - Add little amounts of sugar into the water slowly at room temperature.
   - Stop adding sugar, when no more sugar dissolves.
   - Find out the amount of sugar added, using the following. formula:
     Sugar added =250g –Sugar left
   - Heat the water in the vessel to a temperature of up to 40°C.
   - New add little amount of sugar into it slowly.
   - Stop adding sugar, when no more sugar dissolves.
   - Find out the total amount of sugar added, using the following formula:
   - Total sugar added = 250 g –Sugar left
   - What do you find?

   You will find that with increase in temperature more amount of sugar can be added to have water.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. The growth of our body is irreversible change because we can not get back this change.

2. (i) Burning of paper is a chemical change. It is an irreversible chemical change because we can not get back paper by its ash.
   (ii) Burning of candle is not a chemical change.

E. Classify the following as reversible or irreversible changes :

Ans. 1. I 2. R 3. I 4. R 5. I 6. R 7. I 8. R
Where, I = Irreversible
R = Reversible

Fun Time

A. Laboratory Experiment

An Invisible Message: Cut a lemon and squeeze out its juice in a small bowl. Take an ear bud or a match stick, dip it in the lemon juice and write a message on a paper. Leave the paper to dry for some time. Ask your friend to read what is written on the paper. Now light a candle and fix it on a table. Warm the

paper by holding it over the flame of candle. You will observe that invisible message becomes visible. Is it a reversible change?

Ans. Do yourself

B. Investigate and Analyze

Ask your mother what she has prepared for dinner today. Find out which of the steps or processes in the preparation of various dishes in dinner can be reversed.

And. Do yourself

Lesson 7 Things Around Us

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (i) 2. (iii) 3. (ii) 4. (iii)

B. Complete the following :

Ans. 1. The structural unit of an organism is the **cell**.
2. A group of tissues which work together to perform one or more functions is called **organ**.
3. We throw out waste form our bodies in the form of faces, urine and **sweat**.
4. A **stimulus** is something which produces a response of reaction in a living being.
5. All living beings **respond** to external stimuli.

C. Write 'T' for true and 'F' for false statements :

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

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Touch-me-not pant
2. When we touch the tip of a touch-me-not plant then all the leaves will close.
3. No, all the organisms are not made of only one cell.
4. Cell : Smallest unit of structure and function in all living beings.
5. Cells are organised into special groups which perform special functions. These groups of cells which are similar and perform a particular function are called tissues.

B. Short Answer Questions :

Ans. 1. Shape, mass and occupy space are the those characteristics which living and non-living things have in common.
2. Reproduction, growth, movement, excretion and respiration are the five characteristics of a living being.

3. Fish breathe by taking in water. They breathe through gills.
4. A group of organs which co-operate with each other to perform a particular function is called an organ system.
5. The process of getting rid of wastes by the living organisms, is called excretion.

C. Long Answer Questions :

Ans. 1. Growth is a feature differentiating the living from the non-living. Some non-living things such as, crystals formed from a solution also seem to grow. But this growth is different. A sugar crystal hanging in a solution grows because more sugar is added on to it from the outside. Human body on the other hand, grow because the cells inside the body multiply and grow inside the body. In non-living things growth occurs from outside, while in living beings growth occurs from inside.

2. Life of all living beings start from a single cell. In many plants, this cell grows and multiplies inside a seed until the seedling comes out, and the new plant grows. In many animals (like birds and snakes), the single cell grows and multiplies inside the egg until the baby hatches out of the shell. The baby then grows into the adult. In some other animals, the baby grows inside the mother's body, is born, and grows into the adult. However it happens, a small organism grows into an adult organism. Then it reproduces, or produces its young ones. Then it grows old, and lastly it dies. We can conclued that all organisms follow a life cycle of birth, growth, reproduction, ageing and death.

3. The energy is stored in the food. All living beings use food to produce energy in their bodies. For this process they need oxygen, which they get from the air or water surrounding them. Oxygen combines with food inside their bodies to release energy. This is a type of chemical change in which carbon dioxide and water vapour are produced. The carbon dioxide and water vapour are wastes, which the body gives out. This process of taking in air (or water), allowing oxygen combine with food, and giving out carbon dioxide and water vapour is called respiration.

4. Whether plants really respire, to know this do this activity. Put a handful of Lantana buds or any other small flower, like drumstick in a piece of muslin. Tie up the piece of cloth to make a bag and suspend the in a vessel containing lime water. Moisten the cloth and make sure that the bag does not touch the lime water.

Suspend a bag of boiled buds in another vessel containing lime water. Cover both vessels. After some time, the lime water in the vessel

with fresh buds will turn milky because the buds respire and give out carbon dioxide. The lime water in the vessel with the boiled buds will not turn milky. You could use small developing fruit or germinating seeds instead of buds.

5. All living things show growth. You were born a little baby and now you are nearly 5 feet tall. You will still increase for a few more years. Then your growth will stop. This is true of all animals. They grow to the adult size and then stop growing. But plants, on the other hand, grow all their lives. They start as little seedlings and then keep growing.
6. Plants throw out gases through the stomata (pores) in their leaves. They also store wastes in cells. Some of these wastes are useful to human beings. For example, the rubber we extract from rubber trees is a plant waste called latex. Gum obtained from Acacia trees is also a waste product. So is the resin extracted from coniferous trees.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Oxygen is that gas which is a by product of photosynthesis in plants by essential for human beings.
2. Whales are not included in fish group. Actually they are mammals. Hike other mammals they breathe in oxygen with the help of their nostrils.

Fun Time

A. Seminar

Ans. Do yourself

B. Library Research and Project

Ans. Do yourself

C. Collect and Analyze

Ans. Do yourself

Lesson 8 Habitat and Adaptation

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (i) 2. (ii) 3. (ii) 4. (ii)
5. (i) 6. (i) 7. (iii) 8. (iii)

B. Write 'T' for true and 'F' for false statements :

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

C. Fill in the blanks :

Ans. 1. **Frog** and **salamander** are amphibious animals.
2. Fishes swim with the help of **fins**.
3. Camel is known as the **ship** of the desert.
4. The **leaf insect** simulates a green leaf for deceiving predators.

5. **Birds** and **bats** are volant animals.
6. Organization live **happily** in their own habitat in which they are born.
7. Tendril is a thin wine lift coiled **formation** which climber around the support.

D. Match the following :

	Column A	**Column B**
Ans. 1.	Xerophytes	(iii) Cactus
2.	Climbing	(iv) Monkey
3.	Volant	(v) Birds
4.	Hydrophytes	(ii) Lotus
5.	Protection	(i) Duranta

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Gills are the organs of respiration in aquatic.
2. Living things live on land, in water or on trees. Based on this, habitats are of the following types:
   1. Terrestrial 2. Aquatic 3. Aerial
3. Common adaptations in mesophytes are or following:
   1. Stem has well-developed mechanical and vascular tissues.
   2. Have well- developed roots with root hairs.
4. Camel and lizard are the two animals which are suited for desert life.
5. Some of the animals which are adapted for the aerial mode of life (flying) are known as volant animals. Mainly volant animals are all birds and bats.
6. Aquatic group of animals like fishes have spindle-shaped, stream lined body.

B. Short Answer Questions :

Ans. 1. 1. bones are hollow, light, spongy and contain many air cavities.
   2. have streamlined body which is covered with feathers.
   3. forelimbs are modified into wings.
2. In fact, the term habitat refers to the total environment of a place including physical factors like sunlight, temperature, rainfall, air and soil of that region and various living things such as plants, animals and microorganisms interacting amongst themselves as well as with the physical factors.

TYPES OF HABITATS

Living things live on land, in water or on trees. Based on this, habitats are of the following types:
1. Terrestrial 2. Aquatic 3. Aerial

3. The presence of specific features or habits which enable an organism to survive in its surroundings is called adaptation.
Adaptation commonly involves a combination of characteristic, colour,

size, structure, shape, behaviour and mode of life. The measure of adaptation differs in different groups of plant and animals, some being more closely adapted and others being more generalized.

4. The skin of animals protects them from various climatic conditions. The skin prevents the loss of too much water from the body protecting it from dryness. The skin of animals is adapted to a wide range of temperature to which they are generally exposed.
   Some animals like lizards and snakes have rough scales and birds have feathers on their skin. These structures protect the skin from dehydration. Animals like the polar-bear, yak, silverfox, etc. that live in cold regions, usually have thick fur on their skin and also have a layer of fat under their skin. The fur traps air and keeps the body warm.
5. In some plants such as, lemon and Durant the maxillary buds are modified into thorns to protect the plants from browsing animals.
   In some plants such as, cactus leaf is replaced by a hard pointed structure called spines for defense. It protects the plants from grazing animals and excessive transpiration.

C. Long Answer Questions :

Ans. 1. To meet the demands of ever increasing population, more land was required for growing more food, setting up towns, cities, erecting industries, etc. The continuous and ever increasing demand for the basic needs of shelter, food, survival, clothes and water forced the man to exploit all possible natural resources without any planning. Dams were constructed for harnessing water for generating electricity, wells were bored and mining was done for more fossil fuels to run the vehicles, factories and engines. Deforestation started at a very large scale. To get more land, forests became the first casualty.

2. The camel is rightly called the ship of the desert. It is superbly adapted for xeric conditions. The following adaptations are found in camel.
   1. It has a large hump on the back which is filled with fat. This food is utilized during the periods when the camel does not get anything to eat.
   2. It uses its entire foot while walking and its hooves are covered by a large sole which helps it to move on hot slippery sand and it can cover about 100 km a day at a speed of 20-25 km/hr without food and water.
   3. It can drink large amount of water in one gulp when water is available to it.
   4. It excretes very little water from its body. When it does not get water, it passes only about half a litre of urine in a day.
   5. The water gets evenly distributed in the different parts of the body and not in a specific pocket or an organ.

3. How is Fish Adapted for Aquatic Life?
   1. The body of a fish is provided with the waterproof covering of scales.

2. The body is spindle-shaped and streamlined which allows least resistance while swimming in water.
3. The body is laterally compressed with a pointed head, body and a tail.
4. Fins are present for movement and swimming.
5. Body is slimmy because of mucous coating to reduce water tension.
6. Caudal fins help in changing the direction.

4. Common adaptations in xerophytes are as follows:
   1. Have various root hairs to absorb water.
   2. Have very extensive root systems which penetrate deep into the soil in search of water.
   3. Leaves are reduced, small, scale like.
   4. Leaves are modified into spines as in cactus.
   5. Stomata are few, sunken in pits or covered with fine hairs.
   6. Leaves are coated with cuticle to prevent the loss of water.
   7. Stem becomes thick and fleshy for conserving water as in cactus.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Object resemblance is another type of protective adaptation in which the animals resemble a non-living object that is very common in its environment. For example, a walking stick insect is a pale brown insect and has close resemblance with a dead twig. The stick insect imitates a twig and hangs from branches, thereby deceiving predators. The leaf insect simulates a green leaf.

2. Cactus is a xerophytes. To present the water loss the leaves of cactus are modified into spines. So, the stem in cactus in green with several spines but no leaves.

3. Do yourself

Fun Time

1. Visit a pond or lake near your area and observe the aquatic plants found there. Note down the names of submerged, floating and free-floating plants in your exercise book.

Ans. Do yourself

2. Make a list of the characteristics which are found in a fish, polar bear and camel. Explain how these characteristics help these animals to survive in their respective habitats.

Ans. Do yourself

Lesson 9 Plants-Forms and Functions

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (i) 2. (i) 3. (iii) 4. (i) 5. (i) 6. (ii)

B. Write 'T' for true and 'F' for false statements :

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

C. Fill in the blanks :

Ans. 1. Potato is a modified **stem**.
2. Roots help in absorption of **water** and **mineral** from the soil.
3. Nodulated roots help in **hitrogen** fixation.
4. **Pistils** is the female sex organ in flower.
5. Ovules grow into **seeds** on fertilisation.
6. The pillar-like roots are called **prop roots**.
7. The flower is born on a stalk is called **incomplete flower**.

D. Match the following :

	Column A	Column B
Ans. 1.	Androecium	(ii) stamens
2.	Corolla	(v) petal
3.	Calyx	(iii) sepals
4.	Gynoecium	(iv) pistil
5.	Seeds	(i) ovule

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Calyx
2. Tap roots are true roots. A tap root consists of a single main primary root with lateral branches arising from it. The primary root is longer than its branches and develops vertically downward into the soil. It is found in most of the dicot plants like gram, pea, mango, castor and beans.
3. Four whorls.
4. Leaf
5. Generally in all flowers, all the four whorls i.e., calyx, corolla, androecium's and gynoecium's are present. Such a flower is said to be a complete flower e.g. cotton.
6. Turnip and ear rat.
7. Female reproductive cell or ovum is present inside the ovule.

B. Short Answer Questions :

Ans. 1. **Simple Leaves**
A leaf which have a single or undivided lamina is called a simple leaf. It has an axillary bud in its axil. Dahlia, jamun, and mango are few examples of simple leaves.
Compound Leaves
A compound leaf has a number of leaflets borne on a single stalk Leaflets do not bear axillary buds in their individual axils. The stalk of a compound leaf is called rachis which has an axillary bud. Neem, gram and rose are few examples of compound leaves.
2. The flower is borne on a stalk called pedicel. The uppermost end of the

pedicel is somewhat swollen. It is known as the thalamus. It bears all the four whorls of a flower.

3. Functions of a Root
   1. Fixation: It fixes the plant firmly to the soil.
   2. Absorption: The root hairs help in the absorption of minerals and water from the soil.
   3. Transportation: Mineral and water absorbed by the roots are transported up to the stem and into the branches.
   4. Prevention of soil erosion: Roots hold the soil particles together, thus they prevent soil erosion.
4. Functions of a Flower
   1. **Reproduction**
      Flower is the organ of reproduction in plants and it develops into the fruit and seed.
      You have learnt that some flowers possess male and female reproductive organs. The male sex cells are contained in the pollen grains found in the anther and the female sex cells are contained in the ovules found in the ovaries. Pollen grains are transferred from the anther to the stigma by a process called pollination. After pollination, a male cell and a female cell fuse together in an ovule in a process called fertilization. Fertilized ovules grow into seeds. Under favourable conditions seeds germinate and give rise to seedlings which develop into new plants. This process is called sexual reproduction.
   2. **Perfumes**
      Flowers provide perfumes or scents. The common ones are Lavender, Jasmine, Keora and Rose.
   3. **Aesthetic**
      Cut flower are used for interior decoration. Flowering plants are grown in houses, gardens, parks and road sides for their brilliant colours, beautiful shapes and sweet smell.
   4. **Spices**
      Cloves, which are used as a spice and in medicine, are the dried flower buds of the clove plant.
5. The loss of water from the aerial parts of the plant is called transpiration.

C. Long Answer Questions :

Ans. 1. (i) Pollination is the process of transfer of pollen grains from anther to stigma.
   (ii) Fusion of male cell and female cell is known as fertilization.
2. Functions of Stem
   1. **Transportation:** It helps in the transportation of mineral salts and water absorbed by the roots of the plant and helps in supply of food from the leaves to various parts of the plant such as roots and fruits.

2. **Support:** It supports branches, flowers, leaves, fruits and buds.
3. **Food manufacturing:** The green stem can make food for the plant.
4. **Food storage:** The green stem also functions as the store-house of food as in the case of garlic, onion, potato, ginger.
5. **Climbing:** In weak plants like the gourd, bitter gourd, the stem gets modified to form tendrils which help the climbers in climbing.

3. This flower is complete in having all the four whorls. It can be bisected into two similar halves. Petals are five and are free form each other. Sepals are five in number and green in colour. Androecium is with ten stamens arranged in two bundles, nine fused and one free. Gynoecium has single carpel with single locule.

Petunia

Calyx	:	5 sepals
Corolla	:	5 petals
Androecium	:	5
Gynoecium	:	2

4. **The Leaf**

The leaf is a flat, green lateral out growth of the stem.

Parts of leaf

A leaf arises on the stem from the node. It usually has a stalk called petiole and a pair of very small leaves at the base of the petiole called the stipules. The stipules protect the young leaf.

Do all plants have petioles? No. Some plants do not have petioles and are called sessile. Wheat, maize, rice and barley are few examples of such plants.

The flat, broad expanded green part of the leaf is called leaf blade or lamina. The petiole continues in the leaf up to its tip in the form of the midrib. On either side of the midrib, thin veins branch out. These veins in turn divide and sub-divide to form a fine network of veinlets which keep the leaf in expanded form. The veins are actually the transporting vessels for water and food.

Functions of a Leaf

1. **Manufacturing of Food**
   Green plants make their own food by the process of photosynthesis. The leaf is called 'the food factory' of a plant.
2. **Transpiration**
   The excess of water absorbed by the root hairs is evaporated through the pores called stomata present in the lower surface of the leaves.
3. **Storage of Food**
   In certain plants, leaves are modified to store food. For this purpose leaves become fleshy and thick. Example: onion.
4. **Gaseous Exchange**
   Exchange of gases occurs during respiration and photosynthesis.

During respiration, oxygen is taken in and carbon dioxide is given out. During photosynthesis, carbon dioxide enters the leaves and oxygen is given out. Therefore leaves maintain the balance of gases in nature.

5. **Vegetative Propagation**
   In certain plants, leaves bear buds in the marginal notches from which new plants grow and develop. Example: Begonia and Bryophyllum.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Flowers are the reproductive parts of the plants. They need pollination due to the fertilization. without pollination fertilization can not be done for pollination some insects or animals are necessary. So, flowers are so brightly coloured to attract these insects or animals for the process of pollination.

2. It was sucking the nectar of the flower nectar is the sweet liquid present inside the flower. Honey bees produced honey with the help of this nectar.

Fun Time

Do the following :

Ans. Do yourself

Formative Assessment 2

A. Tick (✓) the correct option :

Ans. 1. (iii) 2. (ii) 3. (i) 4. (i) 5. (i)

B. Match the columns :

Ans.

1. Colour change on ripening of fruit	(iii) Irreversible change
2. Increase in the height of a child	(v) Slow change
3. Solubility of gases	(i) Decreases with temperature
4. Solubility of solids	(iv) Increases with temperature
5. Solute	(ii) Present in small amount in solution

C. Name these :

Ans.

1. Materials that allow light to pass through them.	**Transparent**
2. A plant which show sensitivity to touch.	**Teach-me-not**
3. An animal which is suited for desert life.	**Camel**
4. The flat green portion of the leaf.	**Lamina**
5. A root which store food.	**Sweet potato**

D. Answer the following questions :

Ans. 1. Some materials conduct electricity. These materials are called conductors like iron, copped copper etc.

2. Reversible change : A change in which you can get back the initial substance by reversing the action.

3. Cells are organised into special groups which perform special functions. These groups of cells which are similar and perform a particular function are called tissues.
4. Some of the animals which are adapted for the aerial mode of life (flying) are known as volant animals. Mainly volant animals are all birds and bats.
5. Generally in flowers, all the four whorls i.e. Calyx corolla, and roecium and gynoecium are present such a flower to said to be complete flower. eg. : cotton.

Summative Assessment 1

A. Fill in the blanks:

Ans. 1. Spinach is a **leaf** vegetable.
2. An alloy is a **strong** solid mixture.
3. Nylon and polyester are **synthetic** fibres.
4. Salt is **soluble** in water.
5. Condensation of steam is a **reversible** change.

B. Write true or false:

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

C. Short Answer Questions :

Ans. 1. An animal that only eats other animals.
2. Decantation can also be used to separate immiscible liquids, i.e., which form separate layers in a mixture, e.g., oil and water.
Generally immiscible liquids are more easily separated by using a separating funnel. A separating funnel consists of a glass bulb to the stem of which is fitted a stopcock. A mixture of immiscible liquids is poured in a separating funnel and allowed to stand for sometime . The liquids form different layers. The heavier liquid, which forms the lower layer, is drawn into beaker by carefully opening the stopcock. The stopcock is closed when the upper layer reaches it. The lighter liquid can then be collected in another beaker.
3. All fabrics are made of yarns or threads woven together. Each yarns or thread is further made of still thinner strands called fibres.
4. The substances which conduct electricity are called good conductors of electricity or simply conductors whereas substances which do not conduct electricity are called bad conductors of electricity or insulators. For example, metals are good conductors of electricity; air, wood and plastic are insulators.
5. The presence of specific features or habits which enable an organism to survive in its surroundings is called adaptation.
Adaptation commonly involves a combination of characteristic, colour, size, structure, shape, behaviour and mode of life. The measure of

adaptation differs in different groups of plant and animals, some being more closely adapted and others being more generalized.

D. What are the following called?

1. The solid that settles when a heterogenous solid-liquid mixture is allowed to stand : **Sediment**
2. A mixture with the same composition and properties throughout : **Homogeneous mixture**
3. The liquid above the solid settling from a heterogeneous solid-liquid mixture : **Supernatant liquid**
4. A mixture, the different parts of which very in composition and properties : **Heterogeneous mixture**

E. Differentiate between the following :

Ans. 1. **Reversible change :** A change in which we can get back the initial substance by reversing the action.
Irreversible change : A change in which we can not get back the initial substance by reversing the action.

2. **Carnivores :** A animal that only eats other animals.
Herbivores : An animal that only eats plants products.

3. **Insulators :** Substances which do not conduct electricity are called insulators; e.g., wood, plastic etc.
Conductors : Substances which conduct the electricity are called conductors; e.g, iron, copper etc.

4. **Terrestrial habitat** : Terrestrial habitats consist of habitats in land like forests grass lands, deserts and mountains.
Aerial habitat : Birds, insects and bats come under this category. This includes habitat of organisms that use sky for their activities.

F. Long Answer Questions:

Ans. 1. Uses of Cotton
Since it is very light and a good absorbent, it is mainly used for making clothes for summer.
It is used to make a variety of clothing materials like cotton bags, shirts, saris, bad sheets, curtains and other upholstery items.
The cotton seed meal (khal) left after taking out oil is used to feed livestock.
Cotton seeds, left after separation of cotton bolls, are used to produce cotton seed oil. Cotton seed oil is refined and used like other vegetable oils for human consumption.

2. Materials such as, metals that are attracted to magnet are called magnetic materials. This property is called magnetism. Objects made of iron are attracted to a magnet. In addition to iron, cobalt and nickel are also attracted to a magnet.

3. The energy is stored in the food. All living beings use food to produce energy in their bodies. For this process they need oxygen, which they get

from the air or water surrounding them. Oxygen combines with food inside their bodies to release energy. This is a type of chemical change in which carbon dioxide and water vapour are produced. The carbon dioxide and water vapour are wastes, which the body gives out. This process of taking in air (or water), allowing oxygen combine with food, and giving out carbon dioxide and water vapour is called respiration.

4. How is Fish Adapted for Aquatic Life?
   1. The body of a fish is provided with the waterproof covering of scales.
   2. The body is spindle-shaped and streamlined which allows least resistance while swimming in water.
   3. The body is laterally compressed with a pointed head, body and a tail.
   4. Fins are present for movement and swimming.
   5. Body is slimmy because of mucous coating to reduce water tension.
   6. Caudal fins help in changing the direction.
5. Functions of Stem
   1. **Transportation:** It helps in the transportation of mineral salts and water absorbed by the roots of the plant and helps in supply of food from the leaves to various parts of the plant such as roots and fruits.
   2. **Support:** It supports branches, flowers, leaves, fruits and buds.
   3. **Food manufacturing:** The green stem can make food for the plant.
   4. **Food storage:** The green stem also functions as the store-house of food as in the case of garlic, onion, potato, ginger.
   5. **Climbing:** In weak plants like the gourd, bitter gourd, the stem gets modified to form tendrils which help the climbers in climbing.

Lesson 10 Animals : form and Function

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (ii) 2. (iii) 3. (iv) 4. (iii) 5. (iii)

B. Fill in the blanks :

Ans.
1. A bony framework is absent in a **snail** (fish/snail).
2. The spine is made up of bones called **vertebrae** vertebrae/backbone).
3. Our skeleton is made up of **206/260** (206/260) bones.
4. The **cage** (skull/rib cage) protects the heart.
5. The **skull** (skull/backbone) protects the brain.
6. The backbone protects the **spinal** (lungs/spinal cord).
7. Movement is brought about by the contraction and relaxation of **muscles** (bones/muscles).
8. Knee joint is an example of a **ball-and-socket** (hinge/ball-and-socket) joint.

C. Write 'T' for true and 'F' for false statements :

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

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Five organ systems of our body are :
(i) Digestive system (ii) Circulator system (iii) Nervous system
(iv) Muscular system (v) Skeletal system

2. Most birds can fly easily. The following characteristics help them to fly.
   1. Their bones are hollow, which makes them lightweight.
   2. They have streamlined shape, which makes it easier for them to fly through air.
   3. They have strong chest muscles, which help them in flapping their wings during flight.
   4. They have wings, which are equipped with feathers.
3. The human skeleton consists of the following parts: skull, rib cage, backbone, and limbs. Unlike most limbed vertebrates, human beings use
4. All the movements are brought about by joins and muscles. joints are places where two or more bones meet.
5. Some fish such as sharks and rays have no bones inside their bodies. their skeleton is entirely made of cartilage. There are called liquid skeleton.

B. Short Answer Questions :

Ans. 1. **Invertebrates:** These animals do not have a backbone. Insects, spider, and jellyfish are examples of invertebrates.
Vertebrates: These animals have a backbone. Human beings, birds, and snakes are examples of vertebrates.

2. For movement snails use a muscular organ called the foot. The foot produces a slimy substance called mucous. The snail actually slides on a layer of mucous. The mucous reduces the friction between the ground and the foot by offering a smoother surface to slide on. The muscular foot produces a series of wavelike movements that force the snail's body forward . A trail of mucous is left behind when the snail crawls. Sticky mucous also enables the snail to crawl on a variety of surfaces.
3. Muscles bring about movement by contracting (shortening) and relaxing (lengthening). Joints cannot bring about movement without the help of muscles. One end of a muscle is attached to a movable bone, whereas the other end is attached to a fixed bone. When the muscle contracts, it pulls the movable bone. Since muscles are only capable of pulling, they work in pairs.
4. Vertebrates are the animals which have a back bone. Human beings, birds and snakes are examples of vertebrates.

5. Joints at the elbow and the knee are examples of hinge joints.

C. Long Answer Questions :

Ans. 1. An earthworm's body is made up of various parts called segments. It moves by lengthening and shortening these segments. Its movement can be compared with that of a spring. The segments also have tiny, hair- like bristles, which help the earthworm to grip the surface and move its body forward.

2. They are able to run very fast and can move across a variety of surfaces. Their feet are equipped with small claws that help them climb walls. Cockroaches walk in a very interesting manner, moving three legs at a time.

   Cockroaches are thought to be fastest land insects. When they are running very fast, they rear up on their two back legs and run like we do!

3. In our body, bones are arranged in an organized manner and form the skeleton. The human skeleton is made-up of 206 bones. Besides helping in movement, it is responsible for the following functions.
   1. It protects the soft internal organs.
   2. It provides shape and support to the body.
   3. Bones are filled with a substance called marrow, which produces blood cells.

4. **Freely movable joints:** These joints can move quite freely and allow a variety of movements. Examples include knee and elbow joints.

   Slightly movable joints: These joints allow very little movement. Examples include the joints between most vertebrae.

   Fixed joints: These joints do not allow any movement. The joints between the bones of our skull are examples of fixed joints.

5. 1. **Pivot joint:** In this joint the rounded surface of one bone fits into a ring formed by the other, such that one bone is able to rotate over the other. This type of joint is found between the first two vertebrae of the backbone.
   2. **Ball-and-socket** joint: In this joint the ball-like surface of one bone fits into a hollow in the other. A ball-and-socket joint allows maximum movement in all directions. Joints at the hip and the shoulder are examples of this type of joint.
   3. **Hinge joint:** This joint provides movement similar to the hinges of a door. Joints at the elbow and the knee are examples of this type of joint.
   4. **Gliding joint:** This joint allows bones to glide over each other, providing little movement in all directions. Examples include joints between the bones of the ankle (tarsals).

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Cockroaches are able to climb walls became their feet are equipped with small claws that help them climb walls.

2. Wrestlers develop strong muscles so that they can stay long in the fights.

Fun Time

1. Students can collect pictures of different animals and paste them on a chart, classifying them as vertebrates and invertebrates.

Ans. Do yourself

2. Students can make a report describing how the following animals move: frog, mosquito, and penguin.

Ans. Do yourself

Lesson 11 Measurement and Motion

Formative Assessment

A. Tick (✓) as the correct option :

Ans. 1. (ii) 2. (ii) 3. (i) 4. (ii) 5. (iv)

B. Which type of motion is performed by each of the following?

Ans.

1.	A man pushing a box along a road.	**Linear motion**
2.	Motion of a child sitting in a merry-go-round.	**Circular motion**
3.	The hands of a clock.	**Circular motion**
4.	The needle of a sewing machine.	**Periodic motion**
5.	A battalion moving in a parade.	**Linear motion**
6.	Drawing water from a well.	**Linear motion**
7.	Motion of the pendulum of a clock.	**Oscillatory motion**
8.	Motion of a falling apple.	**Linear motion**
9.	Motion of a ceiling fan.	**Circular motion**
10.	Motion of a cyclist on a straight-levelled road.	**Rectilinear motion**
11.	Motion of butterfly in a garden.	**Curvilinear motion**

C. Write 'T' for true and 'F' for false statements :

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

D. Fill in the blanks :

Ans.
1. Motion in a straight line is called **Linear** motion.
2. One kilometre is **1000** metres.
3. A kite flying in the sky performs **curvilinear** motion.
4. The **SI** unit of length is metre.
5. The length between the tip of the finger and elbow is called **cubit**.

Summative Assessment

A. Very Short Answer Questions :

Ans.
1. The different modes of transport are :
   (i) Land transport (ii) Water transport (iii) Air transport
2. I will measure the length of a desk using a measuring tape.

3. Handspun, cubit, arm length and footstep are not used as standard units of length because there are differed from person to person. This is because the hand, arm and foot length of all humans is not equal. Hence, there units of measurement lock precision.
4. Linear motion : When on object moves in a straight line, it is said to be in linear motion.
5. Circular motion : An object is said to be in circular motion, when it moves on its own axis or around a fixed center.

B. Short Answer Questions :

Ans. 1. The motion where an object repeats its motion after a fixed time interval is called periodic motion.
- The movement of the moon around the earth is repeated after every 30 days and so is a periodic motion.
- The motion of the earth around the sun is periodic as the earth takes 365¼ days to complete one revolution.
- The movement of hands of a clock is also a periodic motion.

2. Motion of Earth: The earth keeps on rotating on its axis as well as revolves around the sun. Thus, there are two types of simultaneous circular motions.
3. For taking measurements, correct position of the eye is also very important. The eye must be placed exactly vertically above the mark to be read.
4. The motion of a bus and a fan is round but the bus moves along a curved path, it is said to be in curvilinear motion while the fan moves on its own axis or around a fixed center, it is said t be in circular motion.
5. The height is 1.20 m
   $1.20 \times 100 = 120$ centimentres (cm)
   $1.20 \times 10 = 12$ decimetres (dm)
   $1.20 \times 1000 = 1200$ millimetres (mm)

C. Long Answer Questions :

Ans. 1. Invention of the wheel made things easier. Animals were used to pull vehicles such as bullock carts and tongas, that move on wheels.
   Vehicles that moved on wheels made travelling from one place to another more comfortable and faster.
   All vehicles used today such as bicycles, motorcycles, scooters, cars, trucks, buses and trains move on wheels.
2. **To measure the length of a curved line.**
   Suppose you have to measure the length of a curved line like the one
   - Take a thin thread and put a knot on one of its ends.
   - Mark small segments like AB, BC, CD, etc., on the curved line, which are nearly straight.
   - Place the knot on point A on the curved line.
   - Holding the knot at the point A with your left hand, pull the thread

along AB, BC, CD, etc. , on the curved line, which are nearly straight.

- Now shift your left thumb to point B and press the thread with it.
- Again stretch the thread with your right hand till point C is reached.
- Bring your left thumb to point C and again stretch the thread till point D is reached .
- Continue in the same way till you reach the end of the curved line, i.e., point L.
- Put an ink mark on the thread where it reaches the end point L.
- Now stretch the thread along a meter scale.
- See the length between the knot and the ink mark.
- This is the length of the given curved line.

3. In ancient times, early men used handspan, cubit, arm length and footstep as different units of measurement of length and distance.

   Handspan: It is the distance between the tip of the thumb and the little finger, when stretched.

   Cubit: It is the distance between the tip of the middle finger and the elbow.

   Arm length: It is the distance between the shoulder and the middle finger.

   Footstep: It is the distance between thumb and the heal of the foot.

   Handspan, cubit, arm length and footstep differ from person to person. This is because the hand, arm and foot length of all humans is not equal. Hence, these units of measurement lack precision.

4. For taking measurement of a length, the following steps are followed:

   (i) Place the meter scale along the length to be measured, parallel to its graduation (the markings on a scale).

   (ii) Make sure that its zero mark coincides with one of the ends of the length to be measured.

   (iii) In some cases, the ends may be broken and you may not be able to see the zero mark clearly. In such scales, some other digit say mark I can be taken as the initial reading. You must remember the digit taken and subtract it from the final reading at the other end to get an accurate measurement of the length.

   For example, the initial reading is 1 cm and the reading at the final reading is 7 cm. Therefore, the length of the box is 7 cm- 1 cm = 6 cm.

   (iv) For taking measurements, correct position of the eye is also very important. The eye must be placed exactly vertically above the mark to be read.

5. **Oscillatory and Vibratory Motion**

   The 'to and fro' motion or vibrations of an object about its position of rest is called oscillatory motion. For example, the movement of a pendulum and swing.

The **vibratory motion** is a very fast 'to and fro' motion. The movement of strings in a musical instrument such as, guitar or the movement of the surface of drums and table when played are the examples of vibratory motion. Vibration produces sound. The faster the vibration, the shriller the pitch of the sound produced.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. A tailor uses a measuring tape rather than a meter scale because the measuring tape is longer than meter scale and it is easy to measure long and short distance and a tailor needs to measure both type of length.

2. Many a times you need to measure lengths and distances.
A carpenter needs to measure the length, height and width in order to make furniture, such as table, chair, sofa and cupboard.
A tailor needs to know the length of the cloth to stitch a dress for you, such as shirt, pant, kurta, pyjama and coat.
Thus, human beings not only realised the need but also devised methods for various measurements. This need of measurement is now an essential part of human thinking

Fun Time

A. With the help of a measuring tape, measure the height of all your family members. Find out who is the tallest and who is the shortest. Make a comparison chart in MS Excel.

Ans. Do yourself

B. With the help of your parents, find out the distance of your house from your school, the nearest grocery shop, the nearest chemist and some of your relatives and friends houses. Draw a rough sketch of the area around your house and write the distances.

Ans. Do yourself

Lesson 12 Electric Current

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (ii) 2. (iv) 3. (iii) 4. (ii)
5. (ii) 6. (ii) 7. (ii)

B. Give one (or two) word(s) for the following :

Ans. 1. copper
2. switch

3. source of electric current
4. Dry cell
5. Positive and negative terminals
6. Closed circuit

C. Fill in the blanks :

Ans. 1. A dry cell contains dry or semisolid **materials**.
2. Electric current flows only if these is an **unbroken** path.
3. Electric current flows in a **particular** direction.
4. An electric switch is a device that is used to open or **close** an electric circuit.
5. An electric torch has one or more dry cells inside, which act as **the 'source'**.

D. Write 'T' for true and 'F' for false statements :

Ans. 1. True 2. True 3. False 4. False 5. True 6. False

Summative Assessments

A. Very Short Answer Questions :

Ans. 1. A device or an appliance that is used to produce electric current is called a source of electric current.
2. A dry cell is a very convenient source of electric current. It contains dry or semis solid materials.
3. A circuit which has a 'broken path' through which an electric current can not flow is called an open circuit.
4. A circuit which has an 'unbroken path' through which an electric current can flow is called a closed circuit.
5. No, all materials do not allow electric current to flow through them.

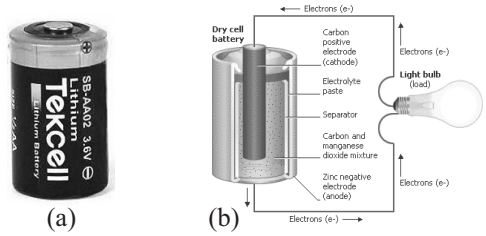
B. Short Answer Questions :

Ans. 1. A dry cell is a very convenient source of electric current. It has made it possible to invent so many wonderful electrical devices.
2. There are three main conditions required for an electric current to flow.
    1. A device used to produce an electric current such as batteries, cells, or plug points.
    2. A wire made of a metal such as aluminium, silver, or copper, which will allow electric current to flow through easily.
    3. A loop of the wire running through from one terminal of the source, through various various appliances, back to the other terminal of the source.
3. The 'path' made for electric current to flow is known as the electric circuit or, simply, circuit.
4. A material that does not allow the electric current to flow through it is called an insulator or a bad conductor of electricity such as the plastic pen and the rubber band in figures (a) and (c), respectively.

5. A person gets an electric shock if an electric current flows through his or her body.

C. Long Answer Questions :

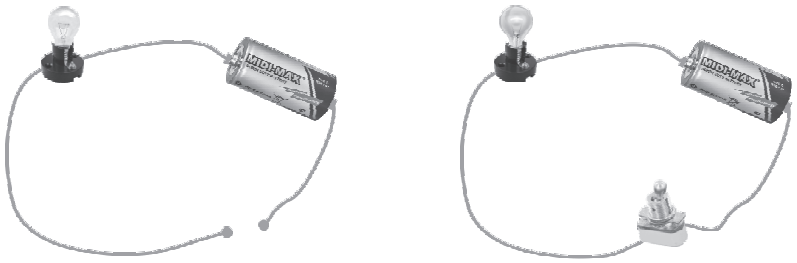
Ans. 1. Look at a simple dry cell and see what is inside it.



(a) (b)

(a) A dry cell and (b) inside of a dry cell

2.



(a) Open circuit- the bulb does not glow and (b) Closed circuit the bulb l ights up

3. An electric switch is a device that is used to close or open an electric circuit. When we open an electric circuit, an electric current in the circuit stops, and when we close an electric circuit, an electric current flows through it. When the switch is 'on' , an electric current flows through the circuit, and the appliance, which is a part of the circuit, works. When the switch is 'off' the supply of electric current is cut off, and the appliance does not work. In an electrical circuit, a switch is also sometimes referred to as a 'key'. It is represented by the symbol.

•—• when it is 'ON' (closed circuit)

and

•/• when it is 'OFF' (open circuit)

4. An electric torch has one or more dry cells inside, which act as the 'source'. These cells are connected through a switch to a small bulb. When the switch is pushed to the 'on' position, the circuit is complete and the bulb glows. When the switch is pushed to the 'off' position, the circuit is incomplete (broken). Now the current can not flow through the circuit, and the light goes out.

Electric torch

5. Precaution to avid getting an electric shock :
   (i) Do not put a metal object into any electrical appliances.

(ii) Do not put your finger into a plug socket. You might get a nasty shock.
(iii) Do not plug in or take out the cords of any electrical device with wet hands.
(iv) Do not pull a wire from the plug point. Do not take out the wire when the switch is on.
(v) Do not touch a hanging wire on the road.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Insulators are used in places where we do not want an electric current to flow. Insulators are used to cover the electric wire.
2. We are usually advised to wear rubber shoes slippers when we touch an electrical appliance because rubber is an insulator which prevent the flow of electricity through our body into the earth.

Fun Time

Ans. 1. Do yourself
2. Do yourself

Lesson 13 Magnetism

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (i) 2. (ii) 3. (i) 4. (i)

B. Fill in the blanks :

Ans. 1. **Alnico**, an alloy of aluminium, nickel and cobalt, is commonly used to make magnets.
2. A freely suspended bar magnet always points in the **north and the south** direction.
3. The points where a magnet is the strongest are called the **pole** of the magnet.
4. When a magnet is heated it **lose** its magnetisation.

C. Write 'T' for true and 'F' for false statements :

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

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. In olden days natural magnets were used to attract small pieces of iron towards them. Because of this a magnet was known as lodestone or magnesia.
2. Iron, cobalt and nickel are the three elements that can be permanently magnetised.

3. Alminium, iron and cobalt are magnetic.
4. The magnet seems to be the strongest at two points–one on each of its ends. We call there points the poles of the magnet.
5. Unlike poles of magnets attract, or pull, each other, and like poles of magnets repel, or push, each other.
6. A permanent magnet can be demagnetised if it is hammered or dropped from a great height. It can also lose its magnetisation if it is heated.

B. Short Answer Questions :

Ans. 1. A permanent magnet tends to lose some of its magnetism with time. A permanent magnet can lose its magnetism if it is hammered or dropped from a great height. It can also lose its magnetisation if it is heated. So, it has to be stored in a special way. A good way to store a horseshoe magnet is to insert a strip of a magnetic material between its opposite poles. Bar magnets are safely stored in pairs, with a strip of magnetic material between the opposite poles of the two magnets. The strips of magnetic material (usually soft iron) used to store magnets safely are called keepers.

2. Some complex phenomena inside the earth produce a magnetic effect, which makes the earth behave like a big bar magnet, with poles at its ends. The south pole of this imaginary magnet points approximately towards the geographical north pole, and its north pole points approximately towards the geographical south pole. That is why the north pole of a freely hanged magnet points north. The imaginary magnet is, however, inclined to the earth's axis of rotation. Because of this, the north and south poles of a compass needle do not point exactly towards the geographical poles. Instead, they point towards two points on the earth's surface called the magnetic south pole and the magnetic north pole respectively. The geographical and magnetic poles are actually hundreds of kilometres apart.

3. **Uses of Magnetism**

   Some of the more common applications of magnets and magnetic materials are given below:

   - Ragpickers often use a long stick with a magnet attached to it to pick up scraps of iron from garbage dumps. Magnets are used to separate magnetic ores from non-magnetic rocks, magnetic substances from a mixture, and things made of magnetic materials during the recycling of waste.
   - Images, sound and data are stored on special surfaces coated with magnetic material in computer hard disks, floppies, and audio and video tapes. Information is also stored on the magnetic stripe on credit cards, ATM cards. airline tickets, and so on.

     Motors and generators use powerful magnets. Loudspeakers also have a powerful magnet inside them.

- The door of a refrigerator has a weak magnetic strip all round it to ensure that it remains firmly shut. Magnetic stickers, magnetic clasps in handbags and magnetic pin/paper clip holders are some other examples of everyday uses of magnets. Magnetic latches, or 'catches', are used in windows, cupboard doors, and so on.

4. If you dip a bar magnet in a pile of pins, you will notice that almost all the pins which stick to the magnet do so at the two ends of the magnet. You will notice the same thing if you dip a magnet in iron filings. The magnet seems to be the strongest at two points—one on each of its ends. We call these points the poles of the magnet.

C. Long Answer Questions :

Ans. 1. A **magnetic compass** is a simple device for finding direction. It consists of a magnetic needle that can turn freely about its centre. The needle is encased in a box with a transparent top. Directions are either printed on a card placed below the needle of marked on top of the box. Generally, the north pole of the needle is painted red or blue, or is in the shape of an arrowhead. When kept away from magnetic materials, the north pole of the needle points towards the geographical north. To find directions, the box is turned till the north mark on the card falls exactly below the north pole of the needle. In this position, the other directions are as indicated by the card.

2. To identify the magnet, you will need another magnet. The needle of a compass is a suitable magnet for this purpose. If you bring the bar which is not a magnet near either pole of the magnetic needle the pole will attract the bar and the needle will swing towards the bar. The same thing will happen if you turn the bar around so that its other end faces the compass. But if in case of a magnet, one pole of the needle will be attracted to and the other will be repelled by the pole of the magnet facing the compass.

   When the needle is repelled by one pole of the magnet, it swings around, so that the unlike poles of the needle and the magnet face each other. That is, the south pole of the needle will face the north pole of the magnet and vice versa.

   To identify the magnet, you will need another magnet. The needle of a compass is a suitable magnet for this purpose. If you bring the bar which is not a magnet near either pole of the magnetic needle the pole will attract the bar and the needle will swing towards the bar. The same thing will happen if you turn the bar around so that its other end faces the compass. But if in case of a magnet, one pole of the needle will be attracted to and the other will be repelled by the pole of the magnet facing the compass.

   When the needle is repelled by one pole of the magnet, it swings around, so that the unlike poles of the needle and the magnet face each other. That

is, the south pole of the needle will face the north pole of the magnet and vice versa.

Now you are in a position to understand why **only repulsion by another magnet is a sure test of a magnet.**

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Do yourself
2. Maglev trains manage to run without touching the ground due to the magnetive effect.

Fun Time

Ans. 1. Do yourself 2. Do yourself

Formative Assessment 3

A. Tick (✓) the correct option :

Ans. 1. (iv) 2. (iii) 3. (i) 4. (ii) 5. (ii)

B. Which type of motion is performed by each of the following :

Ans.
1. A man pushing a box along a road. **Linear motion**
2. Motion of a child sitting in a merry-go-round. **Circular motion**
3. Movement of chalk on a blackboard while writing. **Curvilinear motion**
4. The hands of a clock. **Circular motion**
5. The needle of a sewing machine. **Periodic motion**

C. Give one (or two) word(s) for the following :

Ans.
1. Conductor
2. Switch
3. Source of electric current
4. Dry cell
5. Positive and negative turminals

D. Answer the following questions :

Ans.
1. All the movements are brought about by joins and muscles. joints are places where two or more bones meet.
2. For movement snails use a muscular organ called the foot. The foot produces a slimy substance called mucous. The snail actually slides on a layer of mucous. The mucous reduces the friction between the ground and the foot by offering a smoother surface to slide on. The muscular foot produces a series of wavelike movements that force the snail's body forward . A trail of mucous is left behind when the snail crawls. Sticky mucous also enables the snail to crawl on a variety of surfaces.

3. Linear motion : When on object moves in a straight line, it is said to be in linear motion.
4. A dry cell is a very convenient source of electric current. It contains dry or semisolid materials.
5. The magnet seems to be the strongest at two Points one on each of its ends. We call there Points the polls of the magnet.

Lesson 14 Water

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (ii) 2. (iv) 3. (iv) 4. (i) 5. (ii) 6. (iv) 7. (iv)

B. Match the two columns:

	Column A	Column B
Ans. 1.	Groundwater	(vi) Obtained from hand pumps and tube wells
2.	Drought	(vii) Scarcity of water for a long time
3.	Rainwater harvesting	(v) Purest from of water
4.	Sea water	(iv) Saline Water
5.	Whale	(viii) An aquatic animal
6.	Flood	(ii) leads to soil erosion
7.	Hydrilla	(iii) A water plant
8.	Rainwater	(i) Method of water conservation

C. Write 'T' for true and 'F' for false statements :

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

D. Fill in the blanks :

Ans. 1. A human body has **75%** water by weight.
2. Excretion of water from the human body occurs in the form of **sweat** and **urine**.
3. The major sources of water are **rainwater**, **surface water** and **ground water**.
4. **Water table** is the level of water under the ground.
5. Excessive rainfall causes **flood**.

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. The major sources of water are : rainwater, surface water and groundwater.
2. Water table : The level of water under the ground is called water table.
3. Well water, tube wells, hand pumps are forms which we use from groundwater.
4. Drought and flood.

5. Drought occur when no rainfall for a long period, it leads to serious hydrological in balance.

B. Short Answer Questions :

Ans. 1. Due to scarcity of water, the soil dries up completely, becomes hard and begins to crack and gradually becomes infertile. While rapidly running water takes a way the top layer of the soil. It leads to soil erosion and sedimentation deposition problem down stream.

2. Heavy and continuous rain for a long period of time can lead to a major calamity. When there is continuous rain and the soil and vegetation cannot absorb all the water, then water runs off the land. It cannot be carried in river channels or retained in natural lakes and ponds, reservoirs and dams. The water then may spread over a large area. This condition is called flood.

3. We know that about 75% of the earth's surface is covered with water. About 2% of water exists in ice from. Which we can not drink. About 97.4% is present in oceans and seas and is saline. Which we can not drink. Only 0.6% of water is fresh water, of which 1.98% is present in ice caps and glaciers, 0.61% is groundwater and only 0.01% is available for consumption So we need to conserve it.

4. The water level in ponds and wells, etc, in drought affected areas goes down and some of them may even dry up and the water life is completely lost. While in floods, many water animals are carried away by the strong water current and are deprived of their habitat.

5. Water is necessary for us in the following ways:
   - Water maintains the body temperature. In summer, we sweat a lot which has a cooling effect.
   - Blood, consisting of water and blood cells, absorbs digested food and also helps in transportation of oxygen and carbon dioxide in the body.
   - Digestion of food in the body takes place with the help of water.
   - Water helps in excretion of wastes from the body in the form of sweat and urine.

   Therefore, person should drink 3-4 litres of water daily to make up for this loss.

C. Long Answer Questions :

Ans. 1. About 30% of plant body weight is water. Water is necessary for plants in the following ways:
   - Water is very important for the germination of seeds.
   - Water helps in transportation of minerals among different parts of the plant body.
   - A large amount of water is needed by plants during photosynthesis.

2. Some other uses of water are:
   - A large amount of water is required in many industries such as chemical industries, steel mills, paper mills, petroleum refineries, fertilizer and rayon industries.
   - The largest amount of water is used for irrigation.

- Water is also used for producing electricity, i.e., hydroelectricity, in which the energy of falling water (hydropower) is used to produce electricity.
- Water is used for extinguishing fire, sanitation and cleaning streets.
- Water acts as a coolant in power generation from fossil fuels and nuclear fuels, and also in car radiators.
- Ships, boats and sailboats are used for transporting humans and goods from one place to another.
- Some people in Kerala and Kashmir live in boats. These boats are called houseboats.
- Water is needed for many sport activities and recreation such as swimming, river rafting, boating and water skiing.

3. If there is no rainfall for a long period, it leads to serious hydrological imbalance. **Drought** refers to a period (a year or more), in which there is an unusual scarcity of rain.

   Major water crisis can have the following effects:
   - The water table in drought-affected areas goes down, so, groundwater become scarce.
   - The soil dries up completely, becomes hard and begins to crack and gradually becomes infertile.
   - The water level in ponds and wells, etc., in drought- affected areas also goes down and some of them may even dry up and the water life is completely lost.
   - During drought, farmers, who depend on agriculture for their livehood, are mostly badly, affected. they suffer loss of crops, i.e. their source of income.
   - Drought leads to shortage of food, increase in poverty, reduced health and poor quality of life.
   - Many people as well as living beings die of dehydration and thirst.
4. Flood can have the following effects:
   - Rapidly running water takes away the top layer of the soil. It leads to soil erosion and sedimentation deposition problem downstream.
   - It leads to acute shortage of food, safe drinking water, etc.
   - If water rushes in to godown and fields, it destroys the stored food material and crop.
   - Heavy rains and sudden flow of water carry away people, their houses, other belongings and domestic animals and can cause death by drowning.
   - Many water animals are carried away by the strong water current and are deprived of their habitat.
   - During heavy rains there are increased chances of the outbreak of epidemics, various kinds of infectious diseases, malaria, diarrhoea, etc.
   - Collapse of houses, buildings, bridges, banks and other structures leads to a lot of financial losses.
   - Floods for a long period of time delay traffic, disturb the drainage

system and often break hydroelectric power.

5. **RAINWATER HARVESTING**

One of the ways of conserving water is to collect rainwater and store it for future use. This is called rainwater harvesting. The motto behind rainwater harvesting is "collect water where it falls."

Rainwater does not seep in the ground in places that are covered with buildings and concrete roads.

The following methods can be used to collect rainwater in such places:

1. **Rooftop rainwater harvesting:** It is a old method in which rainwater is collected from the rooftop and allowed to go into a storage pit through pipes. Water from the roof may contain soil and should be cleaned before use. Rainwater can be directed through pipes from the rooftops to the storage pipe in the ground. From here it goes into the soil to recharge or refill the ground water.
2. Rainwater from the roadsides goes directly into the ground into pits, trenches, dug wells, recharge wells, recharge shafts, etc. This can be used later.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Do yourself

2. We know that the water vapour in the atmosphere condense to form clouds and fall as rain. Rain forms a part of the water cycle. Rainwater is the purest form of water.

Fun Time

Ans. Do yourself

Lesson 15 Light, Shadows and Reflection

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (i) 2. (iii) 3. (iv) 4. (i)
5. (i) 6. (iv) 7. (ii) 8. (iii)

B. Fill in the blanks :

Ans. 1. A **opaque** (translucent/opaque) material does not allow any light to pass through it.
2. Clear glass is a **transparent** (transparent/opaque) material.
3. A shadow has no **colour** (colour/shape).
4. A **reflected** (reflected image/shadow) shows details of the object, like colour, etc., as well as its shape.

5. A **shadow** (reflected image/shadow) shows only the outline of an object.

C. Write 'T' for true and 'F' for false statements :

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

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Water and clear glass.
2. No we can't see a shadow if there is no light.
3. The colour of a shadow is black.
4. Substances that transmit some amount of light are called translucent.
5. The following three things are required for a shadow to form :
(i) a source of light
(ii) an opaque object and
(iii) a screen or surface behind the object.
A shadow cannot from if any of there is missing. This is the reason why we can not see a shadow in the dark. It is only when light rays are blocked by an opaque object that we get a shadow of the object.

B. Short Answer Questions :

Ans. 1. The following three things are required for a shadow to form:
- a source of light;
- an opaque object; and
- a screen or surface behind the object.

2. Substances that allow light to pass through them are called transparent. If we hold a transparent substance in front of us and look at the objects behind it, we will be able to see them very clearly. Examples of transparent substances are clear glass, clear air, clean water, some kinds of plastic, and cellophane paper.
3. Examples of opaque substances are metals, coal cement, mud and wood. A mirror is a very good example of opaque objects. It does not let any light pass through it.
4. **SHADOWS**
An opaque object will obstruct the light falling on it. This makes an area of darkness on the other side of the object. This area of darkness is called the shadow of the object.
5. Unlike a shadow, the image of an object has colour, and also shows the details of the object. A very interesting phenomenon occurs when an object is reflected. This is something all of us must have noticed while seeing ourselves in the mirror. When we lift our right hand, the image in the mirror appears to lift its left hand. This left-right reversal is called lateral inversion.

C. Long Answer Questions :

Ans. 1. **Table** : Shows the differences between the image and the shadow of an object and its shadow.

Image

- It has the colour of the object.
- It give the details as well as the outline of the object.
- It undergoes lateral inversion (*i.e.,* left-right reversal).

Shadow

- It is always black, regardless of the colour of the object.
- It gives only the outline of the object.
- It does not undergo lateral inversion.

2. A shadow has the following three characteristics :
   1. It is always black, regardless of the colour of the object used to make the shadow.
   2. It only shows the outline of the object and not the details.
   3. The size of a shadow changes depending on the distance between the object and the source of light, and the distance between the object and the screen.
3. **Umbra and Penumbra**

   A very tiny source of light, like a small dot, is termed a **point source**. A bigger source of light is termed an **extended source**. The type of shadow formed by a given object depends on the light source. A point source produces a single well-defined shadow. However, if we use a bigger source of light we will see two regions in the shadow, one of which will be darker then the other. The darker region is called the 'region of complete shadow' or the **umbra**. The lighter region is called the 'region of partial shadow' or the **penumbra**.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Yes
2. Black
3. The word 'Ambulance' written backwards on the front of an ambulance so that the people, riding on the vachinles which is ahead the ambulance, can read the word 'Ambulance' in the mirror of vehicles and give the way to pass the ambulance.

Fun Time

Ans. Do yourself

Lesson 16 Air Around Us

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (iii) 2. (iii) 3. (iii)
4. (ii) 5. (iii) 6. (ii)

B. Fill in the blanks :

Ans. 1. Water, when poured into a glass, displaces **air** from the latter.
2. The earth is surrounded by a thick blanket of **atmosphere**.
3. Air is a gaseous **of some gases**.
4. Nitrogen is neither combustible nor a **supporter** of combustion.
5. A diver carries **oxygen cylinder** for respiration.
6. The **water vapour** present in air helps in the formation of clouds.

C. Write 'T' for true and 'F' for false statements :

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

D. Match the following :

	Column A	**Column B**
Ans. 1.	Oxygen	(iii) 21%
2.	Nitrogen	(i) 78.1%
3.	Carbon doxide	(v) 0.9%
4.	Oxygen-nitrogen proportion	(ii) 1 : 4
5.	Wind power plants	(iv) USA

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Air bubbles come out when soil is added to water because soil contains air in it.
2. In the absence of air in the soil, plants would not grow as their roots would not get oxygen. And the absence of plants would bring all life on earth to an end.
3. Two elements are dust particles and water vapour and two compounds are oxygen and nitrogen.
4. Two component of air and their proportions are :
(i) Nitrogen (78.1%) (ii) Oxygen (21%)
5. No, the composition of air is not strictly fixed.
6. Carbon dioxide is released in the air during burning and respiration. The burning of fuels like coal (carbon), diesel, patrol, wood and kerosene, results in the formation of carbon dioxide.
7. In rainy season we expect a higher proportion of water vapour in air.
8. Carbon dioxide is formed when carbon is burnt in air.

B. Short Answer Questions :

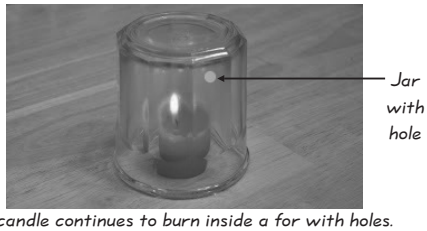
Ans. 1. To see that water contains dissolved air, heat some water very slowly on a burner. You will see air bubbles being formed.
Allow some cold water to stay undisturbed in a glass for a couple of hours on a hot day. You will observe air bubbles sticking to the walls of the glass. This happens because the solubility of air decreases with increasing temperature. So the warmer water releases some of the air

dissolved in it.

2. 1. Put a inverted glass over a burning candle. The candle will burn for only and a short while. This is because the amount of air so, of oxygen in the glass is limited. The burning stops as soon as the oxygen is used.

A Candle cannot burn without oxygen

2. Again do the activity with glasses of different sizes. The bigger the glass, the longer will the candle burn because the more will be the amount of oxygen available of burning.



A candle continues to burn inside a for with holes.

3. Make holes in a plastic jar and invert it over a burning candle. The candle will continue to burn till the end. This is because it continues to get oxygen through the holes.

3. The mucus and hair in your nostrils trap the dust particles and soot present in the air when you inhale it. On the other hand, when you inhale through your mouth, the dust particles and soot enter your lungs and respiratory tract.

4. **THE USES OF AIR**

Water and air are the most useful natural resources. We know that we cannot live for more than a few minutes without breathing. We have already discussed the various uses of water, and how it is necessary for our life. Here, let us discuss some of the important uses of air.

1. **Respiration:** The oxygen of the air takes part in respiration in animals and plants alike.
2. **Photosynthesis:** The carbon dioxide of the air helps plants to make their food by the process of photosynthesis.
3. **Regulating temperature:** The air absorbs a lot of the heat of the sun during the day. Had it not done so, the earth would have become too hot to sustain life. It also traps the heat radiated by the earth at night. This prevents the nights from becoming too cold.
4. **Compressed air:** Compressed air is used for inflating tubes. It is also used in sprayers.
5. **Hearing:** We can hear one another only because there is air between us. When we speak, the air vibrates. These vibrations make our eardrums vibrate and so we can hear each other.

C. Long Answer Questions :

Ans. 1. Invert an empty glass tumbler and push it right into a bucket containing water. No water will enter the tumbler. Now slightly tilt the tumbler. You will find bubbles coming out of the tumbler and water entering it.

You see the bubbles because the tumbler was filled with air. When you tilted the tumbler, the air inside it found its way out forming bubbles. No water could enter the tumbler when the tumbler was in an inverted position. This is because air is lighter than water. So, air remained on top and water remained at the bottom.

2. **Displacement of Air by Water and Vice versa**
   We know that water is heavier than air, it goes to the bottom when filled into a tumbler. And a volume of air equal to that of the water goes out of the tumbler. We then say that water has displaced air from the tumbler.
   Air, the displaced matter, goes upwards. Such displacement is known as upward displacement.
   Fill a bottle with water. Close its mouth with your thumb and invert it into a bucket of water. Remove your thumb and hold the bottle with its mouth under the water. Introduce one end of a bent drinking straw into the bottle and blow from the other end. You will find bubbles rising up the liquid and collecting in the upper part of the bottle. The level of water in the bottle falls as air collects in the bottle. Finally the bottle will be full of air and the level of water in the bottle will become the same as that in the bucket. In this case air has displaced water from the bottle. This is the **downward displacement** of water.
3. We burn fuel in the industry, laboratory, kitchen, motor vehicles, railway engines, etc. A large amount of the oxygen of the air is being used every moment for burning and respiration. The product is carbon dioxide, which is thrown into the atmosphere. Also, every living organism—plant or animal respires all the time. Again, big amounts of oxygen are used and large amounts of carbon dioxide are given out. Thus, it looks that the proportion of oxygen should decrease and that of carbon dioxide should increase in the air. But this is not so. During the process of photosynthesis, plants use up carbon dioxide and give out oxygen into the air. Thus, the balance of oxygen and carbon dioxide is maintained. (plants produce more oxygen than they use. This makes up for the oxygen used up in burning and by animals.) This is a good example of the interdependence of animals and plants.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. No, life would not be possible without air.
2. If there is too much water vapour in the air, it will be very difficult to breath in.

Fun Time

Ans. A. Do yourself
B. Do yourself

Formative Assessment

A. Tick (✓) the correct option :

Ans. 1. (ii) 2. (ii) 3. (iii)

B. Fill in the blanks :

Ans. 1. After an object has served its purpose it becomes **waste** compost/waste)
2. Domestic sewage is an example of **liquid** (solid/liquid) waste.
3. Glass is a **non-biodegradable** (biodegradable/non-biodegradable) substance.
4. We can manage our wastes well by reducing, reusing, and **recycling** (revising/recycling).
5. Plant and animal products **rot** (rot/do not rot) easily.

C. Write 'T' for true and 'F' for false statements :

Ans. 1. True 2. False 3. True 4. False

Summative Assessment

A. Very Short Answer Questions :

Ans. 1. Two sources of gaseous waste :
(i) Factories (ii) Vehicles
2. Two sources of liquid waste :
(i) Sewage (ii) Industries
3. Two sources of solid waste :
(i) Industries (ii) Houses
4. Two method used to mange liquids waste :
(i) Sewage must be treated before it is discharged into rivers
(ii) Industries should stop throwing liquid waste and other chemicals into water bodies.
5. Two methods used to manage solid waste :
(i) Composting (ii) Landfills

B. Short Answer Questions :

Ans. 1. **Waste**
Waste is something which is of no use or purpose. It consists of things we intend to throw or have already discarded. Wastes are produced in our homes, schools, offices, markets, industries and agricultural activities.

2. **THREE R'S- REDUCE, REUSE AND RECYCLE**
Reduce: We should reduce the amount of waste generated by consuming and throwing less.
Reuse: We should reuse certain things by repairing them.
Recycle: Recycling involves making useful things form waste materials. Materials like plastic, metal, glass, and paper are collected, separated, and sent to recycling plants, Where these used to make new products.

3. Organic wastes such as vegetable peels can be converted into manure by burying them in compost pits. This process is called composting.
4. The process by which waste materials are used to make new products is called recycling.
5. Biodegradable substances are those that rot by the action of small organisms found in soil. Dead plants and animals and their products decay very easily.

C. Long Answer Questions :

Ans. 1. **Types Of Wastes**

Wastes generated by us fall into the following three types.

Gaseous wastes: The gases released by industries and vehicles are examples of gaseous wastes.

Liquid wastes: Discarded chemicals, fertilizers washed into rivers, and domestic sewage are examples of liquid waste. Homes, industries, and agricultural activities create a lot of liquid wastes.

Solid wastes: Fruit and vegetable peels and discarded metal and plastic objects are examples of solid wastes. Homes, industries, and agricultural activities are the main sources of solid wastes. Solid wastes are of two types: biodegradable and non-biodegradable.

2. Non-biodegradable substances are those that cannot be broken down by decomposers. For example plastic, glass and metals.
3. Management of gaseous waste: Industries should be encouraged to consider cleaner technology to reduce emission. Long chimneys should be used in factories to assist in the dispersal of pollutants. Garbage should not be burned in open. Organic waste such as dry leaves should be composted, no burned. Emission from vehicles may be lowered by using public transport.
4. Vermicomposting : The method of preparing compost with the help of earthworms is called vermicomposting. Earthworms eat biodegradable kitchen wastes such as vegetable peels and fruit and convert it into compost, which can be used as manure.
5. Landfills: Landfills are large open areas used for solid waste disposal. In a landfill, garbage is buried in such a way that it does not damage the environment. Garbage buried inside landfills stays there for a long time as it decomposes very slowly. After a landfill is full it can be converted into a park! For example, Indraprastha Park in New Delhi is built on a landfill site.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. We should avoid plastic bags because plastic bags cannot be broken down by decomposers. They do not allow the garbage to mix with soil and ground water. It harms the environment.
2. Composting does not harm the environment while burning leaves creator land pollution and air pollution.

Fun Time

Ans. 1. Do yourself
2. Do yourself

Formative Assessment 4

A. Tick (3) the correct option :

Ans. 1. (ii) 2. (iv) 3. (ii) 4. (ii) 5. (iii)

B. Name these :

Ans.

1.	A barrier built across a river to hold back water.	**Dam**
2.	The water collected under the ground.	**Underground water**
3.	Materials that allow light to pass through them.	**Transparent**
4.	A very tiny source of light, like a small dot.	**Point source**
5.	The envelope of air surrounding the earth.	**The atmosphere**

C. Match the two columns :

Column A		Column B
1. Groundwater	(vi)	Obtained from hand pumps and tube wells
2. Drought	(vii)	Scarcity of water for a long time
3. Rainwater harvesting	(i)	Method of water conservation
4. Sea water	(ii)	Saline Water
5. Whale	(viii)	An aquatic animal
6. Flood	(iv)	Leads to soil erosion
7. Hydrilla	(iii)	A water plant
8. Rainwater	(v)	Purest form of water

D. Answer the following questions :

Ans. 1. The major sources of water are : rainwater, surface water and groundwater.
2. Water and clean glass.
3. No, the composition of air is not strictly fixed.
4. Factories and vehicles.
5. **Waste**
Waste is something which is of no use or purpose. It consists of things we intend to throw or have already discarded. Wastes are produced in our homes, schools, offices, markets, industries and agricultural activities.

Summative Assessment 2

A. Fill in the blanks :

Ans. 1. The **rib cage** protects the heart.
2. One kilometre is **1000** metres.
3. Electric current flows in a **particular** direction.
4. When a magnet is heated it **lose** its magnetism.
5. A human body has **75%** water by weight.

B. Write True or False :

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

C. Very Short Answer Questions :

Ans. 1. No, the composition of air is not strictly fixed.

2. The motion where an object repeats its motion after a fixed time interval is called periodic motion.

3. A dry cell is a very convenient source of electric current. It contains dry or semis solid materials.

4. **Uses of Magnetism**

Some of the more common applications of magnets and magnetic materials are given below:

- Ragpickers often use a long stick with a magnet attached to it to pick up scraps of iron from garbage dumps. Magnets are used to separate magnetic ores from non-magnetic rocks, magnetic substances from a mixture, and things made of magnetic materials during the recycling of waste.
- Images, sound and data are stored on special surfaces coated with magnetic material in computer hard disks, floppies, and audio and video tapes. Information is also stored on the magnetic stripe on credit cards, ATM cards. airline tickets, and so on.
- Motors and generators use powerful magnets. Loudspeakers also have a powerful magnet inside them.
- The door of a refrigerator has a weak magnetic strip all round it to ensure that it remains firmly shut. Magnetic stickers, magnetic clasps in handbags and magnetic pin/paper clip holders are some other examples of everyday uses of magnets. Magnetic latches, or 'catches', are used in windows, cupboard doors, and so on.

5. Drought refers to a period (a year or more), in which is an unusual scarcity of water.

E. Differentiate between the following :

Ans. 1. **Open circuit and closed circuit :** A circuit which has an 'unbroken path' through which an electric current can flow is called a closed circuit. A circuit with a break in it is called on open circuit.

2. **Attraction and Repulsion :** Unlike poles of magnets attract, or pull, each other, and like poles of magnets repel, or push, each other.

3. **Drought and Flood :** Drought refers to a period, in which is an unusual scarcity of water. Flood is the accumulation of water due to heavy and continuous rain for a long period of time.

4. **Transparent object and Opaque objects :** A material that allows almost all the light falling on it to pass thought is called transparent object. A material that does not allow any light to pass through is called opaque object.

5. **Biodegradable substances and Non-biodegradable substances :**

Substances that rot by the action of decomposers, are called biodegradable substances. Substance that do not rot by the action of decomposers are called non-biodegradable.

F. Long Answer Questions :

Ans. 1. An earthworm's body is made up of various parts called segments. It moves by lengthening and shortening these segments. Its movement can be compared with that of a spring. The segments also have tiny, hair- like bristles, which help the earthworm to grip the surface and move its body forward.

2. An electric switch is a device that is used to close or open an electric circuit. When we open an electric circuit, an electric current in the circuit stops, and when we close an electric circuit, an electric current flows through it. When the switch is 'on' , an electric current flows through the circuit, and the appliance, which is a part of the circuit, works. When the switch is 'off' the supply of electric current is cut off, and the appliance does not work. In an electrical circuit, a switch is also sometimes referred to as a 'key'. It is represented by the symbol.

 when it is 'ON' (closed circuit)

and

 when it is 'OFF' (open circuit)

3. The disaster caused by floods have following effects:
Rapidly running water takes away the top layer of the soil. It leads to soil erosion and sedimentation deposition problem downstream.
   - It leads to acute shortage of food, safe drinking water, etc.
   - If water rushes in to godown and fields, it destroys the stored food material and crop.
   - Heavy rains and sudden flow of water carry away people, their houses, other belongings and domestic animals and can cause death by drowning.
   - Many water animals are carried away by the strong water current and are deprived of their habitat.
   - During heavy rains there are increased chances of the outbreak of epidemics, various kinds of infectious diseases, malaria, diarrhoea, etc.
   - Collapse of houses, buildings, bridges, banks and other structures leads to a lot of financial losses.
   - Floods for a long period of time delay traffic, disturb the drainage system and often break hydroelectric power.

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4. **Compressed air:** Compressed air is used for inflating tubes. It is also used in sprayers.
5. **Hearing:** We can hear one another only because there is air between us. When we speak, the air vibrates. These vibrations make our eardrums vibrate and so we can hear each other.

5. **Landfills:** Landfills are large open areas used for solid waste disposal. In a landfill, garbage is buried in such a way that it does not damage the environment. Garbage buried inside landfills stays there for a long time as it decomposes very slowly. After a landfill is full it can be converted into a park! For example, Indraprastha Park in New Delhi is built on a landfill site.