पु•ना International School

Shree Swaminarayan Gurukul, Zundal

CLASS-VI

SUBJECT-SCIENCE

SPECIMEN COPY

SESSION:22-23

Index

Ch-1

Food: Where Does it Come From?

❖ KEY WORDS:

- Ingredients
- Edible
- Nectar
- Sprouted seeds
- Herbivore
- Carnivore
- Omnivore

❖ KEY POINTS TO REMEMBER:

➢ Eating a variety of foods provides a range of different nutrients to the body and promotes good health.

➢ USES OF FOOD IN OUR BODY

- For energy
- for growth
- for body functions
- for wounds healing
- for good health

➢ Main sources of food are plants and animals.
➢ Exception salts and water does not come from plants and animals.
➢ Depending on food habits animals can be classified into Herbivores, Carnivores and Omnivores.

➢ Animals which eat only plants are called **herbivores.** Example: cow, goat, sheep etc.
➢ Animals which eat only animals are called **carnivores**. Example: tiger, lion, etc.
➢ Animals which eat both plants as well as other animals are called **omnivores**. Example: bears, foxes, dogs, etc.
➢ Animals that live on dead and decaying food is called **scavengers.** Example: hyenas, vulture, etc.

❖ Summary

There is a lot of variation in the food eaten in different regions of India.
The main sources of our food are plants and animals.

PLANT SOURCE OF FOOD

(A) parts of the plants as a source of food

1. plant roots are used as food .Ex. Carrot, Turnip, Radish, Beetroot.
2. Plant stems are used as food : Ex. Potato, Coriander and sugarcane.
3. plant leaves are use as food : Ex. spinach, cabbage, onion.
4. flowers from plant are used as food : Ex. Rose, Cauliflower and Bauhinia (kachnar)
5. Fruits on plant are used as food :

- pulpy fruits: grapes, banana, apple
- Nuts and dry fruits : almond, currant (kismis)
- Fruits used as vegetable : Brinjal, tomato, gourd, beans

6. Seeds are used as food :

- Cereals(grains)and seeds : paddy(rice),maize(corn),wheat
- pulses (dal) : Gram(Chana),green gram (mung), pegeon pea.
- Seeds yield oil which is used as food : mustard (sarson),sesame(til),coconut oil.

(B) FOOD THAT COMES FROM ANIMALS

1. MILK;
2. EGGS
3. MEAT FROM ANIMALS
4. FISH,PRAWNS,CRABS
5. HONEY

Main sources of food are plants and animals Main sources of food are plants and animals.

- Animals which eat only plants are called **herbivores.** Example: cow, goat, sheep etc.
- Animals which eat only animals are called **carnivores**. Example: tiger, lion, etc.
- Animals which eat both plants as well as other animals are called **omnivores**. Example: bears, foxes, dogs, etc.

❖ Tick the correct answer:

1. Honeybees are often seen sitting on flowers. Why do they do so?

(a) They like flowers

(b) They lay egg sunflowers

(c) They suck nectar from flower

(d) All of these

Ans: They suck nectar from flower

2. Which part of a mustard plant is edible?

(a) Seeds and flowers

(b) Leaves and flowers

(c) Seeds and leaves

(d) Stem and roots

Ans: Seeds and leaves

3. Which one of the following set comprises only herbivorous animals?

(a) Cow, goat, rabbit, deer

(b) Cow, goat, rabbit, wolf

(c) Wolf ,goat, rabbit ,deer

(d) Cow ,crow, crane, camel

Ans: Cow, goat, rabbit, deer

4. Which of the following is a root vegetable?

(a) Potato

(b) Carrot

(c) Cucumber

(d) Onion

Ans: Carrot

5. Which of the following is a stem vegetable?

(a) Potato

(b) Carrot

(c) Spinach

(d) Onion

Ans: onion

❖ Fill in the blanks:

(a) Tiger is a_____ because it eats only meat.
(b) Deer eats only plant products and so is called_____ .
(c) Parrot eats only_____
(d) The_____ that we drink, which comes from cows, buffaloes and goats is an animal product.
(e) We get sugar from_____ .
(f)Animals which eat both plants and animals are called_____.

(a) Carnivore (b) herbivore (c) plant
(d) milk (e) sugarcane (f) omnivores

❖ State True or False:

1. Honey is prepared by honey bees**.[True]**
2. Human beings are omnivores.**[True]**
3. Sprouted grains give less energy compared to normal grains.**[False]**
4. Tiger, giraffe and yak provide us milk. **[False]**
5. All living beings need food. **[True]**

❖ Short question –answer:

Q1- Define ingredients?
Ans-Ingredients are substances that are combined to make a particular dish.

Q-2What are the two common sources of food items?
Ans-Plants and animals.

Q-3What items are used to prepare cooked rice?
Ans-.Raw rice and water.

Q-4 Do you find that all living beings need the same kind of food?
Ans- No, all living beings do not need same kind of food.

Q-5What do you call the habit of an individual to eat a particular type of food items commonly?
Ans- Food habit.

Q-6 What is honey?
Ans.- Sweet juice collected from flowers is called honey.

Q-7 Name the three products each provided by plants and animals?
Ans: Plants products: Grains, cereals and vegetables
Animal products: Milk, egg and meat

❖ Long question-answer:

Q-1 Do you find that all all living beings need the same kind of food?
Ans- All living beings do not need the same kind of food. We know that different organisms eat different kinds of food. This is because of the differences in their structures, requirements, habitats, etc.

Q-2 Name five plants and their parts that we eat.

Ans:

Brinjal- Fruit
Groundnut- Seed
Potato- Stem
Spinach- Leaves

Beetroot- Roots

Q-3Match the items given in Column A with that in Column B

Column A	**Column B**
Milk, Curd, Paneer, Ghee	**Eat other animals**
Spinach, Cauliflower, carrot	**Eat plants and plant products**
Lions and tigers	**Are vegetables**
Herbivores	**Are all animal products**

Solution:

Column A	**Column B**
Milk, Curd, Paneer, Ghee	Are all animal products
Spinach, Cauliflower, carrot	Are vegetables
Lions and tigers	Eat other animals
Herbivores	Eat plants and plant products

Q-4Why bees store nector in their hives?

Ans- Flowers are not available throughout the year .So bees collect the nector during flowering seasons to survive during cold month sandal so to feed their young ones.

Hots:

1. Suggest any three ways you can think of to avoid wastage of food.
Ans:
Three ways we can avoid wastage of food are :
1) The food that we produce should not get spoilt or eaten away by animals. For this, it should be stored in granaries and silos.
2) In daily uses we should use drying and other preservation techniques to avoid the spoilage of food stuffs.
3) We should avoid cooking more amount of food than required.

2.Does everyone around you get enough Food to eat? If not,why?
Ans:
No, everyone around us does not get enough food to eat. In our country a large population is living below poverty line(BPL). Food is either not available to them and even if food is available, they do not have money to buy enough of it. There are a large number of people suffering from diseases which are a result of their not eating enough.

Q-3 Differentiate between herbivores, carnivores and omnivores. Give two examples each?

Herbivores	Carnivores	Omnivores
Animals which eat only plants, plants part or Plants product are called herbivores. Example Cow, buffalo, Sheep	Animals which eat other Animals are called carnivores. Examples Lion ,tiger	Animals which eat both Plants and animals are Called omnivores. Example Dog, cat, Human beings.

❖ Activity:

1. **Draw and label the different parts of plants.**
2. **Paste the five pictures of herbivores, carnivores and omnivores**

Ch-2
Components of Food

❖ Keywords:

Balanced diet
Beriberi
Carbohydrates
Energy
Fats
Minerals
Nutrients
Proteins
Roughage
Scurvy
Starch
Vitamins

❖ KEY POINTS:

Nutrients: Food substances that provide nourishemt to the body.
The major nutrients in our food are carbohydrates, proteins, fats,
vitamins and minerals. In addition, food also contains dietary fibres and water.
Carbohydrates and fats mainly provide energy to our body.
Carbohydrates : cellulose, starch and sugar.
Carbohydrates: These are energy-giving compounds. There may be simple carbohydrates or complex carbohydrates.
Sources of fats : animal fats and vegetable fats.
Fats: These are very high energy-giving compounds compounds.They produce greater amount of energy than carbohydrates.
Carbohydrates and fats are Energy giving food.
Minerals: These are elements required by the body in small amounts. It is essential for growth and development of bones, teeth and red blood cells.**Proteins:** These are body-building foods. They help in growth of thebody.

Vitamins: These are organic substances that protect the body from diseases.
Roughage: It is the dietary fibre present in the food. It facilitates regular movement of the bowels and prevents constipation.
Dietary fibre and water are not food.
Balanced diet: It provides all the nutrients that our body needs, in right quantities, along with adequate amount of roughage and water.
Deficiency Diseases: These are the diseases cause due to the lack of required nutrients for a long period in the diet.

❖ SUMMARY

- The major nutrients in our food are carbohydrates, proteins, fats, vitamins and minerals.
- In addition, food also contains dietary fibres and water. Carbohydrates and fats mainly provide energy to our body.
- Proteins and minerals are needed for the growth and the maintenance of our body
- Vitamins help in protecting our body against diseases
- Balanced diet provides all the nutrients that our body needs, in right quantities, along with adequate amount of roughage and water.
- Deficiency of one or more nutrients in our food for a long time may cause certain diseases or disorders.

Some Nutrients Deficiency Diseases are:

1. **Protein:** - Stunted growth, thinning of legs, protruding belly.
2. **Protein and Carbohydrates** – Complete/partial arrest of growth, lack of energy.
3. **Vitamin D and calcium : Rickets –** Bowed legs, bent spine, deformed bones are joints.
4. **Vitamin C: Scurvy** – Bleeding and swelling of gums, weakness.
5. **Iodine: Goitre** – Enlargement of thyroid gland, retarded growth.
6. **Iron – Anaemia** – Fatigue, loss of appetite, pale skin.
7. **Vitamin K : -Bleeding disease-** delay in blood clotting leads to excess bleeding.
8. **Beri-beri : - Vitamin B_1** . weakness in muscles, little energy to do work, paralysis
9. **Night blindness - Vitamin A** - No vision at night or in dim light.

❖ Tick the correct one:

Q-1: Which one of the following food items does not provide dietary fibre?

(a) Fruits and vegetables
(b) Milk
(c) Whole grains
(d) Whole pulses

Ans : Milk

Q-2 A component which found in our food as "Starch" That is a form of

a) Carbohydrates
b) Protein
c) Fat
d) Vitamin

Ans: Carbohydrate

Q-3 Rickets is caused by the deficiency of

a) Vitamin-A
b) Vitamin-B1
c) Vitamin-C
d) Vitamin-D

Ans: Vitamin – D

Q-4 A component which is needed for the growth and repair of our body is

a) Carbohydrate
b) Protein
c) Fat
d) Vitamin

Ans: Protein

Q-5The essential components of our food are called

a) Roughage
b) Nutrients
c) Minerals
d) Vitamins

Ans: Nutrients

Fill in the blanks:

(a) **Rickets** is caused by deficiency of Vitamin D.

(b) Deficiency of **VitaminB1** causes disease known as beri-beri.

(c) Deficiency of Vitamin C causes a disease known as **Scurvey .**

(d) Night blindness is caused due to deficiency of **Vitamin A** in our food.

(e)**Vitamin D** thev it a min that our body prepares in the presence of sunlight.

(F)Deficiency diseases can be prevented by taking a **Balanced diet**

(g)Eating too much of fat –rich foods may lead to a condition called **Obesity**.

❖ State true or false

(a) By eating rice alone ,we can fulfil nutritional requirement of our body .**F**

(b) Deficiency diseases can be prevented by eating a balanced diet .**T**

(c) Balanced diet for the body should contain a variety of food items **.T**

(d) Metal one is sufficient to provide all nutrients to the body**. F**

(e) Lacks of nutrients in our diet over a long period cause deficiency diseases. [**True**]

(f) A food items may contain more than one nutrients.[**True**]

❖ Name the following:

(a) The nutrients which mainly give energy to our body.

(b) The nutrients that are needed for the growth and maintenance of our body.

(c) A vitamin required for maintaining good eyesight.

(d) A mineral that is required for keeping our bones healthy.

Solution:

a) Carbohydrates

b) Proteins and minerals

c) Vitamin A

d) Calcium

❖ Short question-answer:

Q-1 What is the main function of roughage?
Ans: The main function of roughage is to help our body get rid of undigested food.

Q-2 Why should a meal have different food items?
Ans: A meal should have different food items because our body needs different kinds of nutrients for proper functioning

Q-3What is obesity?
Ans: When a person eats too much fat-containing foods, then the fat gets deposited in his body and he may end up suffering from a condition called obesity.

Q-4Write the functions of water in our body.
Ans: Water helps our body to absorb nutrients from the food. It also helps in removing the waste from the body in the form of urine and sweat.

Q-5 Name major nutrients in our body?
Ans: Carbohydrate, Fats, proteins, Vitamins, roughage and water are essential nutrients for our body.

Q-6. Name two foods each rich in:

(a) Fats

(b) Starch

(c) Dietary fiber

(d) Protein

Solution:

a) Cream, Butter

b) Rice, Wheat

c) Whole grains, raw vegetables

d) Milk, Soya bean

❖ Long Question answer:

Q-1What is a balanced diet? Write the components of balanced diet.
Ans: A diet which provides the right proportion of all the nutrients that our body needs along with roughage and water is called balanced diet. The various components of balanced diet are carbohydrates ,fats, proteins, vitamins, minerals, roughage and water.

Q-2 Water does not provide nutrients, yet it is an important components of food . Explains.

Ans:1) Water helps our organs to absorb nutrients from food.

2) Water helps in the removal of wastes in the form of urine ans sweat.

3) Water helps our body in maintaing Temperature.

Q-3What are nutrients ?Name major nutrients with examples?
Ans: The components of food which are needed by our body for growth and development are called nutrients. The major nutrients are:

(i) Carbohydrates-Potato ,wheat ,rice
(ii) Fats-Nuts, Eggs, milk ,ghee
(iii) Proteins- pulses, meat, paneer ,milk
(iv) Vitamins-Carrot ,Guava, orange. chillies
(v) Minerals-Banana, milk, spinach

Q-4 Name any 3 vitamins ,there sources and deficiency disease caused by the them.

Vitamin	**Sources**	**Deficiency disease**
Vitamin A	Green leafy vegetables, fruits	Night blindness/loss of vision
VitaminB1	Whole grains, eggs	Beri-Beri
Vitamin C	Citrus fruit, Peppers, strawberries	Scurvy
Vitamin D	Egg yolk, spinach ,sunlight, mushrooms	Rickets

Hots:

Q-1

Boojho was having difficulty in seeing things in dim light. The doctor tested his eyesight and prescribed a particular vitamin supplement. He also advised him to include a few food items in his diet.

a. **Which deficiency disease is he suffering from?**
b. **Which food component may be lacking in his diet**
c. **Suggest some food items that he should include in his diet. (any four)**

Ans. a. Boojho is suffering from a disease known as night blindness.

b. Absence or minimum amount of vitamin A in the body causes night blindness.
c. He should eat papaya. carrot, green leafy vegetables like spinach, fish oil, etc.

Q-2Tasty food is not always nutritious and nutritious food may not always be tasty to eat. Comment with examples.

Sol. Foods Like burgers, potato chips, Pizza are delicious but are not nutritious. These contain a lot of refined flour, oil, and spices that are not good for the liver. Whereas food like boiled vegetables, juices pulses, etc. are not always tasty but they are highly rich in nutrients like vitamins and proteins that keep us healthy.

Activity:

1. Paste the pictures of carbohydrates, fats and proteins sources.
2. Prepare a chart on diseases/ disorders caused by deficiency of vitamins and minerals.

CHAPTER-3
Fiber to Fabric

❖ Key words:

- Cotton wool
- Fabric
- Fibre
- Knitting
- Spinning
- Weaving
- Yarn
- Ginning

❖ Key points to remember :

FIBRE : Fibre is a fine thread-like filament.

There are two types of fibres:
(a) Natural Fibres: The fibres which are obtained from plants and animals.
Example :cotton ,jute, silk and wool.
(b) Synthetic Fibres :are made from chemicals substance. Synthetic fibres are man made fibre. They are also called artificial fibers.
Examples rayon, nylon, polyester, etc.

Fibres from plant sources:
1. Cotton: cotton comes from cotton ant .Both ,plant and the fibre are called cotton. Cotton is grown in black soil and warm climate.
2.Jute: jute is obtained from stem of jute plant.

PROCESSING OF COTTON FIBRE
1. Ginning:-Removal of seeds from fibre.
2. Spinning:-drawing yarn thread from cotton fibre.
3. Weaving:-making cloth or fabric from yarn.

PROCESSING OF JUTE
1. Retting of plant:-After harvesting the jute plants(stalks) are retted(soaked)in water for 10 to15 days or more. Rettings often the rest of the stem tissues other than fibres.
2. Stripping:-The stalks are stripped to bring out the fibres. This is done by hand.
3. Washing and drying:-The stripped fibres are washed and dried in sun.
Fibres from **animal** sources:
(a) Wool: wool cloth Is spun from yarn made from the fibres of the thick fleece of sheep.
(b)Silk: silk thred is obtained from the saliva of an insect called silkworm.
Making Fabric from Yarn: It is done by two processes:
(a) Weaving: The process by two sets of yarns are arranged together to form fabric. It is done

on looms.
weaving involves placing two sets of threads or yarn made of fibre, called
the **warp** and **weft** of the loom.
The **warps** are drawn tight in parallel order, with the **weft** being interplaced at right angles to the warps.
(b) Knitting: The process by which a single yarn is used to make fabric. It is done by hand or machines.

❖ Summary:

- There is a variety of clothing material or fabric, such as, cotton, silk, wool and polyester.
- Fabrics are made from yarns, which in turn are made from fibres.
- Fibres are either natural or synthetic. Cotton, wool, silk and jute are some natural fibres, while nylon and polyester are some examples of synthetic fibres.
- Fibres like cotton and jute are obtained from plants.
- The process of making yarn from fibres is called spinning.
- Fabric from yarns is made by weaving and knitting.

❖ Tick the correct one:

Q-1:Boojho went to a cloth shop. There he found a fabric, which was smooth to touch, had vibrant colour and shine. The fabric could be .

a) Silk
b) Jute
c) Cotton
d) Wool

Ans:Silk

Q-2: Which part of jute plant is used to obtain jute fibre.

(a)Seed
(b)Flower
(c)Stem
(d)fruit
Ans: stem

Q-3 Yarn is woven to get fabric using

a) Knighting needle
b) Looms
c) Charkha
d) Spinning machines

Ans: Looms

Q-4The correct sequence to get cloth is

a) Fabric→Yarn→Fibre
b) Yarn→Fibre→fabric
c) Fibre→Fabric→yarn
d) Fibre→Yarn→fabric

Ans: Fibre→Yarn→fabric

Q-5Cotton fibres are separated from

(a) cotton balls
(b) cotton boils
(c) cotton bales
(d) all of these

Ans: cotton balls

Q-6 Which one of the following is a synthetic fibre?

(a) Nylon
(b) Rayon
(c) Polyester
(d) All of these

Ans: All of these

Q-7Which of the following is a plant fibre?

(a) Wool
(b) Silk
(c) Cotton
(d) Nylon

Ans: Cotton

Q-8 Which type of soil is suitable for growing cotton?

(a) Red soil
(b) Yellow soil
(c) Black soil
(d) Brown soil

Ans:Black soil

Q-9 Silk is obtained from an insect called

(a) silkmoth
(b) leech
(c) earthworm
(d) none of these

Ans: Silkmoth

Q-10 Which of the following is not a natural fibre?

(a) Cotton
(b) Nylon
(c) Flax
(d) Wool

Ans: Nylon

❖ **Fill in the blanks:**

1. Plant fibres are obtained from **cotton** and **Jute plants .**
2. Animal fibres are **Silk** and **Wool**.

3.Fibres are of two types **natural** and **Synthetic**.
4.Separation of cotton fibre from its seeds is known as **ginning.**
5.Cotton plants need **Warm** climate to grow.
6.The process of making yarn from fibres is called **Spinning.**
7.When a single yarn is used , the fabric is prepared by **Knitting.**
8.Fibres are converted into **yarns** to make fabrics.

Q.2. State whether the following statements are 'true' or false':

(a) Yam is made from fibres.
(b) Spinning is a process of making fibres.
(c) Jute is the outer covering of coconut.
(d) The process of removing seeds from cotton is called ginning.
(d) Weaving of yam makes a piece of fabric.
(e) Silk fibre is obtained from the stem of a plant.
(g) Polyester is a natural fibre.
Ans.
(a) True
(b) False
(c) False
(d) True
(e) True
(f) False
(g) False

❖ Short question-answer:

Q.1. Classify the following fibres as natural or synthetic: nylon, wool, cotton, silk, polyester, jute.
Ans. Natural fibres: wool, cotton, jute, silk.
Synthetic fibres: nylon, polyester.

Q.2 . From which part of the plant cotton and jute are obtained?
Ans.(i) Cotton – Cotton bolls (from the surface of cotton seeds) (fruit)
(ii) Jute – Stem

Q.3. Name two items that are made from coconut fibre.
Ans.(i)Bags
(ii) Rope

Q.4. Explain the process of making yam from fibre.
Ans. Yarns are made up of thin strands called fibres. The process of making yam from fibres is called spinning. In this process, a mass of cotton wool are drawn out and twisted. This brings the fibres together to form yarn.

Q-5.:Which Fibres we get from animal sources:
(a) Wool: wool cloth is spun from yarn made from the fibres of the thick fleece of sheep. Yarn made from the fibre of the thick fleece of sheep.

(b) Silk: silk thread is obtained from the saliva of an insect called silkworm.

Q-6 What are natural fibres?
Ans: The fibres obtained from plants and animals that can be spun into filament, thread or rope are termed as 'natural fibre'

Q-7 What is retting?
Ans: The plant stems are soaked in water to remove the sticky materials and separate the fibres in this process.

Q-8 Name two uses of cotton?
Ans: It is used to make bed sheets, curtains, saris, pillows etc…..

❖ Long Question answer:

Q-1: Explain the Processing of cotton fibre.

1. Ginning :- Removal of seeds from fibre.
2. Spinning:-drawing yarn thread from cotton fibre.
3. Weaving:-making cloth or fabric from yarn.

Q-2: Explain the processing of jute.

1. Retting of plant:-After harvesting the jute plants (stalks) are retted (soaked) in water for 10 to15 days or more rettings often the rest of the stem tissues other than fibres.

2. Stripping:-The stalks are stripped to bring out the fibres. This is done by hand.

3 .washing and drying:-The stripped fibres are washed and dried in sun.

Q-3: Explain the Processing of wool:

It involves four steps:

1. Shearing: The process of removal of wool from the sheep's skin.
2. Grading: The process of separating fleece from damaged wool.
3. Carding: The process after the wool has been washed and dried, it is passed through the rollers (that have teeth).
4. Spinning: The process by which fibres are gathered together and drawn into along rope and then twisted to make yarn.

Q-4: Explain Making Fabric from Yarn:

It is done by two processes:

(a) Weaving: The process by two sets of yarns are arranged together to form fabric. It is done on looms .weaving involves placing two sets of threads or yarn made of fibre ,called the warp and weft of the loom .The warps are drawn tight in parallel order ,with the weft being interplaced at right angles to the warps.

(b) Knitting :The process by which a single yarn is used to make fabric .It is done by hand or machines.

❖ Hots:

Q-1 A cotton shirt, before it reaches you, completes a long journey. Elaborate on this journey starting from cotton bolls.

Ans: The journey starting from cotton bolls to a cotton shirt is as follows:

i. **Picking:** Cotton bolls burst open after maturing. The seeds covered with cotton fibres are handpicked from the cotton bolls.
ii. **Ginning:** The process of separating the seeds from fibres by combing is called ginning. These days ginning is done with the help of machines.
iii. **Spinning:** In spinning, fibres from a mass of cotton wool are drawn out and twisted. This brings the fibres together to make a strong yarn. Spinning is done with the help of hand-operated devices such as charkha or by using spinning machines.
iv. **Weaving and knitting:** Weaving and knitting are the two methods of converting cotton yam into cotton fabric. A cotton shirt is usually made by weaving. In weaving, two sets of yarns are arranged together to make a fabric.
v. **Stitching:** The cotton fabric is then stitched into a cotton shirt.

Q-2 What is silk and how is it made?
Ans: Silk is made by the silkworm. The silk moth's cocoons are used to make silk fibre. Silk moths have four phases in their life cycle: eggs, larva, pupa, and adult. Caterpillar is the larval stage of the silk moth. Its salivary gland secretes fibroin, a sticky fluid. A lengthy thread of sticky fluid forms. The caterpillar's body is then wrapped in this thread, forming a cocoon. The larva develops into a pupa, which eventually develops into an adult moth. Silk is a pricey material. The silk fibre is used to weave cloth, particularly traditional Indian outfits such as saris, kurtas, shawls, and other bridal attire. Silk has traditionally been appreciated for its lustrous sheen and superior quality.

❖ Activity

- **Do you know that famous sulfi saint and poet kabir, was a weaver ,Find out about his life and teaching.**
- **Prepare a chart of charkha and takli with pictured. You can also take help of internet.**

CHAPTER–4
Sorting Material into Groups

❖ Key words:

Hard
Insoluble
Lustre
Materials
Metals
Opaque
Rough
Soluble
Transparent
Translucent

❖ Key points to remember:

Matter : Anything that occupies space and has mass is called matter. Objects around us are made up of a large variety of materials.

Material : A material is a substance which is used for making things.

A given material could be used to make a large number of objects. It is also possible that an object could be made of a single material or of many different types of materials.

GENERAL PRPERTIES OF MATRIAL

(A) Appearance : shine (lustre) or Roughness (non- lustrous)

- All metals are **lustrous** , some are more and some are less.
- wood, rubber or a piece of rock is **non-lustrous.**

(B) .Hardness ; Hard and soft

- Rocks, iron and many metals are **hard**.
- Hard materials may be :

1. **Brittle** ;- Which break into smaller pieces or are powdered when hammered, ex. rock, glass, salt.
2. **Malleable :** which spread into sheets when beaten . metals are malleable.
3. **Ductile** :- they can be drawn into thin and long wires. metals are ductile.

- materials like wood, rubber and fibres are **soft**.

(C) Thorough visibility :-

- Transparent: - object through which light may pass .ex. glass some plastics , sugar and salt solution in water.
- Translucent :- object through which light may pass partially .ex. milky glass, milk.
- Opaque :_ object through which light does not pass .ex. wood, metals, rock, wall

(D) Good and bad conductor of electricity :-

- material through which electric current can pass easily are the good conductors of electricity. metals are good conductors of electricity.
- wood, plastic ,rubber, cork and certain materials are bad conductors of electricity. electric current does not pass through them.

(E) SOLUBILITY OF A SUBSTANCES IN WATER.

- The substances like salt and sugar , which disappear in water , are said to be **soluble.**
- The substances which remain as such and do not disappear in water are said to be **insoluble** in water.

(F) Miscible and Immiscible Liquid:-

- when two liquids are mixed and they do not mixed well, they are said to be **immiscible**.
- The liquids which mix well with water are said to be **miscible.**

❖ Summary

- Objects around us are made up of a large variety of materials.
- A given material could be used to make a large number of objects. It is also possible that an object could be made of a single material or of many different types of materials.
- Different types of materials have different properties.
- Some materials are shiny in appearance while others are not. Some are rough, some smooth. Similarly, some materials are hard, whereas some others are soft.
- Some materials are soluble in water whereas some others are insoluble.
- Some materials such as glass, are transparent and some others such as wood and metals are opaque. Some materials are translucent.
- Materials are grouped together on the basis of similarities and differences in their properties.
- Things are grouped together for convenience and to study their properties.

❖ Tick the correct one:

Q-1: Which of the following materials is not lustrous?
(a)Wood (b) Silver (c)Gold (d)Diamond
Ans : Wood

Q-2: Find the odd one out from the following.

(a)Eraser (b)Tawa (c)Pressure cooker (d)Spade
Ans: Eraser

Q-3:Anything that has a mass and occupies space is called
(a)Classification (b)Volume (c)Matter (d)Air
Ans: Matter

Q-4: Which of the following has a fixed shape?
(a)Iron (b)Oxygen (c)Milk (d)Co2

Q-5:The process of grouping the things on the basis of similar properties is called
(a) roughness
(b) classification
(c) matter
(d) arrangement
Ans: Classification

Q-6:Transparent materials allow the light to pass through them
(a) partially
(b) completely
(c) sometimes only
(d) not at all
Ans: Completely

Q-7Which of the following is transparent?
(a) Wood
(b) Stone
(c) Glass
(d) both (a) and (b)
Ans: Glass

Q-8:Which of the following is soluble in water?
(a) Salt
(b) Sand
(c) Chalk powder
(d) None of these
Ans: Salt

❖ Fill in the blanks:

1. Classification is done on the basis of some **Similarities** and **differences.**
2. A liquid changes its **shape** on changing the container.
3. The object through which we can see is known as **transparent** object.
4. Sand is **insoluble** in water.
5. **Opaque** substances are those through which we can't see anything.

6. Those materials which cannot be easily compressed, cut, bent or scratched are called **hard** materials.

❖ State True or False

(i) Stone is transparent, while glass is opaque.

(ii) A notebook has lustre while eraser does not.

(iii) Chalk dissolves in water.

(iv) A piece of wood floats on water.

(v) Sugar does not dissolve in water.

(vi) Oil mixes with water.

(vii) Sand settles down in water.

(viii) Vinegar dissolves in water.

Solution:

i) False

ii)False

iii) False

iv) True

v) False

vi) False

vii) True

viii) True

❖ Short question answer:

Q-1. Name five objects which can be made from wood.

Solution: a) Table

b) Chair

c) Doors

d) Desk

e) Box

Q-2. Select those objects from the following which shine: Glass bowl, plastic toy, steel spoon, cotton shirt

Solution:

Glass bowl and steel spoon are the objects which shine

Q-3. Given below are the names of some objects and materials:

Water, basket ball, orange, sugar, globe, apple and earthen pitcher. Group them as:

(a) Round shaped and other shapes (b) Eatables and non eatables

Solution:

(a) Round shaped – Basketball, Orange, Globe, Apple, Earthen pitcher

Other shapes – Water, Sugar

(b) Eatables – Water, Orange, Sugar, Apple

Non eatables – Basketball, Globe, Earthen pitcher

Q-4. List all items known to you that float on water. Check and see if they will float on an oil or kerosene.

Solution:

Few items that float on water are as follows:

1. Sponge's piece
2. Plastic bottle
3. Paper's piece
4. Thermocol's piece
5. Wood
6. Plastic ball
7. Cork

However, these items will not float on an oil or kerosene

Q-5. Find the odd one out from the following:

a) Chair, Bed, Table, Baby, Cupboard

b) Rose, Jasmine, Boat, Marigold, Lotus

c) Aluminium, Iron, Copper, Silver, Sand

d) Sugar, Salt, Sand, Copper sulphate

Solution:

a) Baby – others are made up of wood

b) Boat – others are flowers

c) Sand – others are metals

d) Sand – others are soluble in water

Q-6 It was Paheli's birthday. Her grandmother gave her two gifts made of metals, one old dull silver spoon and a pair of lustrous gold earrings. She was surprised to see the difference in the appearance of the two metals. Can you explain the reason for this difference?

Ans.The silver spoon was old due to which it lost its shine and luster on exposure to

moist air for along time .But gold remain sun affected by the presence of moist air and hence does not tarnish.

Q-7 Mixtures of red chilli powder in water ,butter in water, petrol in water,and honey in water were given to Radha, Sudha ,Sofia and Raveena ,respectively .Whose mixture is in solution form?

Ans. Raveena has got a solution because honey is completely soluble in water and hence gets easily dissolved in it and forms a pure solution.

Q-8 On a bright sunny day, Shikha was playing hide and seek with her brother. She hid herself behind a glass door. Do you think her brother will be able to locate her. If yes, why? If no, why not?

Ans.Yes, her brother would be able to locate her because glass is either transparent or translucent and hence things can either be easily or partially seen through it.

Q-9 Take a small cotton ball and place it in a tumbler /bowl filled with water .Observe it for atleast 10 minutes. Will it float or sink in water and why?

Ans .Cotton has air trapped in between its fibres when it is dry and hence floats in water. But when it absorbs water the gap occupied by air gets filled with water which increases its density and makes it heavier. As a result, the cotton ball sinks in water.

❖ Long question-answer:

1. **Metals have lustre (shine). Give reason why some metal articles become dull and loose their shine.**
   Ans: Metals when exposed to air react with moisture and gases present in it, thereby forming a dull layer of some other compound on it.
2. **Why is a tumbler not made with a piece of cloth?**
   Ans: We use tumblers made of glass, plastic and metal to keep a liquid. These substances can hold a liquid.
   A tumbler made of cloth cannot hold a liquid because:
   (i) Cloth piece is not hard enough to hold liquids and
   (ii) Cloth piece has very minute pores through which the'liquid oozes out.
3. **Why do we need to group materials?**

Ans: Dividing materials into groups make it easy to study their properties. It also helps to observe any pattern in these properties. For example: by placing similar types of objects together, we can locate them easily.

Ch.5

Separation of Substances

❖ Keywords:

- Churning
- Condensation
- Decantation
- Evaporation
- Filtration
- Handpicking
- Saturated solution
- Sedimentation
- Sieving
- Solution
- Threshing
- Winnowing

❖ Key points:

- **Pure Substances** : substances which contain only one kind of particles .
- **Impure Substances** : substances which contain more than one kind of particles .
- **Element :** A substance made from identical particles of one material.
- **Compound:** A substance formed as a result of chemical combination of two or more elements in a fixed ratio.
- A solution is a mixture of two substances. the substance in larger quantity is the solvent and the other is the solute.
- Elements and compounds are pure substances.
- **Threshing**: The process of separating grain from husk or chaff is called threshing.
- **Chaff : pieces of straw ; waste material of agriculture processes.**
- **Winnowing**: The process of separation of heavier and lighter components of a mixture by wind or blowing air.
- **Hand-picking**: The process by which undesirable components are just picked up by hand.
- **Sieving**: The process by which separate solid constituents of a mixture which differ in their sizes.
- A **sieve** is a device with many small holes in it , which allow the smaller particles to pass through.
- **Magnetic separation**: Process by which magnet is moved over such a mixture, the magnetic material sticks to it and is removed.
- **Evaporation**: Process by which the conversion of liquid state into gaseous state on heating.
  Condensation: Process by which conversion of gaseous state into liquid state on cooling.

- **Sedimentation**: The process of settling down of heavier and insoluble component from mixture is called sedimentation.. Example: sand, water.
- **Decantation**: The process of transferring clean liquid without disturbing the sediment, is called decantation.
- **Loading**: The methods by which finer particles are made to settle faster by dissolving a small quantity of alum.
- **Filtration**: In this process the impurities are passed through a filter. The filter has pores in it that allow only liquids to pass through ; it can separate the suspended particles or solid particles

❖ Summary

- Handpicking, winnowing, sieving, sedimentation, decantation and filtration are some of the methods of separating substances from their mixtures.
- Husk and stones could be separated from grains by handpicking.
- Husk is separated from heavier seeds of grain by winnowing.
- Difference in the size of particles in a mixture is utilised to separate them by the process of sieving and filtration.
- In a mixture of sand and water, the heavier sand particles settle down at the bottom and the water can be separated by decantation.
- Filtration can be used to separate components of a mixture of an insoluble solid and a liquid.
- Evaporation is the process in which a liquid gets converted into its vapour. Evaporation can be used to separate a solid dissolved in a liquid.
- A saturated solution is one in which no more of that substance can be dissolved.
- More of a substance can be dissolved in a solution by heating it.
- Water dissolves different amount of soluble substances in it.

❖ Tick the coreect one:

Question-1 Butter is separated from milk by
(a) sedimentation
(b) filtration
(c) churning
(d) decantation

Ans: churning

Question 2.
Which method is used to separate pebbles and stones from sand?
(a) Handpicking
(b) Winnowing
(c) Sieving
(d) Any of these

Ans: Sieving

Question 3.
The components of a solution (say sugar in water) can be separated by
(a) filtration

(b) evaporation
(c) sedimentation
(d) decantation

Ans: evaporation

Question 4.
Sand from water is separated by
(a) sieving
(b) evaporation
(c) filtration
(d) sedimentation and decantation

Ans: sedimentation and decantation

Question 5
The process of conversion of water vapours into liquid is called
(a) condensation
(b) decantation
(c) sedimentation
(d) evaporation

Ans: condensation

Question 6.
The process of conversion of water into its vapours is called
(a) evaporation
(b) condensation
(c) guttation
(d) transpiration

Ans: evaporation

Question 7.
A mixture of ammonium chloride and sand is separated by
(a) evaporation
(b) decantation
(c) sublimation
(d) filtration

Ans: sublimation

Question 8.
The property which forms the basis of sieving
(a) difference in weight
(b) difference in colour
(c) difference in shape
(d) difference in size

Ans: difference in size

- **Fill in the blanks:**

1. The method of separating seeds of paddy from its stalks is called **threshing**.
2. When milk cooled after boiling is poured onto a piece of cloth, the cream (malai) is left behind on it. This process of separating cream from milk is an example of **filtration**.
3. Salt is obtained from seawater by the process of **evaporation**.
4. Impurities settled at the bottom when muddy water was kept overnight in a bucket. The clear water was then poured off from the top. The process of separation used in this example is called **decantation**.

5. Peanuts are separated from a mixture of wheat and peanut by **hand picking.**
6. **Winnowing** is used to separate husk from wheat.
7. Fine sand can be separated from larger particles by **sieving.**
8. Mixture may be solid, liquid or **gas.**
9. Butter is a component of **butter milk.**
10. Sugarcane juice is a mixture of **sugar** water and many other substances.
11. Separation of components is done to obtain a **pure** substance.
12. Components retain their properties in a **mixture**.

❖ State True or False:

1. A mixture of milk and water can be separated by filtration.[False]
2. A mixture of powdered salt and sugar can be separated by the process of winnowing. [False]
3. Separation of sugar from tea can be done with filtration. [False]
4. Grain and husk can be separated with the process of decantation**.** [False]
5. Condensation method is used for separating substances which on heating change directly into vapour. [False]
6. Butter is separated from butter milk by churning.[True]

❖ Short question answer:

Q-1. What is winnowing? Where is it used?
Ans: Winnowing is used to separate heavier and lighter components of a mixture by wind or by blowing air. This process is used by farmers to separate lighter husk particles from heavier seeds of grain.

Q-2. How will you separate husk or dirt particles from a given sample of pulses before cooking?
Ans: Husk or dirt particles can be separated by winnowing, being lighter they wall fly away from pulses.

Q-3. Is it possible to separate sugar mixed with wheat flour? If yes, how will you do it?
Ans. Sugar can be separated from wheat flour by sieving. Due to difference in the size of particles, sugar will stay on sieve and wheat flour will pass through it.

Q-4 You are given a mixture of salt and sand. Can you separate them by picking?
Ans. No, we cannot separate them by picking.

Q-5. Name the method used to separate the pieces of stone from grain.
Ans. Handpicking.

Q-6. Define the term handpicking.
Ans. The process used to separate slightly larger particles from a mixture by hand is called handpicking. For example: Stone pieces can be separated from wheat or rice by handpicking.

Q-7. How will you separate oil and water from their mixture?
Ans. Oil, being lighter than water, will float on it. Two distinct layers are formed and slowly oil is allowed to flow into another container and is separated from water. Separating funnel can also be used to separate the two.

Q-8. Define condensation.
Ans. The process of conversion of water vapour into liquid form is called condensation.

❖ Long Question Answer

1. **Why do we need to separate different components of a mixture? Give two examples.**
   Ans: Among different components of mixture there are many substances which are harmful or not useful for us. To remove these harmful or unuseful components we need to separate them. For example:
   (a) Tea leaves are separated from the liquid with a strainer while preparing tea.
   (b) Stone pieces from wheat, rice or pulses are picked out by hand.

2. **What is Sieving? Where can it be used?**
   Ans. Sieving is a process by which fine particles are separated from bigger particles by using a sieve. It is used in flour mill or at construction sites. In flour mill, impurities like husks and stones are removed from wheat. Pebbles and stones are removed from sand by sieving.

3. **How will you separate sand and water from their mixture?**
   Ans. We will separate sand and water by sedimentation and decantation method. First we leave this mixture for some time. After some time, the sand which is; heavier is settled down at the bottom. After that we wall pour water into another container and the mixture will be separated.

4. **How would you obtain clear water from a sample of muddy water?**
   Ans. We will obtain clear water from a sample of muddy water by the process of filtration.
   A filter paper is one such filter that has very fine pores in it. Figure 5.12(a, b) shows the steps involved in using a filter paper. A filter paper folded in the form of a cone is fixed in a funnel. The mixture is then poured on the filter paper. Solid particles in the mixture do not pass through it and remain on the filter

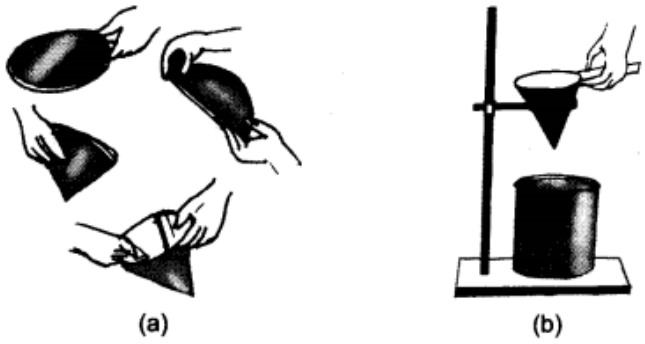


Fig. 5.12 (*a*) Folding a filter paper to make a cone
(*b*) Filtration using a filter paper

5. **What is decantation?**
   Ans. Decantation is a process, of separation of insoluble solids from liquid. The suspension of solid particles in liquid is allowed to stand for some time. The solid particles then settle down at the bottom of the container and clean water goes up. Without disturbing the settled particles the clean water is transferred into other container.

❖ Hots:

Q-1 Describe the method to obtain salt from sea water.

Ans. Sea water contains many salts mixed in it. One of them is common salt, when sea water is allowed to stand in shallow pits, water gets evaporated by sunlight and slowly turns into water vapour. In a few days, the water evaporates completely leaving behind the solid salts. Common salt is then obtained from this mixture of salts by further purification.

Q-2 Lemonade is prepared by mixing lemon juice and sugar in water. You wish to add ice to cool it. Should you add ice to the lemonade before or after dissolving sugar ? In which case would it be possible to dissolve more sugar ?
Ans. We should add ice after dissolving sugar. When the temperature is high then more sugar can be dissolved. After mixing ice it gets cool and less sugar will dissolve in it.

CHAPTER – 6
Changes Around Us

❖ Key Words:

Changes
Contraction
Evaporation
Expansion
Melting

❖ Key Points To Remember:

Types of changes:

(a) Reversible change: A change in which the initial substance can be obtained back by reversing the action. Example: folding of paper, dissolving sugar in water, etc.

(b) Non-irreversible change: Change in which the initial substance cannot be obtained back by reversing the action. Example: burign of paper, grinding grains etc.

(c) Physical change: Changes in the form of substance but not in chemical identity. No new substance formed. Changes is sometimes reversible. Example: breaking a log of wood.

(d) Chemical changes: Changes in which substance is transformed into new substance. Initial substance is lost. Change is always irreversible. Example: burning a log of wood.

Ways by which changes occur:

(a) Boiling and Condensation:

(i) Boiling: The rapid vaporization of a liquid when it is heated to its boiling point.

(ii) Condensation: The change of water vapor into liquid water on cooling.

(b) Heating of metal: Process in which a **metal** is **heated** to a certain temperature and the cooled in a particular manner to alter its internal structure for obtaining desired degree of physical and mechanical properties such as brittleness, hardness, and softness.

(c) Freezing and Melting:

(i) Freezing: The process in which a liquid turns into solid when its temperature is lowered.

(ii) Melting: The process in which a solid converts to a liquid by applying heat.

(d) using pressure to change things

- Air can be compressed by applying pressure.
- pressure may change the shape of the object.

❖ Summary:

- Some changes can be reversed and some can not be reversed.
- A change may occur by heating a substance or by mixing it with some other.

❖ Tick the correct one:

Question 1.Which of the following changes can be reversed?
(a) Raw egg to boiled egg
(b) Wet clothes to dry clothes
(c) Bud to flower
(d) Cow dung to biogas

Ans: Wet clothes to dry clothes

Question 2.Which of the following changes cannot be reversed?
(a) Milk to paneer
(b) Cold milk to hot milk
(c) Yam to knitted sweater
(d) Wet clothes to dry clothes

Ans: Milk to paneer

Question 3 On heating metal rim
(a) expands
(b) contracts
(c) depends how much it is heated
(d) depends as the type of meted

Ans: expands

Question 4.Which is a way to make a change happen?
(a) Heating a substance
(b) Cooling a substance
(c) Mixing a substance with another substance
(d) All of these

Ans: All of these

Question 5.Rusting of iron is an example of
(a) slow change
(b) fast change

(c) reversible change
(d) physical change

Ans: slow change

Question 6.Metal rim is fixed to the wooden cart wheel by
(a) heating metal rim
(b) heating wooden wheel
(c) cooling metal rim
(d) cooling wooden wheel

Ans: heating metal rim

Question 7.Which of the following is not a man-made change?
(a) Change of day and night
(b) Burning of fuels
(c) Drying of clothes
(d) Tearing of paper

Ans: Change of day and night

❖ Fill in the blanks:

1 Generally on heating metals **Expands**
2. Paper, petrol, LPG, CNG etc. are **Inflammable** substances.
3. A change in which new substance is formed is called **Chemical changes**.
4. A change that occurs during a definite time interval is known as **Perodic change.**
5**. Pasteurization** is the process Heating of milk for boiling to kill microbes.
6. Dissolving sugar in water is a **reversible change**..
7. water changes into ice on cooling is an example of **Reversible change .**
8. Those changes which are desired to occur that is we want them to take place are known **Desirables changes**.

❖ State True or False:

(a)Evaporation of water is a reversible change.[T]
(b) Burning of the candle is an irreversible change.[T]
(c) Rusting of iron is a reversible change.[F]
(d) Bursting of cracker is fast change.[T]
(e) Formation of Petrol is a slow change.[T]
(f) Baking of dough into bread is a reversible change.[F]

❖ Short question Answer:

1. To walk through a waterlogged area, you usually shorten the length of your dress by folding it. Can this change be reversed?
Ans: Yes, it can be reversed by unfolding the dress.

2. You accidentally dropped your favourite toy and broke it. This is a change you did not want. Can this change be reversed?
Ans: No, this change (breaking of toy) cannot be reversed.

3. A drawing sheet changes when you draw a picture on it. Can you reverse this change?
Ans: No, we cannot get fresh drawing sheet once a picture is drawn on it with paint/ oil or water. However, we can reverse the change, if soft pencil is used to draw the picture.

4 A thick coating of a paste of Plaster of Paris (POP) is applied over the bandage on a fractured bone. It becomes hard on drying to keep the fractured bone immobilised. Can the change in POP be reversed?
Ans: No, the change in POP cannot be reversed since it is a chemical change.

5. A bag of cement lying in the open gets wet due to rain during the night. The next day the sun shines brightly. Do you think the changes, which have occurred in the cement, could be reversed?
Ans. No, these are irreversible chemical changes.

6. Give two examples of slow changes.
Ans:
(a) Growing of plants
(b) Ripening of fruits.

7. Give two examples of fast changes.
Ans:
(a) Blowing of balloon
(b) Rolling out roti from dough ball.

8. Give two examples of reversible changes.
Ans:
(a) Drying of wet clothes
(b) Heating of milk.

9: Give two examples of irreversible changes.
Ans:
(a) Milk to cheese
(b) Cooking of food.

10. Does the size of the paper change after making an aeroplane by folding it or by cutting it?
Ans: Yes

❖ Long question Answer:

1. Some changes are listed in the following table. For each change, write in the blank column, whether the change can be reversed or not.

S. No.	Change	Can be reversed (Yes/No)
1.	*The sawing of a piece of wood*	
2.	*The melting of ice candy*	
3.	*Dissolving sugar in water*	
4.	*The cooking of food*	
5.	*The ripening of a mango*	
6.	*Souring of milk*	

Ans. 1. No 2. Yes
3. Yes 4. No
5. No 6. No.

2. Give examples to explain the difference between changes that can or cannot be reversed.

Ans: Examples of reversible and irreversible changes

Reversible changes	*Irreversible changes*
1. Glowing of electric bulb. (It glows when switched on and becomes dark when switched off.)	1. Burning of paper or wood. (It gives smoke and ash, which cannot form paper or wood again).
2. Distillation of liquid: Liquid $\underset{\text{condensation}}{\overset{\text{evaporation}}{\rightleftharpoons}}$ Vapour	2. Rusting of iron. (Rust cannot be changed into iron again.)
3. Sublimation Solid $\underset{\text{cool}}{\overset{\text{heat}}{\rightleftharpoons}}$ Vapour	3. Making of curd from milk.
4. Collapsing of mimosa (touch me not) leaves on touching and opening up on removing the finger.	4. Growth of plants and animals.

3. Why does a blacksmith heat the metal rim to fix it on a cart wheel?

Ans: A blacksmith heats the metal rim to fix it onto a cart wheel because a metal rim is made slightly smaller. On heating, the rim expands and fits onto the wheel. Then on cooling, the rim contracts and fits tightly onto the wheel.

4. How does curd being set? Is this change reversible?

Ans: A small quantity of curd is added to warm milk. The milk is stirred and is set aside undisturbed for a few hours at a warm place. In a few hours, the milk changes into curd. Curd formed from milk cannot be changed into milk again. So, this an irreversible (cannot be reversed) change.

- **Hots:**

Q-1. Can we reverse the following changes? If yes, suggest the name of the method.

a. Water into water vapour
b. Water vapour into water
c. Ice into water
d. Curd into milk

Sol.

a. Water into water vapour - Yes, by condensation water vapour can be converted to water.
b. Water vapour into water - Yes, water can be converted to water vapour by evaporation.
c. lce into water - Yes, water can be converted to ice by freezing.
d. Curd into milk is an irreversible process.

Q-2 Which of the following changes cannot be reversed?

a. Blowing of a balloon
b. Folding a paper to make a toy aeroplane
c. Rolling a ball of dough to make roti
d. Baking cake in an oven
e. Drying a wet cloth
f. Making biogas from cow dung
g. Burning of a candle

Sol.

a. Can be reversed
b. Can be reversed
c. Can be reversed
d. Cannot be reversed
e. Can be reversed
f. Cannot be reversed
g. Cannot be reversed

Therefore, from the given options, the changes which cannot be reversed are (d), (f), and (g).

Ch.7
Getting to know plants

❖ **Keywords:**

- Climbers
- Conduct
- Creepers
- Fibrous roots
- Herbs
- Lamina
- Lateral roots
- Midrib
- Ovule
- Parallel
- Petal
- Petiole
- Photosynthesis
- Pistil
- Reticulate venation
- Sepal
- Shrubs
- Stamen
- Taproot
- Transpiration
- Veins

Key points:

- **Herbs:** Have soft, green and weak stems. Example: rice, wheat, maize, sunflower, mint, etc.
  Shrubs: They are bushy and have hard stems that do not bend easily. These are plants with the stem branching out near the base. Example: lemon, China rose, jasmine, Nerium, etc.
  Trees: These are big plants which have a tall and strong stem (trunk). Stems have branches in the upper part, much above the ground. Live for many years. Example: mango, neem, banyan, coconut, etc.
  Climbers: Have weak stems and cannot stand erect. They take the support of other trees and climb on them. Example: pea, grape, vine, etc.
  Creepers: Plants which creep on the ground and spread out. Example: pumpkin and watermelon.
- **Classification of plants on the basis of their Life Cycle:**
- **Annuals:** Plants whose life cycle is completed in the one season. These are generally herbs. Example: wheat and mustard.
- **Biennials:** Plants whose life cycle requires two seasons for completion. They are generally herbs and rarely shrubs. Example: carrot, radish, and potato.

Perennials: Plants whose life cycle runs for more than two seasons example: guava, Babul, and palm trees.

Parts of a Plants:

Root system: The root and its branches make up the root system of a plant.

- Root is the underground art of a plant body.It is non-green.
- The root grows into the soil and away from the light.

Tap Root: It is formed by the baby root (radicle) which comes out from a germinating seed.

- It is the main primary root arises from the lower end of the stem.
- A number of tiny branches called secondary roots. Example: mustard, neem, rose, etc.

Fibrous Root: A bunch of roots arises from the base of the stem. Example: wheat, maize, etc.

Leaf: A leaf is a flat and green structure on a plant, coming out from a node on the stem and always bearing a bud in its axil.

Parts of leaf:

(a) Petiole: Stalk of the leaf with which it joined to the stem.

(b) Leaf lamina: The flat green portion of the leaf.

(c) Veins: These are the network of small, narrow, tube-like structures on both sides of the midrib present in the middle of the leaf.

- **Pedicel:** Stalk of the flower through which the flower is joined to the branch. It has joined to the branch.
  Sepal: Small green leaf-like structures on the thalamus. They protect the flower.
  Petals: Brightly colored leaf-like structures present inside the sepals. Petals attract the insects and help in the process of reproduction.
  Stamens: These are long, thin and needle-like structures. These are male organs of the flower. It consists of two parts: Anther, Filament.
  Anther: The swollen tip of each stamen that encloses in it a small powdery substance called pollen grains.
  Filament: Long stalk-like structure that joins the anther with thalamus.
- **Carpel:** It is a flask-shaped organ in the center of the flower. It is the female organ of the flower. It consists three parts: Style, Stigma, and Ovary.
  Style: a Long thin tube-like structure which is swollen at the base.
  Stigma: Small, round and sticky part of the carpel at the top of the style the traps the pollen grains.
  Ovary: Swollen part of carpel that contains ovules.
-

  The Bud : A bud is a compact or a condensed shoot. It encloses future stem, nodes and leaves.

❖ Summary

- Plants are usually grouped into herbs, shrubs and trees based on their height, nature of stem and branches.
- The stem bears leaves, flowers and fruits.
- Leaf usually has a petiole and lamina.
- The pattern of veins on the leaf is called venation. It can be reticulate or parallel.
- Leaves give out water vapour through the process of transpiration.

- Green leaves make their food by the process of photosynthesis using carbon dioxide and water in the presence of sunlight.
- Roots absorb water and minerals from the soil. They also anchor the plant firmly in the soil.
- Roots are mainly of two types: tap root and fibrous root.
- Plants having leaves with reticulate venation have tap roots while plants having leaves with parallel venation have fibrous roots.
- The stem conducts water from roots to the leaves (and other parts) and food from leaves to other parts of the plant.
- The parts of a flower are sepals, petals, stamens and pistil.

❖ Tick the correct one:

Q-1 Which is an example of a shrub?
(a) Spinach
(b) Mango tree
(c) Tomato plant
(d) Lemon
Ans: Lemon

Q-2 Which of the following type of plants has thick, hard and woody stem?
(a) Tree
(b) Shrub
(c) Herb
(d) All of these
Ans: Tree

Q-3Which is not a part of a leaf?
(a) Petiole
(b) Lamina
(c) Veins
(d) Nodes
Ans: Nodes

Q-4parallel venation is not found in
(a) sugarcane
(b) peepal
(c) maize
(d) wheat
Ans: peepal

Q-5Which one of the following is a function of leaves?
(a) Photosynthesis
(b) Transpiration
(c) Both (a) and (b)
(d) Support fruits
Ans: Both (a) and (b)

Q-6 Male reproductive part of flower is
(a) sepals
(b) petals
(c) stamens
(d) pistil
Ans: stamens

Q-7 Which of the following has fibrous root?
(a) Peas
(b) Wheat
(c) Radish
(d) Neem
Ans: Wheat

Q-8 The process of loss of water by a plant through leaves is called
(a) evaporation
(b) condensation
(c) photosynthesis
(d) transpiration
Ans: transpiration

❖ Fill in the blanks:

1.The design made by the veins in a leaf is called the **Leaf venation**.
2. The process of leafs absorbing Water and carbon dioxide from the air to produce is called . **photosynthesis**
3. Plants having reticulate venation has **Tap** roots.
4. The food prepared by leaves is stored as **Starch**.
5. mango plant is a **Tree**.
6. **Anther** and **filament** are parts of stamen.
7. The region of attachment of the leaf with the stem is called the **Petiole.**
8. Water comes out of leaf in form of vapour by a process called **Transpiration**

❖ State True and False:

(a)If a plant has fibrous root, then leaves will show parallel venation.[T]
(b) Stem transport the food from leaves to the other parts of the plants.[T]
(c) Leaves absorb Oxygen in the process of photosynthesis.[F]
(d) Herbs are plants with strong stems.[F]
(e) The part of a leaf which it is attached to the stem is called lamina.[F]
(f) Lemon plant is a Shrub plant.[T]

❖ Short question answer:

Q-1 Can you find a plant in your house or in your neighbourhood which has a long but a weak stem? Write its name. In which category would you classify it?
Ans: Yes, we find a money plant in our house. It is a climber.

Q-2 Which of the following leaves have reticulate venation?
Wheat, tulsi, maize, grass, coriander (dhania), china rose.
Ans: Tulsi, china rose.

Q-3 If a plant has fibrous root, what type of venation are its leaves likely to have?
Ans: Parallel venation.

Q-4. If a plant has leaves with reticulate venation, what kind of roots will it have?
Ans: Tap root.

Q-5. Name the part of the plant which produces its food. Name this process.
Ans: Leaves produce food for the plant. This process is called photosynthesis.

Q-6. In which part of a flower you are likely to find the ovary?
Ans: We find ovary in pistil. It is the lowermost part of the pistil.

Q-7 Name two flowers, each with joined and separates sepals.
Ans:
Flowers with joined sepals:
(i) Datura
(ii) Loki
Flowers with separate sepals:
(i) Gurhal
(ii) Mustard

Q-8 How many kinds of plants are there?
Ans: There are three kinds of plants:
(i) Herbs
(ii) Shrubs
(iii) Trees

Q-9 Name two plants that belong to herbs.
Ans:
(i) Tomato
(ii) Potato

Q-10Which of the following leaves have reticulate venation?
Wheat, tulsi, maize, grass, coriander (dhania), china rose.
Ans: Tulsi, china rose.

Q-11 Define petiole.
Ans: The part (stalk) of a leaf by which it is attached to the stem is called petiole.

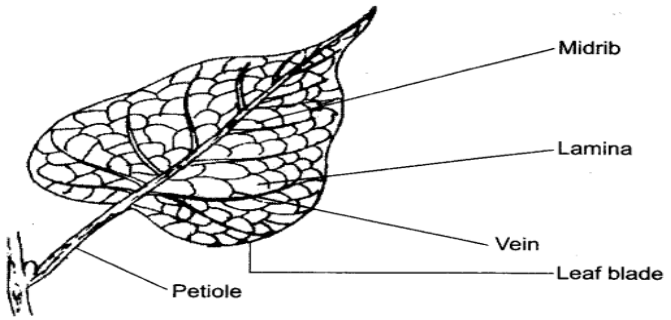
Q-12 What is lamina?
Ans: The broad green flat part of leaf is called lamina.

❖ Long Question Answer:

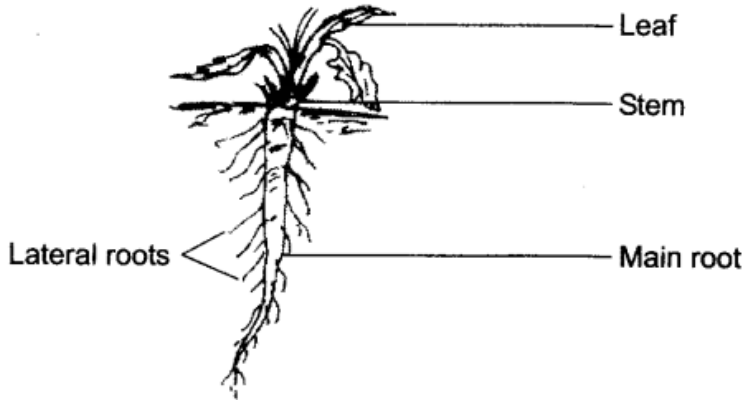
Q-1. Correct the following statements and rewrite them in your notebook.
(a) Stem absorbs water and minerals from the soil.
(b) Leaves hold the plant upright.
(c) Roots conduct water to the leaves.
(d) The number of sepals and petals in a flower is always equal.
(e) If the sepals of a flower are joined together, its petals are also joined together,
(f) If the petals of a flower are joined together, then the pistil is joined to the petal.
Ans:
(a) Roots absorb water and minerals from the soil.
(b) Roots hold the plant upright.
(c) Stem conducts water to the leaves.
(d) The number of petals and sepals in a flower is usually equal.
(e) If the sepals of a flower are joined together, its petals are not necessarily joined together.
(f) If the petals of a flower are joined together, then the pistil is not necessarily joined to the petal.

2. **Draw (a) a leaf, (b) a tap root and (c) a flower, you have studied for Table 7.3 of the textbook.**
Ans:(a) Leaf

(*a*) **Leaf:**



(*b*) **Tap root:**



(*c*) **Flower:**

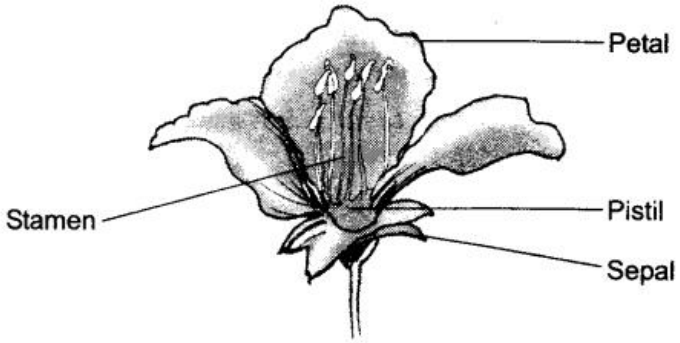


Fig. 7.5

Q-3 What is the function of a stem in a plant?

Ans: A stem performs following functions:

(i) The stem and its branches hold leaves to get maximum sunlight.

(ii) It transports water from roots to different parts of the plant.

(iii) It transports food from leaves to different parts of the plant.

(iv) It bears leaves, flowers and fruits.

Q-4 Which of the following plants have you seen? Of those that you have seen, which one have flowers?

Grass, maize, wheat, chilli, tomato, tulsi, pipal, shisham, banyan, mango, jamun, guava, pomegranate, papaya, banana, lemon, sugarcane, potato, groundnut

Ans:

S. No.	Name of the plant	Whether seen	Whether have flowers
1.	Grass	Yes	Yes
2.	Maize	Yes	Yes
3.	Wheat	Yes	Yes
4.	Chilli	Yes	Yes
5.	Tomato	Yes	Yes
6.	Tulsi	Yes	Yes
7.	Pipal	Yes	Yes
8.	Shisham	Yes	Yes
9.	Banyan	Yes	Yes
10.	Mango	Yes	Yes
11.	Jamun	Yes	Yes
12.	Guava	Yes	Yes
13.	Pomegrenate	Yes	Yes
14.	Papaya	Yes	Yes
15.	Banana	Yes	Yes
16.	Lemon	Yes	Yes
17.	Sugarcane	Yes	Yes
18.	Potato	Yes	Yes
19.	Groundnut	Yes	Yes

Q-5 . Explain an activity to test the presence of starch in a leaf.

Ans: Take a leaf in a test tube and pour spirit till it completely covers the leaf. Now put the test tube in a beaker having water. Heat the beaker till all the green colour from the leaf comes out into the spirit in the test tube. Take out the leaf and wash it with water. Put it on a plate and pour some iodine solution over it. The iodine solution is brown in colour but when it comes in contact with starch it turns blue-black. The iodine solution will turn blue-black when dropped on the leaf, this confirms the presence of starch in the leaf.

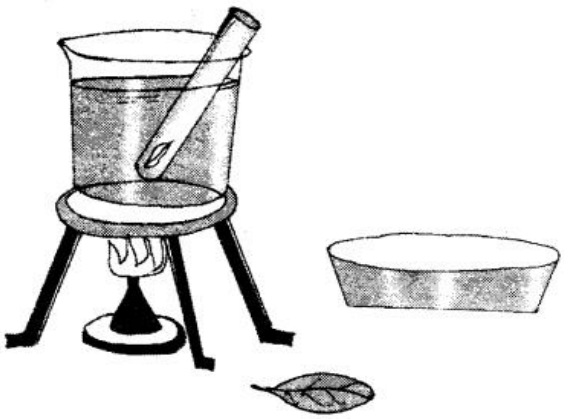


Fig. 7.16 Starch test

Hots:

Q-1Explain the important functions of root.
Ans:. The following are the functions of root:
(i) They help to absorb water from the soil.
(ii) The roots help in holding the plants firmly in the soil.
(iii) They are said to anchor the plant to the soil.

Q-2 Explain the structure of a typical flower with the help of a diagram.
Ans: A typical flower contains the following parts:
(i) **Stalk:** The part by which a flower is attached to the branch is called stalk.
(ii) **Sepals:** The small green leaf-like structures of the flower are called sepals,
(iii) **Petals:** The big coloured leaf-like structures are called petals. Different flowers have petals of different colours.
(iv) **Stamen:** It is the male part of the flower. It has two parts: (a) Filament and (b) Anther.
(v) **Pistil:** The innermost part of a flower is called pistil. It has three parts: (a) Stigma, (b) Style and (c) Ovary. It is the female part of the flower.

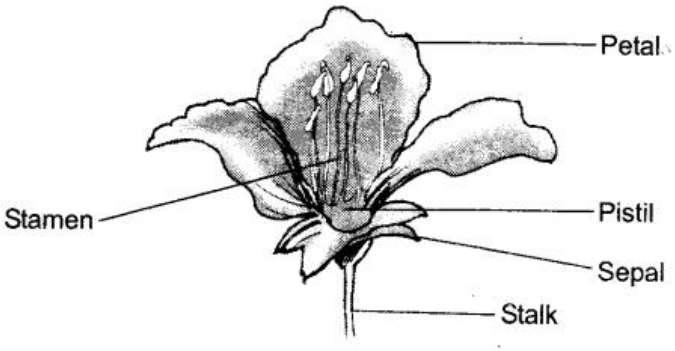


Fig. 7.15 Parts of a flower

Ch-8
Body Movements

❖ Key Words:

- Backbone
- Ball and Socket Joint
- Bristles
- Cartilage
- Cavity
- Fixed Joint
- Gait of animals
- Hinge joint
- Muscle
- Outer skeleton
- Pelvic Bones
- Pivotal Joint
- Rib cage
- Shoulder bones
- Skeleton
- Streamlined

❖ Key points to remember:

Locomotion: Movement of organisms from place to place.
Locomotion in the human body:
(i) Human skeleton: It forms a framework that gives shape and support to the body. It consists of 206 bones. It protects internal organs.
The human skeleton has two parts:

1. **The axial skeleton** system: It includes the skull, vertebral column and the chest bones or the rib-cage.
2. **Appendicular skeleton system: -** It includes shoulder and hip girdles and the limbs (two hands and two legs).

The human skeleton is made of:

- **Bones: -** Bone is the unique combination of flexibility and stiffness.
- **Cartilages: -** It is a flexible bone which gives support to body parts like ears and nose. It also connects bones together.
- **Tough fibres, the tendons: -** Tendons are strong, white cords made from collagen. they attach to bones.

- **Collagen: -** Bones in a just born baby are made from soft fibres of a protein called ' collagen '.
- **Ligaments: -** Ligaments may be in the form of cords or sheets.

(a) Skull: It protects the brain. It is a rigid box made up of plates of bone firmly joined together.

- The skull is bony, forming cranium or the brain-case and the face.
- Twenty-two small flat big bones join to form the skull.
- Eight flat bones are fitted together forming a protective box for the brain.
- Fourteen bones of different shapes fuse together to form the face.

(b) Rib cage: It is a flexible case of ribs. Each rib curves round the side of the chest from the backbone and is joined in front to a plate of bone called sternum. Ribs are connected to one another by the muscles. Two lowermost pairs of ribs are called ‘floating ribs’.

(c) Backbone or the vertebral column: It is also called the spine or vertebral column.

- Backbone is made from 33 rings like pieces.
- Each piece is called a vertebra.
- It is a chain of small bones called vertebrae.
- It protects the spinal cord, which carries messages between the brain and body.
- It also supports the skull, ribs and limbs.

(d) Limbs: It is made up of long bones with joints that allow them to move. They are mainly for support.

(i) **Arms:** fore-arms is made up of two bones and hands have several small bones. Shoulder bones have a pair of collarbones in front and a pair of shoulder blades.

(ii) **Legs:** Lower leg is made up of two bones and feet have several small bones. Hip bones or griddles bear the weight of the body and are attached to thigh bones.

(iii) **Joints:** The point where two bones meet. Allow movement to take place. Bones are held together by ligaments.

(a) Movable Joints: It allows movement between bones and has cartilage between them.

Type of movable joints are:

(i) **Hinge Joints:** It allows movement only in one plane backwards and forwards. Example: elbow joints, knee joints and the joint between phalanges of fingers and toes.

(ii) **Ball and Socket Joints:** It permits a circular movement. Example: the shoulder.

(iii) **Gliding Joints:** It allows bones to slide a little. Example: bones inside wrists and feet.

(iv) **Pivotal Joints:** Joint where the neck joins the head. It allows the head to move backwards and forward and turn to the right and left.

(b) Immovable or Fixed Joints: The bones cannot move at these joints. Example: bones in skull, joint between upper jaw and rest of skull.

Locomotion in other animals:

(i) **Fish:** Locomotion achieved by lateral contractions of the muscular body with a final thrust by the tail. Fish swim by forming loops alternately on two sides of the body.

(ii) **Birds:** When the large flight muscles contract, they pull the wings down.

(iii) **Snails:** The muscular foot helps in locomotion.

(iv) **Earthworms:** Move by stretching out the body in front and keeping the hind end fixed to the ground.

- The bones are moved by alternate contractions and relaxation of two sets of muscles.
- The bone joints are of various kinds depending on the nature of joints and direction of movement they allow.
- Strong muscles and light bones work together to help the birds fly. They fly by flapping their wings.
- Snakes slither on the ground by looping sideways. A large number of bones and associated muscles push the body forward.
- The body and legs of cockroaches have hard coverings forming an outer skeleton. The muscles of the breast connected with three pairs of legs and two pairs of wings help the cockroach to walk and fly.

❖ Summary:

- Bones and cartilage form the skeleton of the human body. It gives the frame and shape to the body and helps in movement. It protects the inner organs.
- The human skeleton comprises the skull, the back bone, ribs and the breast bone, shoulder and hipbones, and the bones of hands and legs.
- The bones are moved by alternate contractions and relaxations of two sets of muscles.

- The bone joints are of various kinds depending on the nature of joints and direction of movement they allow.
- Strong muscles and light bones work together to help the birds fly. They fly by flapping their wings.
- Fish swim by forming loops alternately on two sides of the body.
- Snakes slither on the ground by looping sideways. A large number of bones and associated muscles push the body forward.
- The body and legs of cockroaches have hard coverings forming an outer skeleton. The muscles of the breast connected with three pairs of legs and two pairs of wings help the cockroach to walk and fly.
- Earthworms move by alternate extension and contraction of the body using muscles. Tiny bristles on the underside of the body help in gripping the ground.
- Snails move with the help of a muscular foot

❖ Tick the correct one:

Question 1.Skeleton of human body is made up of
(a) bones
(b) cartilage
(c) both bones and cartilage
(d) None of these
Ans: both bones and cartilage

Question 2.Fixed joints are found in
(a) lower jaw
(b) skull
(c) hands
(d) hip bone
Ans:Skull

Question 3.Knee joints are
(a) hinge joints
(b) ball and socket joints
(c) pivotal joints
(d) fixed joint
Ans: hinge joints

Question 4.Which one of the following is the characteristics of birds?
(a) Strong muscles
(b) Light bones
(c) Hollow bones
(d) All of these
Ans:All of these

Question 5.The organ that protects the main nerve cord is
(a) skull
(b) backbone

(c) breast bone
(d) chest bone
Ans:skull

Question 6.Fish swims by
(a) forming loops alternately on two sides of the body
(b) forming loops on single side
(c) somersalting
(d) alternate dipping and coming up
Ans: forming loops alternately on two sides of the body

Question 7.How many bones are there in human skeleton?

(a) 300
(b) 200
(c) 206
(d) 306
Ans:206

Question 8.Backbone consists of

(a) 13 vertebra
(b) 23 vertebra
(c) 43 vertebra
(d) 33 vertebra
Ans:33 vertebra

❖ Fill in the blanks:

(1) Joints of the bones help in the **movement** of the body.
(2) A combination of bones and cartilages forms the **skeleton** of the body.
(3) The bones at the elbow are joined by a **hinge.**
(4) The contraction of the **muscle** pulls the bones during movements

❖ State True or False:

(a) The movement and locomotion of all animals is exactly the same.
(b) The cartilages are harder than bones.
(c) The finger bones do not have joints.
(d) The fore arm has two bones.
(e) Cockroaches have an outer skeleton.
Ans:
(a) False
(b) False
(c) False
(d) True
(e) True

Match the items in column I with one or more items of column II :

Column I	Column II
(i) Upper jaw	(a) have fins on the body
(ii) Fish	(b) has an outer skeleton
(iii) Ribs	(c) can fly in the air
(iv) Snail	(d) is an immovable joint
(v) Cockroach	(e) protect the heart

Sol. The correct order of the match is (i)-(d), (ii)-(a), (iii)-(e), (iv)-(b), and (v)-(c).

❖ Short Question Answer:

Q-1Name the places where two parts of the body are seen to be joined together.
Ans: These places are called joint.

Q-2If there are no joints then will it be possible to move?
Ans: No, it is not possible.

Q-3. How many types of joints are there?
Ans: There are five types of joints in our body.

Q-4**. Name the various types of joint.**
Ans:
(i) Ball and socket joints
(ii) Pivotal joints
(iii) Hinge joints
(iv) Fixed joints
(v) Gliding joints

Q-5 Give two examples of ball and socket joint.
Ans:
(i) Joint of upper arm and shoulder.
(ii) Joint of thigh and the hip.

Q-6 Give an example of pivotal joint.
Ans. The joint of skull with backbone.

Q-7Give two examples of hinge joints.
Ans:
(i) Joints in fingers
(ii) Joints in knee

Q-8Give an example of fixed joint.
Ans: Joint of cranium skull.

Q-9 What are cartilages?
Ans: Some additional parts of the skeleton which are not as hard as bones and are elastic in nature and can be bent are called cartilages, e.g. cartilage of ear.

Q-10What is skeleton?
Ans: The framework of bones in our body is called skeleton

❖ Long Question Answer:

Q-1Answer the following questions:
(a) What is a ball and socket joint?
(b) Which of the skull bones are movable?
(c) Why can our elbow not move backwards?
Ans:
(a) The rounded end of one bone fits into the hollow space of other bone. This is called ball and socket joint. Ball and socket joints allow movements in all the directions, e.g. shoulder and hip can be moved in all directions.
(b) In skull, only lower jaw is movable.
(c) Our elbow cannot move backwards because the elbow has a hinge joint that allows movement in only one direction
.

Q-2 How is a bird's body adapted for flying?
Ans: The following adaptations are seen in the body of birds.
(i) Bones are hollow.
(ii) Forelimbs are modified into wings.
(iii) Body is streamlined.

Q-3 How does the earthworm move?
Ans: Earthworm does not have bones. It has muscles. During the movement, earthworm first extends front part of the body keeping the rear portion fixed to the ground. Then it fixes the front and releases the rear end. It then shortens the body and pulls the rear end forward. In this way by repeating such muscular expansions and contractions earthworm moves.

❖ Hots:

Q-1 How does fish move in water?
Ans: The body of fish is streamlined. The streamlined shape helps the fish to move in water. The skeleton of fish is covered with muscles which make the front part of the body to curve to one side and the tail part swings towards the opposite side. This makes a jerk and pushes the body forward. In this way it moves in water.
Q-2 How do the muscles work?
Ans: The muscles work in pairs. When one of them contracts, the bone is pulled in that direction, the other muscle of the pair relaxes. To move the bone in the opposite direction, the relaxed muscle contracts to pull the bone towards its original position, while the first relaxes.A muscle can only pull. It cannot push.