



Exercise

Section 1 : Formative Assessment (CCE Pattern)

A. Answer the following questions orally :

- Ans.** 1. If anyone is not having his/her meals properly, due to the lack of nutrients he/she may fall ill.
2. Food is also required when we are sleeping. It is necessary for the healthy functioning of our body.
3. All living organisms have different food habits or requirements. So they need different type of food, not the same type of food.

B. Multiple Choice Questions (MCQs) :

Tick (✓) the correct answers :

- Ans.** 1. (c) 2. (b) 3. (c) 4. (d) 5. (a) 6. (a)

C. Fill in the blanks :

- Ans.** 1. Most of the food carbohydrate comes from **sugars, starch** and **cellulose**.
2. The energy producing component of food is **carbohydrate**.
3. A sweet carbohydrate is called **sugar**.
4. The carbohydrate which is not digested by our body is **roughage**.
5. Night blindness is caused by the deficiency of **Vitamin A**.

D. Write true or false for the following statements :

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

E. Match the following :

- | Column A | Column B |
|----------------|------------------------|
| 1. Honey | (i) Herbivore |
| 2. Egg | (ii) Milk product |
| 3. Human being | (iii) Sweet liquid |
| 4. Cow | (iv) Omnivore |
| 5. Paneer | (v) Hen |
| 6. Cabbage | (vi) Edible part-seed |
| 7. Wheat | (vii) Edible part-leaf |

F. Tick the odd-one out giving reason :

- Ans.** 1. Glucose, Potatoes, Roughage, Butter
2. Glucose, Wheat flour, Sucrose, Jaggery
3. Vitamin A, Vitamin C, Vitamin B, Vitamin B9
4. Brittle bones, Night blindness, Anaemia, Goitre
5. Iron, Iodine, Corn cob, Calcium

(a) It provides energy.

The food that we eat is digested, absorbed and then oxidised to provide energy. The energy thus released, is utilised by all living organisms to perform various functions of life.

(b) It helps in growth and development.

Our body is composed of millions of cells, and these cells come from other cells by the process of cell division. Food provides all necessary materials for cell division and helps in growth and development.

(c) It helps to overcome wear and tear.

Food is required to make more protoplasm which is necessary for the repair of damaged cells or for the replacement of worn out tissues and for healing of wounds.

(d) It protects the body against diseases.

Food provides resistance to the body against various diseases. Deficiency of food may cause several diseases.

6. Our food has different chemical substances called nutrients. These nutrients can be grouped into the following six classes: carbohydrates, fats, proteins, vitamins, minerals and water. These are essential for good health. It is important that our food includes all these nutrients in sufficient quantities.

Different foods have different nutrients. To get all the nutrients, we must eat a variety of food everyday. A diet which contains all the nutrients in sufficient quantities is called a balanced diet.

Foods rich in carbohydrates and fats provide energy to the body and are known as energy-giving foods.

7. Foods rich in vitamins and minerals are known as protective foods. They protect our body against diseases.

8. Proteins contain nitrogen, in addition to carbon, oxygen and hydrogen. They are needed to make new cells for growth and to replace old cells. In other words, they are needed to build and repair tissues. That is why growing children, convalescents (people recovering from an illness) and pregnant women need more proteins. Our hair, nails, skin and muscles are made up mostly of proteins. Wool and silk are also made up of proteins.

We get proteins from animal sources such as milk, eggs (egg white), meat and fish. We also get them from plant sources, like pulses, corn, soya bean, whole wheat and nuts. Animal proteins are considered better than plant proteins as they are more completely digested by the body. Soya bean is the best source of plant protein.

I. Answer the following questions in detail :

Ans. 1. (a) Vitamin A : It is found in milk, butter, eggs, carrots, cod-liver oil, tomatoes and green leafy vegetables. It is necessary for the normal growth of the body. It also keeps the eyes and skin healthy. Deficiency of Vitamin A cause night blindness, which is inability to see in dim light.

- (b) **Vitamin C** : It is needed for healthy growth and strong blood vessels. It is found in Amla, tomatoes, green leaf vegetables, citrus fruits and water chestnut. Deficiency of this vitamin causes scurvy, in which gums swell up and bleed.
 - (c) **Vitamin D** : It is found in sunlight, milk, butter, green vegetables and cod-liver oil. It is essential for the formation of strong bones and teeth. Deficiency of Vitamin D causes rickets (affects children), in which the bones become soft and out of shape.
 - (d) **Vitamin E** : It is found in vegetable oil, milk, butter, whole grains and vegetables. It protects the cell membrane.
2. (a) **Calcium** : It is essential for making bones and teeth. It also helps in blood clotting. Deficiency of calcium can cause stunted growth, rickets (brittle bones) and excessive bleeding.
 - (b) **Sodium** : It helps in maintaining the body fluids in proper conditions. Deficiency of sodium can cause muscle cramps and tiredness.
 - (c) **Potassium** : It also helps in maintaining the body fluids in proper conditions. Deficiency of potassium can cause muscle weakness and paralysis.
 - (d) **Iron** : It is necessary for the formation of hemoglobin which carries oxygen from lungs to the body cells. Deficiency of iron can cause anaemia.
 3. You lose a lot of water everyday as you breathe, sweat, cry or get rid of your wastes. About half of this water is replaced by the water in the food you eat. Fruits and vegetables contain large quantities of water. Grapes, for example, contain 80 per cent water. The other half is replaced when you drink liquids. Most people need 6-8 glasses of water, or other liquids every day to stay healthy. Athletes and sportspersons should drink enough water to replace the water they lost through sweating.

Even though it is vital for our body, water does not provide any energy. It only serves as a solvent in which all chemical reactions take place.

If a person loses too much water, for example while playing or working in the hot sun, his body may get severely dehydrated. This causes the blood to become thicker and its movement in the body slows down. This causes severe pain and cramps in the muscles.
 4. It is important that we consume all nutrients, but it is equally important that we consume them in adequate quantity. This is what makes our diet a balanced diet. So, a balanced diet can be defined as follows :

'A balanced diet is one which contains all the nutrients in proper amount according to age and work we do.'

No single food item offers all the nutrients required by our body. Only a combination of different food items in adequate quantities will form a balanced diet. Balanced diet implies a complete meal.

But, you must understand that people at different ages and conditions need different nutrients in different quantities.

Growing children need more proteins to build their body.

Infants need more of vitamins and proteins to build their bodies and to keep diseases away.

Nursing mothers and pregnant women also need more of proteins to serve the needs of the growing baby.

A hard working labourer, who does lot of physical work, needs more of carbohydrates and fats to get energy.

5. There are hundreds of food items that we eat. But our diet must include foodstuffs from the following four groups.

1. Milk group : It includes milk, curd, paneer and other milk products.

2. Meat group : It includes meat, chicken, fish, lamb, etc. for non-vegetarians and for vegetarians soyabeans, beans, peas, grams, nuts and seeds, etc.

3. Fruit and vegetable groups : These include all kinds of vegetables and fruits.

4. Cereals and wheat group : It includes wheat, rice and other cereals.

6. Some portion of the food we eat cannot be digested by the body. This part is mainly cellulose. It is a carbohydrate present in plant foods such as fruits and vegetables. It is called roughage. It forms an important part of our diet because of the following reasons.

It adds bulk to our food. Since it is not digested, it passes down the entire digestive tract from the mouth to the anus. The muscles of the digestive tract need this bulk to push against like squeezing toothpaste out of a tube.

It prevents constipation and ensures proper bowel movement.

Many doctors believe that a high-fibre diet reduces the risk of heart diseases and bowel cancer.

7. **Deficiency of vitamins :** Vitamins are called essential nutrients because they are necessary for normal development and functioning of the body systems. They regulate body activities.

Each vitamin is needed for a specific purpose. Deficiency of one or more vitamins leads to deficiency diseases. These diseases affect the eyes, skin, bones, hair and general growth of the body. Table 1.4 lists a few of these vitamins, and the deficiency diseases caused by the lack of these vitamins.

Vitamin deficiency diseases

Vitamin	Deficiency disease
vitamin A	night blindness
vitamin B1	beri beri
vitamin B2	skin disease, poor growth
niacin	pellagra
vitamin B12	pernicious anaemia
vitamin C	scurvy
vitamin D	rickets
vitamin K	affects clotting of blood

8. **Deficiency of minerals :** Like vitamins, minerals are needed by the body in very small amounts. They are supplied to our body in the form of salts by

various foods. deficiency of minerals in a body causes deficiency diseases. Table 1.5 shows the important minerals required by our body and the diseases caused by their deficiency in the body.

Some important minerals

Mineral	Deficiency can cause
iron	anaemia
calcium	stunted growth, rickets (brittle bones), excessive bleeding
phosphorus	weakness, bad teeth and bones
sodium	muscle cramps, tiredness
potassium	muscle weakness, paralysis
iodine	disease called goitre (enlarged thyroid gland)
fluorine	dental caries

Section III : Activities Assessment (CCE Pattern)

Do yourself

Separation of Substances Cleaning of Food

2

Exercise

Section 1 : Formative Assessment (CCE Pattern)

A. Answer the following questions orally :

Ans. 1. We need to separate different substances present in a mixture :

- (i) To remove undesirable substances.
 - (ii) To obtain useful components.
 - (iii) To remove harmful substances.
2. Hand picking method not used in godowns to remove dirt, stone or husk from the grains of wheat and rice because this method is normally used when the amount of impurities present is small and the material to be cleaned is also less in quantity.
3. In the churning method separation the lighter and heavier particles from the liquids by rotating the liquid in a machine. In this method, heavier particles settle down and lighter particles remain on top. This method mostly used in dairies. Cream is separated from milk by churning process. As cream is lighter, it separates and floats at the top of the milk.

B. Multiple Choice Questions (MCQs) :

Tick (✓) the correct answers :

Ans. 1. (d) 2. (b) 3. (a) 4. (c) 5. (d)

C. Fill in the blanks :

- Ans. 1. The mixture having components of **big** sizes are separated by the process of sieving.
2. Grains and husk can be separated by using **winnowing**.
3. **Sedimentation** and **filtration** can be used for separating insoluble solid from liquid.
4. **Sieving** is used to separate stones and pebbles from sand at construction sites.
5. Salt is obtained from sea water by the process of **evaporation**.

D. Write true or false for the following statements :

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

E. Tick the odd-one out giving reason :

- Ans. 1. Filtrate, Filter paper, Residue, Sugar solution, Suspension
2. Dust in air, Solution of salt in water, Cold drinks, Air (Pure)
3. Homogeneous mixture, Pure substance, Heterogeneous mixture
4. Sedimentation, Evaporation, Condensation, Dissolution
5. Solubles, Aqueous Solution, Homogeneous mixture, Hetrogeneous mixture

Section 2 : Summative Assessment (CCE Pattern)

F. Define the following terms :

- Ans. 1. A mixture refers to the physical combination of two or more substances in which the identities are retained. These substances are called components of a mixture. The components of a mixture can be separated by using different methods.
2. Have you ever visited a wheat or paddy field after the crop has been harvested? Harvesting means cutting the crop from the field.
The grains are attached to their stalks which are put together in bundles. How are the grains separated from the stalks in bundles?
The process of separating grains from the stalks is called threshing. Threshing can be done in the following three ways :
(i) by beating the stalks with sticks on the ground.
(ii) by allowing animals like bullocks to trample the stalks, and
(iii) by using machines.
Machines are generally used in large fields.
3. Sometime, the insoluble particles in a liquid are very fine and cannot be removed by decantation. These particles can be made heavier so that they sediment quickly. The process of sedimentation of insoluble fine

particles by making them heavier is called loading. The fine particles are made heavier by using alum, a solid which is soluble in water. The alum particles load the fine particles due to which they form a sediment easily and the liquid can be then cleaned.

4. Saturated solution
5. Solubility

G. Answer the following questions in short :

- Ans.**
1. (a) We buy wheat, rice and pulses from the market. These food grains usually contain small pieces of stones and insects. These pieces of stones and insects are harmful to us. So, we separate them from wheat, rice and pulses before using them.
(b) The separation of the suspended impurities from water meant for drinking is necessary because impure water contains various harmful germs. It is harmful to us and to use this water we may fall ill.
 2. (a) The process of settling down of an insoluble solid in a liquid at the bottom of the container is called sedimentation. Sedi-ment is the solid substance which forms a layer at the bottom of the liquid. The settling of mud or sand particles in water is a common example of sedimentation.
(b) The process of separating out the clear liquid on top without disturbing the sediment is called decantation. This process is only possible when the solid in the liquid is insoluble in it and it is only done after sedimentation.
The liquid obtained after decantation is clearer and cleaner than it was before.
(c) The process of conversion of water vapour into its liquid form is called condensation.
 3. To separate a mixture of water and salt by evaporation.
Procedure : Take a beaker containing some water. Add a teaspoonful of salt in it and dissolve it with a glass rod. Keep the beaker on a stand and light a spirit lamp under it.
Let the mixture boil for some time.
Note what happens.
No water is left in the beaker after some time. Only salt is left behind. This activity shows that water has evaporated.

H. Answer the following questions in detail :

- Ans.**
1. If the mixture comprises solids of different colours, shape or sizes, it can be separated by handpicking. You have seen your mother picking stone pebbles from rice or pulses or from wheat or other foodgrains. This method is normally used when the amount of impurities present is small and the material to be cleaned is also less in quantity.
 2. The act of passing a liquid through a filter or a piece of equipment in order to remove particular undissolved substances is known as filtration. The

insoluble solids which cannot be separated by decantation are passed through a sieve or strainer or filter paper in filtration. The strainer or sieve used is the filter, the clear liquid obtained is called the filtrate and the insoluble solid which gets separated is called the residue. Muddy water can be cleaned by filtering it by placing folded filter paper in a funnel and pouring the muddy water through it while stirring it. The clear solution collects in the container and the mud remains on the filter paper. The water filters we use in our households contain special types of filters which separate all possible insoluble impurities from the water and make it potable.

3. Do yourself.
4. Salt is obtained from sea water by evaporation. Sea water is allowed to stand in shallow ponds or pits. Water gets heated due to sunlight and slowly turns into vapours. As such salt is left behind. But we do not consume it as it is. It is purified before consumption.

Section III : Activities Assessment (CCE Pattern)

Do yourself

Unit - 2 Materials

Fibre to Fabric

3

Exercise

Section 1 : Formative Assessment (CCE Pattern)

A. Answer the following questions orally :

- Ans.**
1. Fibres are long, strong and flexible thread-like materials. Fibres, on the basis of the source they are obtained from and on their chemical characteristics, are divided into three categories :
Natural fibres (from plant sources or animal sources)
Man-made or synthetic fibres
Mixed fibres
 2. Cotton plants need warm climate.
Cotton is cultivated in black clayey soil.
The sowing of cotton crop is done in early spring.
 3. During that time, people had no idea of cutting and stitching clothes. They used to cover various parts of the body according to their needs by the fabrics. They developed ways and means to fix fabrics to the body. Normally, they put holes on the sides of the fabrics and with the help of ropes tied the two parts covering the body.

B. Multiple Choice Questions (MCQs) :

Tick (✓) the correct answers :

Ans. 1. (d) 2. (c) 3. (c) 4. (b) 5. (a) 6. (c) 7. (d) 8. (a) 9. (c) 10. (b) 11. (b) 12. (a) 13. (b) 14. (b) 5. (a)

C. Fill in the blanks :

Ans. 1. Cotton is a **natural** fibre.
2. Fabric is made from **fibres**.
3. After harvesting cotton is sent for **ginning**.
4. **Silk** is an animal fibre.
5. Cotton crop is grown in **black** soil.

D. Write True or False for the following statements :

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

E. Match the following :

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

F. Tick the odd-one out giving reason :

Ans. 1. Cotton, Silk, Jute, Coir
2. Jute, Gunny bags, Door mat, Kurta
3. Wool, Sheep, Highly porous fibre, Synthetic fibre
4. Cotton, Mango, Leaf, Seeds
5. Ginning, Retting, Spinning, Sliver

Section 2 : Summative Assessment (CCE Pattern)

G. Define the following terms :

Ans. 1. The process of removing cotton seeds from cotton pods is called ginning. Ginning can be done by hand and also by machines.
2. During the weaving process the shuttle carries the yarn back and forth across the yarn placed lengthwise (in the warp). The shuttle yarn is called weft.
In simple weaving, the weft yarn goes alternatively over and under a single lengthwise yarn (or warp).
3. The process of arranging two sets of yarn together (at right angle to each other) to make a fabric is called weaving.
4. **Uses Of Cotton**
Cotton is mostly used for making cloth of various kinds, towels, curtains

etc.

The blends of cotton with man-made fibres such as viscose and polyester are used as dress materials.

Cleaned and sterilised cotton is used as absorbent in hospitals. Bandage is also made of cotton thread.

The dispersed cotton is used as filler in mattresses, pillows and quilts.

Cotton cloth or strands of spun cotton yarn are used in mops for cleaning floor.

5. Primitive man did not have any idea of clothing. He wandered naked in jungles like all other animals.

In stone age, about 30,000 years ago, man started wearing skins of animals, leaves or bark of plants to protect himself from cold.

In the year 1991, archaeologists discovered leather shoes and leather cape from the body of a male which was supposed to have existed some 5000 years ago and was found buried in the snow at the Austrian-Italian border.

In India, cotton came to be known and used around 2000 B.C. The classic Indian clothes were not stitched but were used as saree and dhoti by women and men respectively. These clothes were wrapped round the body in a particular style.

Western clothing became popular in India in the 20th century.

H. Answer the following questions in short :

Ans.

1. In the hot weather conditions synthetic clothes are not suitable.
2. (a) (i) Jute is used chiefly to make cloth for wrapping bales of raw cotton.
(ii) Jute is extensively used for making gunny bags, potato sacks, carpets, curtains, coarse clothes and ropes, etc.
(b) Cleaned and sterilised cotton is used as absorbent in hospitals. Bandage is also made of cotton thread.
The dispersed cotton is used as filler in mattresses, pillows and quilts.
3. Wool and silk fibres are obtained from animals. Wool is obtained from the hair of sheep, rabbits, yaks and camels. Silk fibre is drawn from the cocoon of the silkworm.
4. The places where cloth is woven are called looms. Weaving can be done on handlooms or powerlooms.
5. Today, besides all these natural fibres, we have man-made or synthetic fibres to make clothes. These fibres are not obtained from plant or animal sources. Fibres that are made by man from different chemicals in the industries are called man-made or synthetic fibres. Some of the common synthetic fibres are nylon, terylene, polyester and acrylic.
6. Natural fibres are blended with synthetic fibres to obtain more superior and useful fibres. These are called mixed fibres. Some well-known mixed fibres are terrycot (terylene + cotton), terrysilk (terylene + silk) and terrywool (terylene + wool).

7. Yes, jute is a biodegradable fibre.
8. We wear woollen clothes in cold weather to keep us warm.
9. Gunny bags and carpets are the two items made from jute.
10. Cotton fabrics were used for the first time by Indians and Edyptians. So the birth place of cotton is considered to be Indian region as it was grown in the Ganges valley.

I. Answer the following questions in detail :

Ans. 1. Cotton was known to the ancient people for long. Cotton was being used in India around 1800 BC. The Greek historian Herodotus (500 BC) introduced cotton to the Europeans.

In India, cotton is cultivated in the northern, central and western parts such as Maharashtra, Gujarat, Punjab, Haryana, Rajasthan, Tamil Nadu, and Madhya Pradesh.

Uses Of Cotton

Cotton is mostly used for making cloth of various kinds, towels, curtains etc.

The blends of cotton with man-made fibres such as viscose and polyester are used as dress materials.

Cleaned and sterilised cotton is used as absorbent in hospitals. Bandage is also made of cotton thread.

The dispersed cotton is used as filler in mattresses, pillows and quilts.

Cotton cloth or strands of spun cotton yarn are used in mops for cleaning floor.

2. Today, besides all these natural fibres, we have man-made or synthetic fibres to make clothes. These fibres are not obtained from plant or animal sources. Fibres that are made by man from different chemicals in the industries are called man-made or synthetic fibres. Some of the common synthetic fibres are nylon, terylene, polyester and acrylic.

3. (a) The process of arranging two sets of yarn together (at right angle to each other) to make a fabric is called weaving.

Weaving can be done on handlooms or powerlooms.

The big reels of yarn are called bobbins. These bobbins are used for weaving the cloth.

In the looms, the yarn is placed lengthwise on the frames. Another yarn is attached to the shuttle of the machine.

During the weaving process the shuttle carries the yarn back and forth across the yarn placed lengthwise (in the warp). The shuttle yarn is called weft.

In simple weaving, the weft yarn goes alternatively over and under a single lengthwise yarn (or warp).

- (b) In knitting, a single yarn is used to make a fabric. Many a times, many yarns are joined one-to-one lengthwise. Knitting can be done by hand and also on machines. Socks, sweaters etc. are knitted from the suitable yarn.

- (c) The raw cotton is supplied to industry in the form of bales. This cotton is converted into yarn through the following steps. The process of making yarn from fibres is called spinning.

The raw cotton is loosened and cleaned from straw and dried leaves etc.

The cleaned cotton is then fed into a machine. Here the cotton fibres are combed, straightened and converted into a rope-like loose strand. This strand is called sliver.

The strand of cotton fibre (or sliver) is converted into yarn on spinning machines.

During spinning, the strand is pulled and twisted at the same time. Thrusting makes the yarn stronger.

4. The real breakthrough in making proper clothing came when needle was invented. Gradually, designing, fabricating, cutting, stitching became specialized professions of the world.

The development of clothing, their fabrication to suit individual needs and requirements have become one of the greatest money spinning industry nowadays.

5. Jute is a long, soft, shiny plant fibre that can be spun into coarse, strong threads. It is produced from the skin of the jute plant's stem. It is the second most important plant fibre after cotton.

Jute is one of the cheapest natural fibres and is second only to cotton in the amount produced and variety of uses. Jute fibres are of-white to brown in colour, and 1 to 4 metres long.

The fabric made from jute is popularly known as burlap. Jute fabrics are also called hessian cloth and jute sacks are called gunny bags.

Section III : Activities Assessment (CCE Pattern)

Do yourself

Different Kinds of Materials

4

Exercise

Section 1 : Formative Assessment (CCE Pattern)

A. Answer the following questions orally :

- Ans.
1. Wood and cotton are two natural materials and natural materials, and plastic and glass are two man-made materials.
 2. Classification of things can be done on the basis of similarities and dissimilarities in their properties. For example, plants and animals are living things. The similarity in them is that they are both made of cells.

But there are many dissimilarities too.

Classification of things can be done on the basis of shape also. Things like apples, oranges, footballs, marble balls and rubber balls come under the category or group of round or nearly round objects.

We can classify things on the basis of size, colour, shape, use and convenience.

3. Oxygen gas is slightly soluble in water. It is the dissolved oxygen in water which enables the fishes and other water animals to breathe with the help of their gills.

B. Multiple Choice Questions (MCQs) :

Tick (✓) the correct answers :

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

C. Fill in the blanks :

- Ans.
1. **Metals** have lustre.
 2. Grouping of similar things together is called **classification**.
 3. Iron is a **hard** metal.
 4. Vinegar **dissolve** in water.
 5. **Iron nail** will sink in water.

D. Write True or False for the following statements :

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

E. Match the following :

- Ans.
- | | |
|----------------------------------|--------------------------------|
| 1. Butter paper | → (i) Transparent |
| 2. Salt | → (ii) Soft metal |
| 3. Air | → (iii) Translucent |
| 4. A gas that dissolves in water | → (iv) Hardest substance known |
| 5. Sodium | → (v) Soluble in water |
| 6. Diamond | → (vi) Opaque |
| 7. Wall | → (vii) Oxygen |

F. Tick the odd-one giving reason :

- Ans.
1. Knife, Mirror, Steel plate, Spoon, Water tap
 2. Nitrogen, Oil, Air, Steam, Carbon dioxide
 3. Lime juice, Chalk powder, Sulphur, Sand
 4. Acrylic sheet, Ground glass, Glass, Cellophane

Section II : Summative Assessment (CCE Pattern)

G. Define the following terms :

- Ans.
1. Certain substances dissolve completely in water. Such substances are called soluble substances and this property is called solubility.
 2. When we can see easily through some material, then the material is said to be transparent and this property is called transparency.
 3. The materials, which allow the heat energy to flow through them are

called good conductors of heat. This property is called conduction.

4. We must have noticed that some materials are attracted strongly towards a magnet. However, most of the materials are not attracted towards magnet.

The materials which are attracted towards a magnet are called magnetic materials.

Examples : Materials made from iron, steel (except stainless steel), cobalt and nickel are magnetic in nature.

5. The materials which allow the heat energy to flow through them are called good conductors of heat. All metals are good conductors of heat.

H. Answer the following questions in short :

Ans.

- 1.
2. Amongst the solids all the metals have lustre. Graphite (a physical form of carbon) and iodine crystals have lustre. Similarly, gems, diamonds, pearls, etc., are lustrous.
3. The process of gases and liquids spreading into a surrounding substance is known as diffusion. If one opens a perfume bottle at one corner of the room, the smell spreads throughout the room. This is because perfume mixes with air. Gases have the highest rate of diffusion but different gases diffuse at different rates.
4. Materials differ from each other on the basis of their mass and volume. These two properties can be studied together through one property, namely, density. The mass per unit volume of a substance is called its density. Iron has a higher density than cotton and therefore, if we take the same mass of both of them, cotton will occupy more volume.
It is because of density that some materials float in water while others sink. The materials with a lower density than water, for example, wooden logs float on water. The substances with a greater density than water, for example, iron nails, sink in water.
5. When salt dissolves in water it completely mixed with water and make a solution.

I. Answer the following questions in detail :

Ans.

1. Air as well as all gases are bad conductors of heat. A sweater feels warmer in winter, because the air trapped in its fibres does not allow the body heat to flow out.
Similarly, when we wear a number of clothes, such as vest, shirt, sweater, coat, etc., we feel warmer in winter rather than wearing a single, thick piece of cloth. It is because of the air trapped in between the layers of clothes, which does not allow the body heat to flow out.
2. The process of gases and liquids spreading into a surrounding substance is known as diffusion. If one opens a perfume bottle at one corner of the room, the smell spreads throughout the room. This is because perfume mixes with air. Gases have the highest rate of diffusion but different gases

diffuse at different rates.

3. We must have noticed that some materials are attracted strongly towards a magnet. However, most of the materials are not attracted towards magnet.

The materials which are attracted towards a magnet are called magnetic materials.

Examples : Materials made from iron, steel (except stainless steel), cobalt and nickel are magnetic in nature.

The materials which are not attracted towards a magnet are called non-magnetic materials.

Examples : All materials other than magnetic materials mentioned above are non-magnetic materials. For example wood, plastic, cotton, wool, etc.

4. When we can see easily through some material, then the material is said to be transparent and this property is called transparency.

Conversely, when you cannot see through some material, then the material is said to be opaque and this property is called opacity.

- (a) **Solids** : On the basis of the above phenomenon, matter can be classified as transparent or opaque.

Solids are generally opaque. For example, metals, wood, stones, etc., are opaque in nature. However, some solids such as glass, diamonds and certain kinds of plastics are transparent.

- (b) **Liquids** : Most of the pure liquids are transparent in nature. For example, water, alcohol, petrol, etc., are transparent in nature.

- (c) **Gases** : All gases, oxygen, nitrogen, carbon dioxide, etc., and even the coloured gases, such as chlorine and nitrogen dioxide are transparent in nature.

However, there are other kind of materials through which things are partially visible. Such materials which allow the light to pass through them partially are called translucent materials.

However, there are other kind of materials through which things are partially visible. Such materials which allow the light to pass through them partially are called translucent materials.

Examples of translucent materials :

Ground glass, oiled paper, butter paper, deep water, muddy water, fog, mist, dust laden air are the examples of translucent materials.

5. **Conductor of heat** : These are substances which allow heat to pass through them. All metals are good conductors of heat.

Insulators of heat : The substances which do not allow heat to pass through them are called insulators of heat, plastic, wood etc. are the examples of insulators.

Section III : Activities Assessment (CCE Pattern)

Do yourself

A. Answer the following questions orally :

- Ans.**
1. Food is also required when we are sleeping. It is necessary for the healthy functioning of our body.
 2. Cotton plants need warm climate.
Cotton is cultivated in black clayey soil.
The sowing of cotton crop is done in early spring.
 3. In the churning method separation the lighter and heavier particles from the liquids by rotating the liquid in a machine. In this method, heavier particles settle down and lighter particles remain on top. This method mostly used in dairies. Cream is separated from milk by churning process. As cream is lighter, it separates and floats at the top of the milk.
 4. Classification of things can be done on the basis of similarities and dissimilarities in their properties. For example, plants and animals are living things. The similarity in them is that they are both made of cells. But there are many dissimilarities too.
Classification of things can be done on the basis of shape also. Things like apples, oranges, footballs, marble balls and rubber balls come under the category or group of round or nearly round objects.
We can classify things on the basis of size, colour, shape, use and convenience.

B. Multiple Choice Questions (MCQs) :

Tick (✓) the correct answer :

- Ans.** 1. (d) 2. (d) 3. (b) 4. (c)

C. Fill in the blanks : 2½

- Ans.**
1. Grouping of similar things together is called **classification**.
 2. Salt is obtained from sea water by the process of **evaporation**.
 3. Fabric is made from **fibres**.
 4. A sweet carbohydrate is called **sugar**.
 5. Night blindness is caused by the deficiency of **vitamin A**.

D. Write True or False for the following statements :

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

E. Match the following :

- Ans.**
- | | |
|----------------|-----------------------|
| 1. Honey | (i) Herbivore |
| 2. Egg | (ii) Milk product |
| 3. Human being | (iii) Sweet liquid |
| 4. Cow | (iv) Omnivore |
| 5. Paneer | (v) Hen |
| 6. Cabbage | (vi) Edible partseed |
| 7. Wheat | (vii) Edible partleaf |

5. The burning of a candle or matchstick is a **chemical** change.
6. Sugar, when heated, forms **charcoal** and **water**.
7. The homogeneous mixture of a solute and solvent is called a **solution**.

D. Write True or False for the following statements :

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

E. Match the following :

- Ans.** 1. Milk changes to curd ————— (i) Slow change
 2. Temporary change ————— (ii) Irreversible change
 3. Change of season ————— (iii) Physical change
 4. Rusting of iron ————— (iv) Can be compressed easily
 5. Air ————— (v) Chemical change

F. Tick the odd-one out giving reason :

- Ans.** 1. Burning of paper, Ageing of man, Cooking of food, Boiling of water
 2. Changes of seasons, Freezing of water, Hammering of metals, Beating of heat
 3. Forest fire, Eruption of volcanoes, Floods, Formation of curd

Section II : Summative Assessment (CCE Pattern)

G. Define the following terms :

- Ans.** 1. The change which can be reversed by reversing the condition or removing the cause is called a reversible change.
 2. The change which cannot be reversed even by changing the conditions or by removing the cause is called an irreversible change.
 3. A change in which only the physical properties of a substance get changed and no new substance is formed is called a physical change.
 4. An irreversible change in which the composition and chemical properties of the reacting substances get change and which cannot be reversed by reversing the conditions is called a chemical change.

H. Answer the following questions in short :

- Ans.** Reversible change Irreversible change
1. A reversible change is a temporary change.
 1. An irreversible change is a permanent change.
 2. When conditions are reversed, the substance/ object gets back to its original state.
 2. Substance or object cannot be reversed back to its original form/state even when conditions are reversed.
 3. Examples : Stretching of a rubber band, melting and freezing, dissolution of sugar in water, glowing of an electric bulb.
 3. Examples : Burning of coal, conversion of milk into curd and cheese, growth of plant etc.
 2. **Periodic or non-periodic :** The periodic changes include the rotation of

the Earth on its axis and revolution round the Sun. The rotation of the hands of a watch is also a periodic change.

3. Ageing of living beings, growth of plants, ripening of fruits etc are some biological changes that are irreversible.
4. Following are the few examples of physical change where the original form cannot be regained by us :
 - (i) Breaking of a wooden stick
 - (ii) Dissolution of sugar in water
 - (iii) Dissolution of washing soda in water
 - (iv) Breaking of glass tumbler
 - (v) Dissolving salt in water etc.
5. State at least two examples of the following :
 - (i) Reversible change Glowing of an electric bulb, Ploughing a field
 - (ii) Irreversible change Burning of a paper, Ageing of living beings
 - (iii) Physical change Evaporation of water, Inflating a balloon
 - (iv) Chemical change Rusting of iron, Bursting of a cracker

6. (i) **Physical Change**

A change in which only the physical properties of a substance get changed and no new substance is formed is called a physical change.

A physical change is generally reversible.

Some common changes which can be classified as physical change are

Breaking of a wooden stick

Conversion of water into ice and that of ice into water

Evaporation of water

Dissolution of sugar in water

Chemical Change

An irreversible change in which the composition and chemical properties of the reacting substances get change and which cannot be reversed by reversing the conditions is called a chemical change.

Chemical changes occur only under suitable conditions.

Some common changes which can be classified as chemical change are

Burning of coal/wood

Burning of a candle

Bursting of a cracker.

Rusting of iron.

- (ii) The periodic changes include the rotation of the Earth on its axis and revolution round the Sun. The rotation of the hands of a watch is also a periodic change.
- (iii) A chemical change is represented by a chemical reaction which includes both the starting substances called 'reactants' and the end product, formed after the reaction, called 'products'. A chemical change can be represented as shown below with a sign of arrow.

7. The energy released during chemical reaction has been used by human

beings for different purposes such as the cooking of food at homes using LPG (liquefied petroleum gas), running of vehicles like cars and buses to flying of aeroplanes and the generation of electricity in power plants. The only source of energy for all these chemical reactions involves the burning of a fuel such as coal, petrol or diesel.

However, the excessive need of energy required by human beings has resulted in undesirable changes in the surroundings in the form of pollution, acid rain and green house effect. To let the environment remain conducive to man, human beings have to restrict the overuse of energy.

8. (i) Some chemical changes such as photosynthesis or taking a photograph are possible only when sunlight is available. The chemical change on the film in camera occurs only when light falls on it. These changes are called photochemical changes.
(ii) Some substances such as water, on passing of electric current, undergo a chemical change. These changes are called electrochemical changes. When electric current passes through water, it brings about a chemical change by breaking water molecules to produce hydrogen and oxygen gas
9. (i) The homogeneous mixture of two or more substances is called a solution. In a solution of water and sugar, water is called the solvent, the substance in which the other substance is added. The sugar which is added to the water is called the solute. The formation of a solution is only a physical change as the dissolved solute can be recovered by evaporating the water and sugar solution.
(ii) If we keep on adding sugar to a tumbler of water, a stage comes when no more sugar will be soluble in it. At this stage, the solution is called a saturated solution. The maximum amount of a solute that can be dissolved in 100 millilitres of the solvent at room temperature is called the solubility of that substance.
10. The solubility of solutes depend on the temperature. Generally, solubility increases with an increase in the temperature as the inter-molecular spaces between the molecules of the solvent increase on heating. Therefore, more solute can be dissolved in the solvent when it is heated. The solubility of sugar and other solutes in water increases with an increase in temperature. The solubility of sugar in water is more than the solubility of salt in water. This is, because, every solute has its own solubility.
11. (i) Solid-solid solutions Mixture of soil and sand
(ii) Solid-liquid solutions Mixture of salt and water
(iii) Liquid-liquid solutions Mixture of milk and water
(iv) Gas-liquid solutions Mixture of oxygen and water
(v) Gas-gas solutions Mixture of carbon-dioxide and oxygen

I. Answer the following questions in detail :

Ans. 1. Reversible Change

The change which can be reversed by reversing the condition or removing the cause is called a reversible change.

Some reversible changes are,

Conversion of ice into water by heating and that of water into ice on cooling.

Glowing of an electric bulb

Stretching of a rubber band

Ploughing a field

Irreversible Change

The change which cannot be reversed even by changing the conditions or by removing the cause is called an irreversible change.

Burning of paper, wood etc. : Paper when burnt gives ash and smoke. We cannot obtain paper back from the ash and the smoke. Therefore, this change is irreversible.

Ageing of living beings : We cannot make an old man, a child by any method. Therefore, ageing of living things is an irreversible change.

Change of milk into curd : You cannot get milk back from curd. So it is an irreversible change.

Growth of plants : A tree cannot be reversed back into a plant or seed. Therefore, growth of a plant is an irreversible change.

Rusting of iron : You cannot get back iron from the rusted-iron by a simple process. That is why rusting of iron is an irreversible change.

2. Do yourself

3. To study a chemical change :

Procedure : Take a china dish with little sugar.

Keep the China dish on a wire gauze and heat it using a spirit lamp.

Hold a glass sheet over the china dish.

When it is heated to its full, observe the changes that occur in the sugar.

The sugar, upon heating, in a China dish with glass cover, first turns brown and starts melting. The glass sheet over China dish becomes foggy.

If you continue heating, the sugar mass turns black forming charcoal.

It is not necessary that substances undergoing both these changes must be different. A substance can undergo both physical and chemical change under different conditions.

For example, breaking a matchstick into two smaller pieces is a physical change but burning a matchstick is a chemical change because, after burning, you are left with a black residue which is different from the matchstick. You cannot burn it like matchstick again.

4. The solubility of solutes depend on the temperature. Generally, solubility increases with an increase in the temperature as the inter-molecular spaces between the molecules of the solvent increase on heating.

Therefore, more solute can be dissolved in the solvent when it is heated. The solubility of sugar and other solutes in water increases with an increase in temperature. The solubility of sugar in water is more than the solubility of salt in water. This is, because, every solute has its own solubility.

Section III : Activities Assessment (CCE Pattern)

Do yourself

Unit - 3 The World of the Living

Living and Non-Living

6

Exercise

Section 1 : Formative Assessment (CCE Pattern)

A. Answer the following questions orally :

- Ans.** 1. Natural things exist in three states. They are living, non-living or dead. All animals and plants are living things. Biology is the study of these living things.
2. (a) doglungs (b) birdlungs (c) snakeskin (d) fishgills
3. None-living can not reproduce, breathe, intake food and grow.

B. Multiple Choice Questions (MCQs) :

Tick (✓) the correct answers :

- Ans.** 1. (a) 2. (c) 3. (b) 4. (c)

C. Fill in the blanks :

- Ans.** 1. All living and non-living things have **mass** and occupy **space**.
2. **Molecules** are the structural units of non-living.
3. Organisms whose body is made up of many cells are called **multicellular** organisms.
4. The organisms reaction to the stimulus is called **response** organisms.
5. Small openings present in leaves are called **stomata**.
6. **Food** is the primary need of all organisms.

D. Write True or False for the following statements :

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

E. Tick the odd one out giving reason :

- Ans.** 1. Dog, Lizard, Chair, Lotus
2. Excretion, Microscope, Respiration, Reproduction
3. Rose plant, Amoeba, Yeast, Paramecium
4. Urine, Latex, Gum

5. Baby, Child, Man, Seedling
6. Potato, Pea, Gram, Mango

Section 2 : Summative Assessment (CCE Pattern)

F. Define the following terms :

- Ans.**
1. Cell : It is the structural (and functional) unit of a living thing
 2. Autotrophs : These are the living things that make their own food.
 3. Excretion : All living organisms get rid of the waste and other harmful substances formed in their bodies. This process is called excretion.
 4. Growth : Growth is defined as a permanent irreversible increase in the size of an organism. All living things show growth.
 5. Reproduction : All living things have the ability to produce more of their own kind. The ability to produce young ones of their kind is called reproduction. Reproduction is necessary for living things to survive generation after generation.

G. Answer the following questions in short :

- Ans.**
1. All living and non-living things are made up of matter. You have already read that matter occupies space and has mass. Thus, all living and non-living things have mass and occupy space. Another common feature between living and non-living things is that they are made up of structural units.
 2. Each kind of organism (dog, cat, pig and goat) has many individuals which are similar to each other. These individuals may differ slightly but their form, habit and behaviour are almost the same. Such a group of similar living organisms is known as a species. The members of a species have similar body parts, live in the same habitat, eat the same kind of food and reproduce among themselves.
 3. Living things respond to stimuli. Let us consider the following examples:
You move your foot if you suddenly step on a thorn or a sharp stone while walking barefoot.
You shut your eyes when you move from a dark place into bright sunlight.
When you see your favourite food, saliva forms in your mouth.
If your hand touches a hot object, you at once withdraw your hand.
In these examples, different stimuli are present. For example, a thorn or a sharp stone, bright sunlight, favourite food and the hot object are all stimuli. These stimuli make us respond to the changes. How do we respond in the above cases? We immediately withdraw our foot, shut our eyes, start producing saliva or withdraw our hand, depending upon the stimulus.
 4. Oxygen is the primary need of all organisms. The oxygen combines with the food that you digest and produces energy. We need energy to stay alive. The movement of your arms and legs, the blinking of your eyes and the beathing of your heart uses energy. You use energy when you read a

book, when you think and when you eat. All land animals breathe in oxygen from the air. Fish breathe the oxygen dissolved in water.

5. The structural unit of a living thing is the cell. Cells vary in size and shape. There are different kinds of cells in the body of a living thing. Cells can be seen under a microscope.
6. The growth in living things is internal. It takes place due to the formation of new body material from the food taken in by the organism.
Non-living objects like crystals or stones can also grow or show increase in size. The growth in non-living things is external. It takes place due to addition of similar material to their outer surface. Such external growth is reversible i.e. the particles deposited can as well be removed.
7. The mode of reproduction varies in different animals. Some animals produce their young ones through eggs, as you find in birds. Many birds lay their eggs in the nest. The eggs, on hatching, produce young birds. Some animals give birth to young ones, as seen in cows, cats, and humans.
Like animals, plants also reproduce by different modes. Some of the modes are :
through seeds, as in pea, gram, mango.
through stem cuttings, as in henna and rose
through stem pieces containing a bud, as in potato.
8. Autotrophs are the living things which make their own food like green plants. Heterotrophs are the living things that depend on other living things for food like, human and other animals. So, we are heterotrophs.

H. Answer the following questions in detail :

- Ans.**
1. All living and non-living things are made up of matter. You have already read that matter occupies space and has mass. Thus, all living and non-living things have mass and occupy space. Another common feature between living and non-living things is that they are made up of structural units. A non-living thing like a chalk can be broken into smaller and smaller particles until you get the smallest piece of chalk. You have read that a molecule is the smallest unit of matter. So a molecule is the structural unit of chalk. Thus, molecules are the structural units of non-living things. The structural unit of a living thing is the cell. Cells vary in size and shape. There are different kinds of cells in the body of a living thing. Cells can be seen under a microscope.
 2. Growth is defined as a permanent irreversible increase in the size of an organism. All living things show growth. For example, a baby grows into a child, a child into a boy and a boy into a man. A seedling grows into a tree.
The growth in living things is internal. It takes place due to the formation of new body material from the food taken in by the organism.
Non-living objects like crystals or stones can also grow or show increase

in size. The growth in non-living things is external. It takes place due to addition of similar material to their outer surface. Such external growth is reversible i.e. the particles deposited can as well be removed.

Animals stop growing after they have reached a certain size, whereas plants continue to grow throughout their life.

3. Living things grow, have definite lifespans, reproduce, respond to stimuli, need food, excrete, respire, and are made up of cells.
Living things exhibit great variety in shape, size, kind of food they eat, kind of homes and places they live in, and in their habits.
- 4.

Section III : Activities Assessment (CCE Pattern)

Do yourself

Unit - 3 The World of the Living

Plants : Form and Function

7

Exercise

Section 1 : Formative Assessment (CCE Pattern)

A. Answer the following questions orally :

- Ans.**
1. Trees, shrubs and herbs are the three groups in which the most of the plants can be classified.
 2. In most of the desert plants, the leaves get modified into spines. These pointed structures protect the plants from their enemies. Example: Prickly pear, Opuntia (cacti).
 3. Tap root is a main root from which a number of branch roots arise. In a fibrous root a number of similarsized roots arise in a cluster below the stem and spread out in the soil.

B. Multiple Choice Questions (MCQs) :

Tick (✓) the correct answers :

- Ans.** 1. (a) 2. (a) 3. (a) 4. (b)

C. Fill in the blanks :

- Ans.**
1. A plant can be divided into two main parts **root system** and **shoot system**.
 2. **Root** is the main organ of support in a plant.
 3. The stalk by which the leaf lamina is attached to the main stem is called **petiole**.
 4. **Root** provides anchorage to the plant.

washed away easily.

2. **Absorption** : Besides the above mentioned function, roots often have some additional functions too. They absorb water and minerals through root hairs.
3. **Conduction** : They conduct water and minerals absorbed from the soil to the stem.
4. **Prevent soil erosion** : Roots bind the soil particles and thus prevent the soil from soil erosion by wind or water.
5. **Storage of food** : Roots store food in certain plants.

2. Do yourself.

3. The stem conducts water and minerals from the roots to other parts of plant. It also distributes the prepared food to the various parts of the plant.

4. The arrangement of veins in the leaf blade is called venation. Leaf venation may be either reticulate or parallel.

In reticulate venation, veins are arranged in a net-like pattern on both sides of the midrib. This is seen in leaves of plants like pea, petunia, gram, rose and mango.

In parallel venation, veins run parallel to one another. This is seen in leaves of plants like grasses, banana and palms.

5. Do yourself

I. Answer the following questions in detail :

Ans. 1. A leaf consists of two main parts the petiole and the leaf blade or lamina. The flat green portion of the leaf is called the leaf blade or lamina. It is attached to the stem by a narrow, short stalk called the petiole.

If you observe the lamina carefully, you will find that a network of lines is present. The petiole continues in the lamina as a thick vein in the middle. This vein is called the midrib. The midrib branches out as veins to form a network. The veins perform two functions :

- (i) Transport water and food.
- (ii) Provide support to the leaf.

The arrangement of veins in the leaf blade is called venation. Leaf venation may be either reticulate or parallel.

2. Flowers vary in shape, size and colour. But most flowers have the same basic structure, as seen in the figure given below.

A flower, in general, shows four sets of parts arranged in rings or whorls sepals, petals, stamens and pistil (or carpel).

The outermost whorl consists of small, green, leaf-like structures called sepals. Sepals protect the flower in its bud stage (young, unopened condition of a flower).

The inner whorl consists of the petals. These are the most prominent part of a flower and are usually brightly coloured. Large brightly coloured petals can be easily seen in flowers of china-rose and gulmohar.

Petals conduct two important functions :

- (i) They attract pollinators.
- (ii) They make a flower look beautiful.

If we remove the sepals and petals, we can see the next whorl which is that of stamens. These are the male reproductive parts of a flower. Each stamen consists of two parts.

- (i) a thin long stalk called filament, and
- (ii) a knob-like structure at the tip of the filament called anther. The anther produces male gametes in large numbers.

The innermost part of a flower is called the pistil or carpel. It is the female reproductive part of a flower.

Each pistil consists of three parts-ovary, style and stigma. Ovary is the swollen portion at the base of the pistil. The ovary extends above as a thin long structure called style. The style ends in a knob-like structure at the tip called stigma. The stigma receives the male gametes.

The ovary contains many bead-like structures. These are called ovules. These ovules contain the female gametes. Ovary and ovules finally develop into fruits and seeds respectively. In most plants, all the four whorls are present in a flower. Such flowers are called complete flowers. Examples : petunia, pea, mustard, hibiscus and gulmohar

In some flowers, one or more whorl is missing. Such flowers are called incomplete flowers.

Examples : date palm and mulberry

3. There are several varieties of plants which have different heights, type of stems and branching patterns. Based on these, plants can be grouped into four categories trees, shrubs, herbs and creepers.

Trees

Plants that are tall and have thick, hard, brown stems are called trees. Their stems branch out and spread above the ground, for example, guava tree, neem tree and mango tree.

Shrubs

Plants with hard stems which branch near the surface of the soil are called shrubs. For example, lemon and rose are shrubs.

Herbs

Plants with soft green stems are called herbs. They are generally short in height and have no branches, for example, basil and coriander.

Section III : Activities Assessment (CCE Pattern)

Do yourself