



केन्द्रीय विद्यालय संगठन
KENDRIYA VIDYALAYA SANGATHAN



शिक्षा एवं प्रशिक्षण का आंचलिक संस्थान, चंडीगढ़
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ZONAL INSTITUTE OF EDUCATION AND TRAINING, CHANDIGARH
सेक्टर-33 सी, चंडीगढ़ / SECTOR-33C, CHANDIGARH

वेबसाइट / Website : zietchandigarh.kvs.gov.in

ई-मेल / e-mail : kvszietchd@gmail.com दूरभाष / Phone : 0172-2621302, 2621364

हमारे संरक्षक

श्रीमती निधि पांडे, आईआईएस
आयुक्त

**Mrs. NIDHI PANDEY, IIS
COMMISSIONER**

श्री एन. आर. मुरली
संयुक्त आयुक्त (प्रशिक्षण)

**Mr. N R MURALI
JOINT COMMISSIONER (TRAINING)**

श्री सत्य नारायण गुलिया
संयुक्त आयुक्त (वित्त)

**Mr. SATYA NARAIN GULIA,
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संयुक्त आयुक्त (प्रशासन-I)

**Mrs. AJEETA LONGJAM
JOINT COMMISSIONER (ADMIN-I)**

डॉ. जयदीप दास
संयुक्त आयुक्त (प्रशासन-II)

**Dr. JAIDEEP DAS
JOINT COMMISSIONER (ADMIN-II)**

निदेशक महोदय का संदेश



विद्यार्थियों की शैक्षिक प्रगति को ध्यान में रखते हुए उपयोगी अध्ययन सामग्री उपलब्ध कराना हमारा महत्वपूर्ण उद्देश्य है। इससे न केवल उन्हें अपने लक्ष्य को प्राप्त करने में सरलता एवं सुविधा होगी बल्कि वे अपने आंतरिक गुणों एवं अभिरुचियों को पहचानने में सक्षम होंगे। बोर्ड परीक्षा में अधिकतम अंक प्राप्त करना हर एक विद्यार्थी का सपना होता है। इस संबंध में तीन प्रमुख आधार स्तंभों को एक कड़ी के रूप में देखा जाना चाहिए- अवधारणात्मक स्पष्टता, प्रासंगिक परिचितता एवं आनुप्रयोगिक विशेषज्ञता।

राष्ट्रीय शिक्षा नीति 2020 के उद्देश्यों की मूलभूत बातों को गौर करने पर यह तथ्य स्पष्ट है कि विद्यार्थियों की सोच को सकारात्मक दिशा देने के लिए उन्हें तकनीकी आधारित समेकित शिक्षा के समान अवसर उपलब्ध कराया जाए। बोर्ड की परीक्षाओं के तनाव और दबाव को कम करने के उद्देश्य को प्रमुखता देना अति आवश्यक है।

यह सर्वमान्य है कि छात्र-छात्राओं का भविष्य उनके द्वारा वर्तमान कक्षा में किए गए प्रदर्शन पर ही निर्भर करता है। इस तथ्य को समझते हुए यह अध्ययन सामग्री तैयार की गई है। उम्मीद है कि प्रस्तुत अध्ययन सामग्री के माध्यम से वे अपनी विषय संबंधी जानकारी को समृद्ध करने में अवश्य सफल होंगे।

शुभकामनाओं सहित।

मुकेश कुमार
उपायुक्त एवं निदेशक

अनुक्रमणिका / INDEX

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CHAPTER - 2

COMPONENTS OF FOOD

MEAL

The food that is eaten on such an occasion or an occasion when food is eaten.

INGREDIENT

A food that is used with other foods in the preparation of a particular dish.

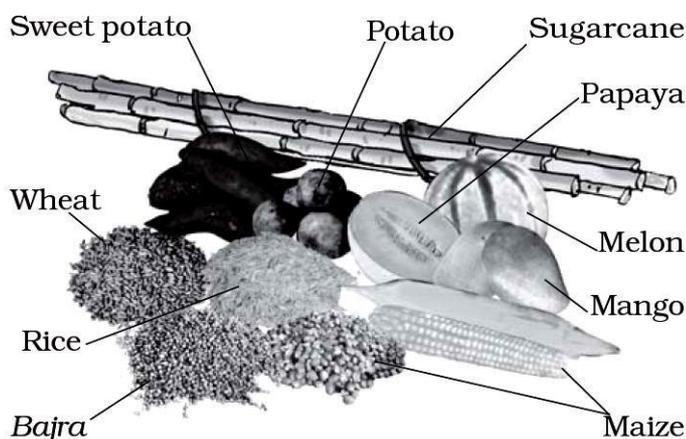
NUTRIENTS

Each dish is usually made up of one or more ingredients, which we get from plants or animals. These ingredients contain some components that are needed by our body. These components are called nutrients. The major nutrients in our food are named carbohydrates, proteins, fats, vitamins and minerals. In addition, food contains dietary fibres and water which are also needed by our body.

CARBOHYDRATES

Carbohydrates are also called energy giving food. It is the main sources of energy. It is made up of carbon, hydrogen, and oxygen. There are three types of carbohydrates.

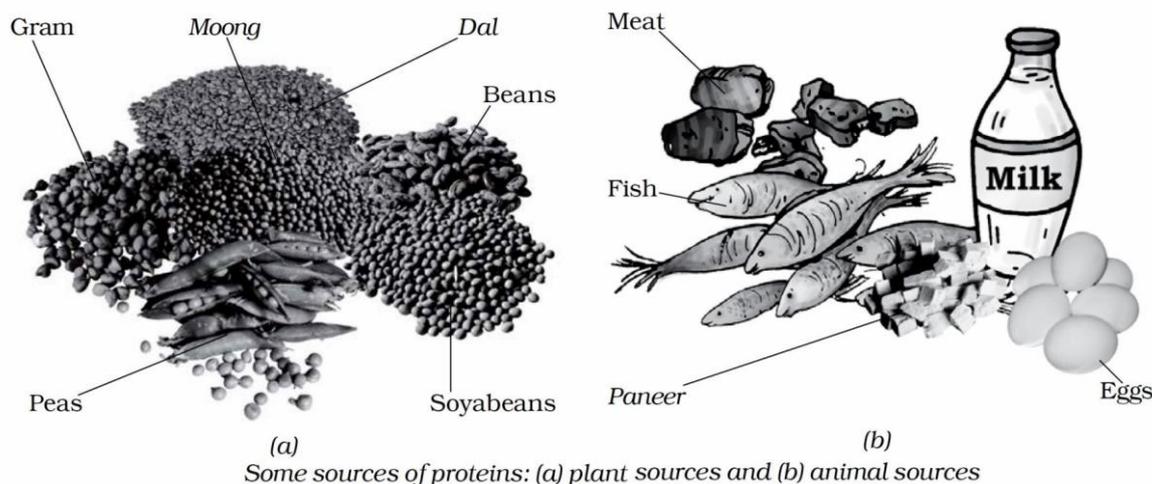
- **Sugars:** It is a simple carbohydrate having sweet taste. Sources of sugar are glucose, Sugarcane, milk and fruits; such as banana, apple, grapes, etc.
- **Starch:** It is a complex carbohydrate. It is a tasteless, colourless, white powder. Sources of starch are: Wheat, maize, potato and rice.
- **Cellulose:** It is present in plant cell wall. It is a complex carbohydrate. Humans cannot digest cellulose.



Some sources of carbohydrates

PROTEIN

Protein helps in body growth and repairs the tissues so it is also called body building food. We get protein from milk, eggs, meat, fish and all kinds of pulse. Protein molecule is made of a large number of smaller molecules called amino acid. The daily requirement of protein for adults is 1 gram per kilogram of the body weight. When the body is building new tissue, more proteins are required, so growing children and pregnant lady need more protein.



FATS

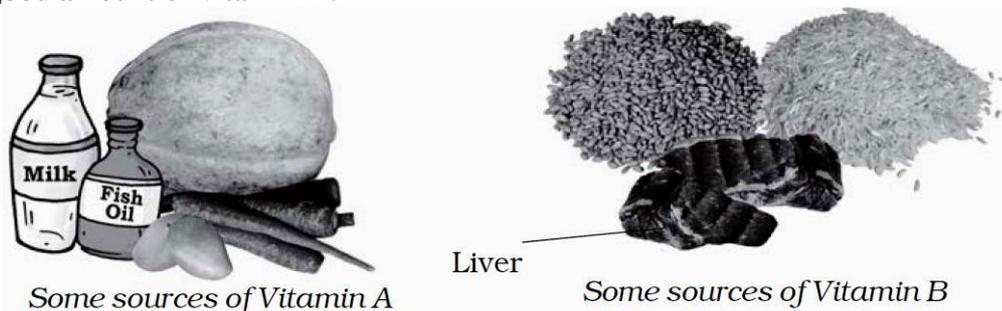
Fats are made up of carbon, hydrogen and oxygen. Butter, ghee, milk, egg-yolk, nuts and cooking oils are the major sources of fat in our food. An adult needs about 35 g fat everyday. Our body stores the excess energy in the form of fat. This stored fat is used by the body for producing energy as and when required so fat is considered as energy bank in our body. Fats are essential for the absorption of vitamins A, D, E and K in the body. Fat in our body also prevents heat loss from the body surface.

VITAMINS

Vitamins are complex organic compounds which are essential for the growth and maintenance of our body. It does not provide energy. Our body requires vitamins A, C, D, E, K and B-complex. Our body can make only two vitamins, Vitamins D and K so other vitamins must be present in our food. The B complex vitamin is a mixture of several water-soluble vitamins. The important vitamins of this group are the vitamin B₁, B₂, B₆ and B₁₂.

Vitamin A

Vitamin A protects the eyes, skin and hair. So, vitamin A is necessary for good eyesight, healthy skin and hair. The various sources of vitamin A are the foods such as: Milk, Butter, Carrot, Fish liver oil, Eggs, Green vegetables, Mango and Papaya. All these food materials contain good amount of vitamin A.

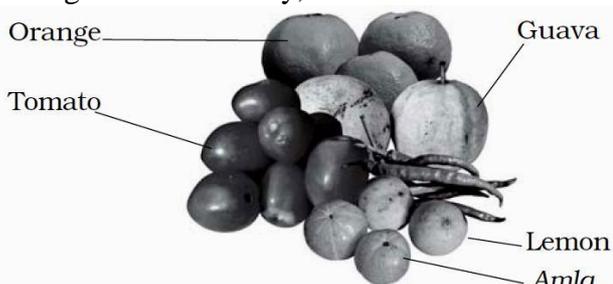


Vitamin B1

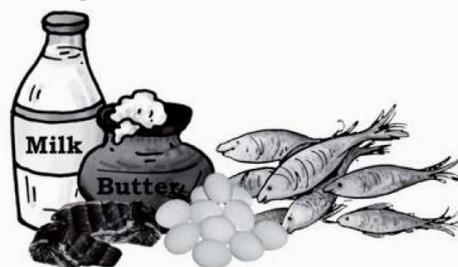
Vitamin B1 is essential for growth, and proper functioning of the digestive system, heart, nerves and muscles. Vitamin B1 is present in good amounts in the following foods: Milk, Eggs, Meat, Wholegrain cereals (like wheat grains and rice), Potatoes, Yeast and Green Vegetables.

Vitamin C

Vitamin C is necessary for keeping teeth, gums and joints healthy. Vitamin C also increases the resistance of our body to infection and helps to fight diseases. Vitamin C is present in : Citrus fruits (such as Oranges, Lime and Lemon), Amfa (Indian gooseberries), Tomato, Guava, and Green vegetables. Actually, almost all the fresh fruits and vegetables contain some vitamin C.



Some sources of Vitamin C



Some sources of Vitamin D

Vitamin D

Vitamin D is necessary for the normal growth of bones and teeth. Vitamin D helps our body to absorb calcium mineral from the food. And this calcium makes the bones and teeth hard and strong. Vitamin D is present in foodstuffs such as: Milk, Fish, Egg, Butter and Fish liver oil. Some vitamin D is also made in our body when the skin is exposed to sunlight. In our country, the newborn babies are exposed to sunshine everyday. This is done to produce vitamin D in their body (which prevents a disease called rickets in children).

MINERALS

Our body needs minerals for its proper functioning, normal growth, and good health. Minerals are needed to build bones and teeth; formation of blood; coagulation of blood; and functioning of muscles, nerves and thyroid gland, etc. Minerals are needed by our body in small amounts. Some of the important minerals needed by our body are : Calcium, Phosphorus, Iron, Iodine, Sodium and Potassium.

ROUGHAGE (DIETARY FIBRE)

Roughage is the fibrous matter in food which cannot be digested. Roughage is mainly made of an indigestible carbohydrate called 'cellulose', which is present in plant cell walls. Roughage is also called dietary fibre ('Dietary fibre' means 'fibre which can be eaten'). Though roughage has 'no food value' but its presence is essential in our food. Roughage is needed for the normal working of the digestive system. **Roughage** provides bulk to the food, keeps the food and waste matter (faeces) moving along the intestines and helps to prevent constipation. Some of the good sources of roughage (or dietary fibre) in our food are: Fruits, Vegetables and Wholemeal flour products (such as wholemeal chapati and wholemeal bread)

WATER

Water is essential for life but it has no 'food value' in our body. A person can live without food for several weeks but would die in a few days without water. Water provides a liquid in which other substances can dissolve and move within the body or eliminated from the body. Water is needed by our body:

- (i) to transport digested food to the body cells
- (ii) to transport important chemicals such as hormones around the body
- (iii) to get rid of waste products from the body
- (iv) to control and regulate the temperature of body

Balanced Diet:

The diet which contains all the essential nutrients in the right proportion is called a balanced diet.

- If the vegetable and fruits are washed after cutting or peeling them, it may result in the loss of some vitamins.
- Cooking also results in the loss of nutrients.
- Vitamins C gets easily destroyed by heat during cooking.

DEFICIENCY DISEASES

A person may be getting enough food to eat, but sometimes the food may not contain a particular nutrient. If this continues over a long period of time, the person may suffer from its deficiency. Deficiency of one or more nutrients can cause diseases or disorders in our body. Diseases that occur due to lack of nutrients over a long period are called deficiency diseases.

PROTEIN DEFICIENCY DISEASE-

The deficiency of proteins in the diet of small children causes a disease known as kwashiorkar. Kwashiorkar disease occurs in children of 1 to 5 years of age. Kwashiorkar develops when a mother stops feeding her child with breast milk due to the birth of another baby too soon. And after weaning (removing) from the protein-rich breast milk, the child from a poor family is given a diet consisting mainly of carbohydrates, having low protein content. Thus, kwashiorkar is a protein-deficiency disease.

PROTEIN AND CARBOHYDRATE DISEASES-

The deficiency of proteins as well as carbohydrates in the diet of very small children (babies) causes a disease known as marasmus. Marasmus disease occurs in infants (or babies) of up to 1 year of age. Marasmus develops when infants below the age of one year are abruptly weaned away from breast milk and are subsequently given a less nutritive food which is deficient in proteins as well as carbohydrates. Such a food is inadequate for the normal growth and development of the child.

VITAMIN DEFICIENCY DISEASES

Deficiency (or lack) of various vitamins in the human diet gives rise to a number of diseases or disorders.

Table: Some diseases/disorders caused by deficiency of vitamins and minerals

Vitamin/ Mineral	Deficiency disease/ disorder	Symptoms
Vitamin A	Loss of vision	Poor vision, loss of vision in darkness (night), sometimes complete loss of vision
Vitamin B1	Beriberi	Weak muscles and very little energy to work
Vitamin C	Scurvy	Bleeding gums, wounds take longer time to heal
Vitamin D	Rickets	Bones become soft and bent
Calcium	Bone and tooth decay	Weak bones, tooth decay
Iodine	Goiter	Glands in the neck appear swollen, mental disability in children
Iron	Anaemia	Weakness

NCERT EXERCISE QUESTIONS AND ANSWERS

1. Name the major nutrients in our food.

Ans:

The major nutrients in our food are carbohydrates, proteins, fats, vitamins and minerals. In addition, food also contains dietary fibres and water.

2. 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.

Ans:

- (a) Carbohydrates and fats.
- (b) Proteins and minerals
- (c) Vitamin A
- (d) Calcium

3. Name two foods each rich in:

- (a) Fats
- (b) Starch
- (c) Dietary fibre
- (d) Protein

Ans:

- (a) Butter, Groundnut.
- (b) Rice, Potato.
- (c) Whole grains, Fresh fruits.
- (d) Pulses, Fish.

4. Tick (✓) the statements that are correct.

- (a) By eating rice alone, we can fulfill nutritional requirement of our body. ()
- (b) Deficiency diseases can be prevented by eating a balanced diet. ()
- (c) Balanced diet for the body should contain a variety of food items. ()
- (d) Meat alone is sufficient to provide all nutrients to the body. ()

Ans:

- (a) By eating rice alone, we can fulfill nutritional requirement of our body. X
- (b) Deficiency diseases can be prevented by eating a variety of food items. ✓
- (c) Balanced diet for the body should contain a variety of food items. ✓
- (d) Meat alone is not sufficient to provide all nutrients to the body. ✓

5. Fill in the blanks.

- (a) _____ is caused by deficiency of Vitamin D.
- (b) Deficiency of _____ causes a disease known as beri-beri.
- (c) Deficiency of Vitamin C causes a disease known as _____.
- (d) Night blindness is caused due to deficiency of _____ in our food.

Ans:

- (a) Rickets
- (b) vitamin B1
- (c) scurvy.
- (d) vitamin A



QUESTION BANK

1. Which one of the following food item does not provide dietary fibre?
(a) Whole grains (b) Whole pulses
(c) Fruits and vegetables (d) Milk
2. Which of the following sources of protein is different from others?
(a) Peas (b) Gram
(c) Soyabeans (d) Cottage cheese (paneer)
3. Which of the following nutrients is not present in milk?
(a) Protein (b) Vitamin C (c) Calcium (d) Vitamin D
4. Read the food items given below:
(i) Wheat (ii) Ghee (iii) Iodised salt (iv) Spinach (palak)
Which of the above food items are “energy giving foods”?
(a) (i) and (iv) (b) (ii) and (iv)
(c) (i) and (ii) (d) (iii) and (iv)
5. Read the following statements about diseases.
(i) They are caused by germs.
(ii) They are caused due to lack of nutrients in our diet.
(iii) They can be passed on to another person through contact.
(iv) They can be prevented by taking a balanced diet.
Which pair of statements best describe a deficiency disease?
(a) (i) and (ii) (b) (ii) and (iii)
(c) (ii) and (iv) (d) (i) and (iii)
6. Given below are the steps to test the presence of proteins in a food item:
(i) Take a small quantity of the food item in a test tube, add 10 drops of water to it and shake it.
(ii) Make a paste or powder of food to be tested.
(iii) Add 10 drops of caustic soda solution to the test tube and shake well.
(iv) Add 2 drops of copper sulphate solution to it.
Which of the following is the correct sequence of the steps?
(a) i, ii, iv, iii (b) ii, i, iv, iii
(c) ii, i, iii, iv (d) iv, ii, i, iii
7. The main carbohydrate which we eat in our food is :
(a) canesugar (b) glucose (c) cellulose (d) starch
8. Which of the following is considered to be body building food?
(a) carbohydrates (b) proteins (c) fats (d) vitamins
9. Which of the following is produced in our body when the skin is exposed to sunlight?
(a) vitamin D (b) vitamin B (c) vitamin A (d) vitamin C
10. The vitamin essential for good eyesight, healthy skin and hair is vitamin :
(a) A (b) B1 (c) C (d) D

11. Which of the following foods is a good source of both calcium and phosphorus?
(a) fish (b) carrots (c) milk (d) oranges
12. The mineral essential for the proper functioning of the thyroid gland is:
(a) calcium (b) iodine (c) iron (d) potassium
13. Iodine solution turns blue-black when added to a food X. The food X is most likely :
(a) a piece of butter (b) a piece of bread
(c) a cup of milk (d) a boiled egg
14. When alkaline copper sulphate solution is added to a food item, then a violet colour is produced. The food item is most probably :
(a) milk (b) butter (c) potato (d) cooked rice
15. When a little of food item is rubbed on a sheet of paper, a translucent spot is produced. Which of the following is present in this food item?
(a) proteins (b) carbohydrate (c) fat (d) minerals
16. Which one of the following food nutrients should be present in greater amounts in the diet of a labourer than an office worker of the same age and weight?
(a) carbohydrates (b) proteins (c) minerals (d) vitamins
17. The cooking of food at high temperature destroys a major portion of :
(a) carbohydrates (b) vitamin B (c) vitamin C (d) fats
18. The disease caused by the deficiency of proteins in the diet of children is called :
(a) marasmus (b) rickets (c) kwashiorkor (d) scurvy
19. When a few drops of dilute iodine solution are added to a food, then a blue-black colour is produced. This food contains :
(a) fat (b) starch (c) minerals (d) proteins
20. Which of the following disease occurs in babies due to the deficiency of proteins as well as carbohydrates in their diet?
(a) night blindness (b) goitre (c) kwashiorkor (d) marasmus
21. A few drops of alkaline copper sulphate solution are added to some milk taken in a test-tube. The colour produced will be :
(a) brown (b) blue-black (c) yellow (d) violet
22. One of the following is not a vitamin deficiency disease. This one is :
(a) scurvy (b) rickets (c) goitre (d) beri-beri
23. The deficiency of vitamin D in children causes a disease known as :
(a) beri-beri (b) rickets (c) anaemia (d) goitre
24. The carbohydrate which produces blue-black colour with dilute iodine solution is :
(a) glucose (b) cane sugar (c) cellulose (d) starch
25. Which one of the following will not give a violet colour with alkaline copper sulphate solution?
(a) white of an egg (b) yellow of an egg
(c) milk (d) cheese

26. The deficiency of vitamin C in the diet causes a disease known as :
 (a) rickets (b) anaemia (c) scurvy (d) goitre
27. A woman is suffering from goitre. Her diet is deficient in :
 (a) vitamin B (b) iron (c) iodine (d) calcium
28. Which one of the following helps in absorbing calcium mineral present in the diet into our body?
 (a) vitamin B1 (b) vitamin D (c) vitamin A (d) vitamin C
29. A child has bow legs (bent legs). He is suffering from the deficiency disease known as :
 (a) anaemia (b) goitre (c) scurvy (d) rickets
30. Which of the following minerals is necessary to make haemoglobin present in the red blood cells?
 (a) iodine (b) red phosphorus (c) iron (d) sodium
31. One of the following is necessary for keeping gum and teeth healthy. This is :
 (a) vitamin B (b) vitamin D (c) vitamin A (d) vitamin C
32. Which of the following is not a function of water in our body?
 (a) to transport digested food (b) to get rid of wastes
 (c) to release energy (d) to regulate body temperature
33. The vitamin which prevents rickets disease in children is :
 (a) vitamin A (b) vitamin B (c) vitamin C (d) vitamin D
34. Roughage in our food is mainly made of :
 (a) starch (b) cellulose (c) glucose (d) canesugar
35. Fill in the following blanks with suitable words :
 (a) Deficiency of iron in the diet causes a disease known as _____
 (b) Deficiency diseases can be prevented by eating a _____ diet.
36. Fill in the following blank with a suitable word :
 Iron is an important constituent of.....present in our blood.
37. Name the vitamin which is required for maintaining good eyesight.
38. Name the vitamin which keeps the teeth, gums and joints healthy, and helps fight diseases.
39. Name the vitamin which is necessary for the normal growth of bones and teeth
40. Which vitamin is produced in the human body when skin is exposed to sunlight?
41. Name the main vitamin present in (a) oranges, and (b) carrots.
42. Name an important mineral present in (a) apple, and (b) sea-fish.
43. Which mineral is needed to make haemoglobin present in our red blood cells.
44. Name the disease caused by the deficiency of:
 (a) Vitamin A (b) Vitamin B1 (c) Vitamin C (d) Vitamin D
45. Name the vitamin whose deficiency causes the disease :

(a) beri-beri (b) scurvy (c) rickets (d) night blindness

46. Name the nutrients present in our food which give mainly energy to our body.
47. Name the nutrient which is needed for the growth and repair of our body.
48. Name the main carbohydrate which we eat in our food.
49. Which carbohydrate is present in wheat, rice and potatoes?
50. Name two foods each rich in (a) fats, and (b) starch.
51. Name the major nutrients in our food.
52. In addition to calcium, which other mineral is needed for making bones and teeth?
53. Name a mineral which is needed for keeping bones and teeth healthy.
54. Which mineral is needed for the proper functioning of thyroid gland?
55. Name two food materials which contain a lot of water.
56. Name the component of our food which helps prevent constipation.
57. What is the other name of roughage?
58. Which component of food is mainly made of indigestible carbohydrate 'cellulose'?
59. The examples of carbohydrates are : sugar, cellulose, glucose and starch. Which of these carbohydrates provides roughage in our food?
60. Name two components of food which do not provide any nutrients.
61. Name the solution which can be used to test the presence of starch in a food.
62. Which vitamin is easily destroyed by heat during the cooking of food?
63. What is the function of fats in our body? Name three sources of fat in our food.
64. Name the nutrient/nutrients whose deficiency causes marasmus disease in children.
65. Name the nutrient/nutrients whose deficiency causes kwashiorkor disease in children.
66. What is the cause of the disease called scurvy?
67. Name two diseases caused by the deficiency of iodine in the diet.
68. If a person looks pale, gets tired easily, loses weight, and his nails turn white, which deficiency disease is he suffering from?
69. How will you test the presence of fat in a given sample of food material?
70. Describe one test for detecting the presence of proteins in a food.
71. How will you test the presence of starch in a food?
72. What happens when a few drops of dilute iodine solution are put on the cut surface of a raw potato? What does it show?
73. How will you show that flour contains starch?
74. How will you show that groundnuts contain fat (or oil)?
75. Name the mineral whose deficiency causes anaemia. Write the symptoms of anaemia.
76. Who needs more proteins in his daily diet in relation to body weight : a growing child or a

grown up man? Why?

77. How does the balanced diet of a man doing hard physical work differ from another man doing normal work?
78. Why does a labourer need more carbohydrates in his diet than normal?
79. State two pre-cooking practices which lead to the loss of nutrients in food materials.
80. Explain why, rice and pulses should not be washed repeatedly before cooking.
81. What happens when fruits and vegetables are first peeled and cut, and then washed?
82. Explain why, thick peels should not be removed from fruits and vegetables.
83. Why should we include some fresh fruits and raw vegetables in our diet?
84. What happens when water in which a food material is boiled during cooking, is thrown away later on?
85. Write down the main symptoms of vitamin C deficiency (or scurvy).
86. Name the vitamin whose deficiency causes rickets in children. Write the symptoms of disease called rickets.
87. What is the function of vitamin B1 in our body? Name two sources of vitamin B1.
88. Why do we need iodine in our diet? Name two sources of iodine in our diet.
89. What is night blindness? What causes night blindness?
90. Mention some effects of the deficiency of calcium in the diet.
91. What is the cause of goitre? Write the main symptom of goitre.
92. The neck of a person appears to be swollen. Name the deficiency disease he is suffering from. What is the cause of this disease?
93. What is a balanced diet? How does the balanced diet of a child differ from that of a grown up man?
94. State two beneficial effects of cooking food. Name two cooking practices which lead to the loss of nutrients in food materials.
95. What is the cause of the disease known as beri-beri? Write the main symptoms of beri-beri disease.
96. Name the disease caused by the deficiency of proteins in the diet of children. Give the symptoms of protein deficiency in children.

.....

CLASS 6 -SCIENCE (2022-23)
CHAPTER 4
SORTING MATERIALS INTO GROUP

Objects Around Us

When we look around, we find ourselves surrounded by a number of objects. Some of these different objects are made from a number of different materials, while others are made using the same material. **For Example**, both desk and chair are made from wood while pen and dustbins are made using plastic. The material from which an object is made depends on its properties.



Properties of Materials

1. Appearance

Materials can be classified on the basis of how they look or appear to be. Some materials have *lustre*, which is a very gentle sheen or soft glow to them while others are plain and dull looking. Materials that have such lustre can usually be classified as **Metals**. Examples include gold, copper, aluminium, iron etc. Usually, a metal loses its lustre after some time due to the action of moisture and air on it. Therefore only freshly-cut metals appear to have lustre on them.

2. Hardness

Materials can also be classified on the basis of hardness.

Materials that can be easily compressed or scratched are called **Soft**.

Materials that cannot be scratched and are difficult to compress are termed as **Hard**.

3. Soluble or Insoluble

Materials that can be dissolved in water upon stirring are said to be **soluble** materials. **For Example**, Sugar and Salt can be dissolved in water.

Materials that cannot be dissolved in water no matter how much we stir them are said to be **insoluble** materials. **For Example**, Stones and Clothes cannot be dissolved in water.

Not just solid materials, even liquids have the property of being soluble or insoluble. **For Example**, Lemon juice can easily dissolve in water while oil does not dissolve and deposits as a thin layer on the uppermost layer of water.

4. Buoyancy: Some materials float in water while others sink:

- Materials like sand, sugar and salt sink in water.
- Materials like wax, oil and wood float on water.

5. Transparency

- **Opaque:** Materials through which we are not able to see are called opaque. For example, wood, iron, gold.
- **Translucent:** Materials through which things are only partially visible are called translucent. For example, butter paper, old glass door.
- **Transparent:** Materials through which things can be seen are called transparent. For example, glass, water, air, test tube.

Why do we need to group objects?

We need to group objects for a number of reasons:

- **Convenience to store:** We often group objects in order to store similar objects together in order to make locating them easier in the future. Even in our homes, we store spices together in the kitchen while storing washing products in our bathrooms.
- **Convenience to study:** We also group objects so that it becomes easy for us to study their features as well as the patterns of these features.

NCERT QUESTIONS-

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

Ans.

- (i) Table
- (ii) Chair
- (iii) Doors
- (iv) Boat
- (v) Bed

Q.2. Select those objects from the following which shine:

Glass bowl, plastic toy, steel spoon, cotton shirt

Ans. Glass bowl and steel spoon are shining objects.

Q.3. Match the objects given below with the materials from which they could be made.

Remember, an object could be made from more than one material and a given material could be used for making many objects.

<i>Objects</i>	<i>Materials</i>
<i>Book</i>	<i>Glass</i>
<i>Tumbler</i>	<i>Wood</i>
<i>Chair</i>	<i>Paper</i>
<i>Toy</i>	<i>Leather</i>
<i>Shoes</i>	<i>Plastic</i>

Ans.

<i>Objects</i>	<i>Materials</i>
Book	Paper
Tumbler	Glass and plastic
Chair	Wood and plastic
Toy	Plastic and wood
Shoes	Leather

Q. 4. State whether the statements given below are ‘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.

Ans.

(i) False

(ii) False

(iii) False

(iv) True

(v) False

(vi) False

(vii) True

(viii) True

Q. 5. 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

Ans.

(a) (i) **Round shaped:** Basket ball, apple, orange, globe, earthen pitcher.

(ii) **Other shapes:** Water, sugar.

(b) (i) **Eatables:** Water, orange, sugar and apple.

(ii) **Non-eatables:** Basket ball, globe and earthen pitcher.

Q. 6. List all the items known to you that float on water. Check and see if they will float on an oil or kerosene.

Ans. (A) List of some items that float on water:

1. Paper
2. Wood
3. Thin plastic sheets
4. Wax
5. Ice
6. Thermocol
7. Oil

(B) List of items that float on an oil:

1. Paper
2. Plastic sheet
3. Wax
4. Thermocol
5. Wood

(C) List of items that float on kerosene:

1. Paper
2. Thermocol
3. Thin plastic sheet

Q. 7. 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

Ans.

- (a) Baby (all others are non-living)
- (b) Boat (all others are flowers)
- (c) Sand (all others are metals)
- (d) Sand (all others are soluble in water)

IMPORTANT QUESTIONS-

Fill in the blanks-

1. Name one object made from wood?

Ans: Table

Other examples can be chairs, sofas, almirah, etc.

2. Name one shining object?

Ans: Glass bowl.

Other examples can be diamonds, metal, wrapping paper, etc.

3. Name one item that floats on water?

Ans: Paper

Other examples can be pieces of paper, wood, plastic bottles, boats, ice, etc.

4. Name one material that floats on oil?

Ans: Wood

Other examples can be balloons.

5. Name one material that floats on kerosene?

Ans: Thin plastic sheet

Very Short Answer Questions

2 - Mark

1. Define solid.

Ans: Any material with a definite shape and volume is considered solid. For instance, boxes, stones, wood, and chairs.

2. What is liquid?

Ans: Any material that does not have a definite shape but has a definite volume is referred to as a liquid. For instance, water, milk, and oil.

3. What is gas?

Ans: Any material that has neither a definite shape nor a definite volume is referred to as a gas. For instance, oxygen, nitrogen, and hydrogen.

4. Define the term soluble.

Ans: Soluble refers to something that can be dissolved, such as sugar or salt that are soluble in water.

5. Define the term insoluble.

Ans: Insoluble refers to anything that does not dissolve. Oil, for instance, does not dissolve in water.

6. Name two gases which are insoluble in water.

Ans: Hydrogen and nitrogen are the two gases insoluble in water. Another example is methane which is insoluble in water.

7. Define the word transparent.

Ans: The term "transparent material" refers to a material that allows light to pass through it. Some transparent objects are water, air, glass, etc.

8. Define the word translucent.

Ans: Translucent materials allow only a little amount of light to flow through them. Plastic cups, clouds, coloured plastic etc. are examples of translucent objects.

9. Define metals.

Ans: Metals are hard, shiny, and excellent electrical conductors. Copper, silver, gold, and other metals are examples of metals.

10. Define non-metals.

Ans: Non-metals are fragile and do not conduct electricity well. They aren't really glossy. Coal and rubber are examples.

Long Answer Questions-

1. Name three states of matter and their characteristic properties?

Ans: Solid, liquid, and gas are the three states of matter.

Characteristics of solid, liquid, and gases are listed below:

Solid	Liquid	Gas
Solids have: <ul style="list-style-type: none">• Definite shape• Definite volume• Example: Wood, boxes, chair, Table, etc.	Liquids have: <ul style="list-style-type: none">• Indefinite shape• Definite volume• Example: oil, milk water etc.	Gases have: <ul style="list-style-type: none">• Indefinite shape• Indefinite volume• Example: oxygen, nitrogen, hydrogen etc.

2. Describe an experiment to show that the palm is translucent?

Ans: The experiment consists of the following steps:

1. With the help of your palm, cover the glass of a torch in the dark place.
2. Switch on the torch.
3. Observe the light from the other side of the palm.

Observation: Some part of the light passes through the palm but not all passes through it. This shows that our palm is translucent.

3. Why is the grouping of the objects helpful?

Ans: Objects must be grouped in order to be easily and quickly located. It's also useful to know whether the grouped objects are finished or not. This is especially useful for shopkeepers. He'll be able to tell if his stock is finished or not.

Extra Questions -

Very Short Answer Type Questions

1. In a blue-coloured solution of water and a dye, which is solvent and which is solute?

Answer: Dye is the solute and water is the solvent in the resulting solution.

2. What are combustible materials?

Answer: Materials that burn on heating at a certain temperature are called combustible materials.

3. Classify the below materials as translucent or transparent or opaque:

Cardboard, water, glass, oily paper, stone, wood, and metal.

Answer: Glass and water are transparent, oily paper is translucent, whereas cardboard, stone, wood, and metal are opaque.

Short Answer Type Questions

1. How is the density of an object related to its floating or sinking?

Answer: An object will float only when its density will be less than the surrounding liquid and it will sink when its density will be greater than the surrounding liquid.

2. When water and starch are mixed together, what kind of solution will you get?

Answer: When you mix a small amount of starch with water, it easily gets dissolved in the water. But when the amount of starch increases, the resulting solution starts thickening and forms a suspension.

3. Why do some metals become dull and lose their shine?

Answer: Some metals lose their shine and become dull because metals when exposed to air react with gases and moisture present in them, and as a result, form a thin layer of oxide, carbonate, or sulphide.

CLASS 6- SCIENCE (2022-23)
CHAPTER 5
SEPARATION OF SUBSTANCES

A substance is a piece of matter with certain features and characteristics.
Substances characterised into two types as Pure substance and Impure substance.

Pure Substance:

- Many of the substances we come into contact with only have one type of component particle.
- Pure substances are elements and compounds.
- Iron, copper, water, salt, and other pure substances are examples.

Impure Substance:

- Impure substances are those that have multiple types of component particles.
- Pond water, milk, and other unclean substances are examples.

Impurities:

Impurities are undesired particles in a substance that cause it to be impure.

Element:

Element is a substance made up of the same material's identical particles.

Compound:

Compound is a substance created by the chemical reaction of two or more elements in a specific ratio.

Mixture:

- Mixtures are substances that have more than one component blended in any ratio.
- Air, for example, is made up of a variety of gases such as nitrogen, oxygen, carbon dioxide, dust particles, and so on.

Solution:

- A mixture of two or more components is referred to as a solution.
- The solvent is the material with the highest concentration, whereas the solute is the substance with the lowest concentration.
- Pure substances are elements and compounds

Need for Separating Component of a Mixture:

Separation of the components of a mixture or an impure substance for the purposes of:

- To get rid of something that isn't beneficial or dangerous.
- Obtaining the required component.
- To get a pure sample, contaminants must be removed.

Methods of Separation:

- The properties of the components in a mixture, such as particle size, density, melting point, boiling temperature, volatility, and so on, remain unchanged.
- To separate the components of a mixture, use the differences in any one of these qualities.
- The following methods are used for separation, these are as follows;

1. Threshing
2. Winnowing

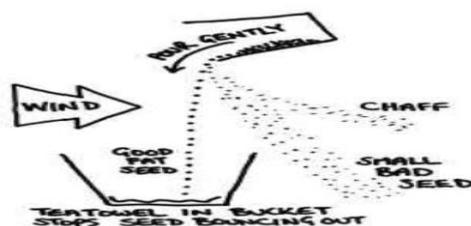
3. Handpicking
 4. Sieving
 5. Magnetic Separation
 6. Floating and Sinking Method
 7. Sedimentation and Decantation
 8. Loading
 9. Filtration
 10. Separation to Immiscible Liquids
 11. Churning to Separate Cream from Milk
 12. Sublimation
- From above Threshing, Winnowing, Handpicking, Sieving and Magnetic Separation methods are used to separate the solid from other solids.
 - Evaporation and Condensation methods are used to separate water soluble solids or soluble solute in the solvent.
 - Sedimentation, Decantation, Loading and Filtration methods are used to separate insoluble solids from liquids.
 - Funnel, Centrifugation and Churning methods are used for separation of immiscible liquids.
 - Floating and Sinking Method and Sublimation methods are used for removing a non-soluble solute from a solvent.

Separation of Solid From Other Solids:

1. Threshing:

- Threshing is the process of separating grain from husk.
- The grains must be separated from the stalks once these crops have been harvested or cut (the dried stems). Threshing is used to accomplish this.
- It can be done by hand or with the use of equipment.
- Threshing is done manually by grasping a pile of grain and pounding it against a rock or a hard surface.
- This loosens the grain and separates it from the stalk.
- Bullocks are sometimes used to crush the gathered stalks during threshing.
- Threshing can also be done with the assistance of machinery such as the combine harvester.
- Seed coverings and small fragments of leaves or stem may still be present in threshed grains (collectively called chaff). Winnowing is used to separate them.

Winnowing:



- Wind or blowing air is used to separate heavier and lighter components of a combination.
- Winnowing is the process used to separate chaff from grain with the help of wind or blowing air.
- The farmer places the mixture of chaff and grain in a winnowing basket and stands at a higher level, letting the mixture fall to the ground.
- The grain falls practically vertically because it is heavier, whereas the lighter chaff is swept away by the wind and forms a distinct mound from the grain.
- Cattle feed is made from the separated chaff.
- The direction of the wind is very important factor in the process of winnowing.

3. **Hand-Picking:**

- Unwanted components are simply picked up by hand in this process.
- When the quantity of the combination is tiny, the undesired component is present in lesser quantities, and the size, form, or colour of the unwanted substance differs from that of the useful one, this hand-picking approach is preferable.

4. **Sieving:**

- The procedure for separating solid parts of a mixture of varying sizes.
- The smaller component (stones or husk) passes through the sieve's pores, while the larger component (stones or husk) is left behind. Some people use this approach to remove wheat bran (larger particles) from flour in their homes.
- At construction sites, sieving is also used to remove pebbles and stones from sand. The fine sand particles flow through the holes of the sieve, while the stones and pebbles in the combination remain in the sieve.
- A sieve is a device having numerous small holes through which smaller particles can pass.

5. **Magnetic Separation:**

When a magnet is passed over a magnetic mixture, the magnetic material adheres to it and is removed.
Separation of Water Soluble Particles or Soluble in Solvent Solutes:

1. **Evaporation:**

The process of converting a liquid condition to a gaseous state when heated.

2. **Condensation:**

On cooling, the process of converting a gaseous state to a liquid state.

Separation of Insoluble Solids From Liquids:

1. **Sedimentation:**

- Sedimentation is the process of heavier and insoluble components of a mixture sinking down.
- Sand and water are two examples.

2. **Decantation:**

Decantation is the technique of conveying clean liquid without disturbing the sediment.

3. **Loading:**

The methods for causing finer particles to settle more quickly by dissolving a little amount of alum.

4. **Filtration:**

- Impurities are passed through a filter in this process. The pores of the filter enable only liquids to flow through, and it may separate suspended particles and solid particles.
- The clear liquid recovered is referred to as filtrate, whereas the stuff left on the filter paper is referred to as residue.

Separation of Immiscible Liquids:

1. **Funnel:**

- In this process, the separation of an insoluble material from a liquid will be done by passing the mixture through a filtering apparatus.

- It is used to separate oil and water mixtures.
2. **Centrifugation:**
 - A centrifuge is used to spin a liquid containing suspended particles at a high speed, causing heavier particles to settle down.
 - It's used to separate milk from cream.
 3. **Churning:**
 - This approach is used to separate lighter solid particles suspended in a liquid.
 - Butter made from curd is an example.

Separating Solute not Soluble in a Solvent:

1. Flotation and sinking methods:

This method is employed when one of the components of a mixture is lighter than water and the other is heavier than water and the components are not soluble in water.

2. Sublimation:

Sublimation is the process of converting a solid to a vapour without first becoming a liquid.

- Husk and stones might be extracted from grains by handpicking.
- Winnowing separates the husk from the heavier grain seeds.
- A saturated solution is one in which no more of a substance can be dissolved.
- A solution can be heated to dissolve more of a substance.
- Different amounts of soluble compounds dissolve in water.

NCERT QUESTIONS

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 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



Fig. 5.9 Winnowing

grain.

3. 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 will fly away from pulses.

4. 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.



Fig. 5.10 Sieving

5. 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 will pour water into another container and the mixture will be separated.

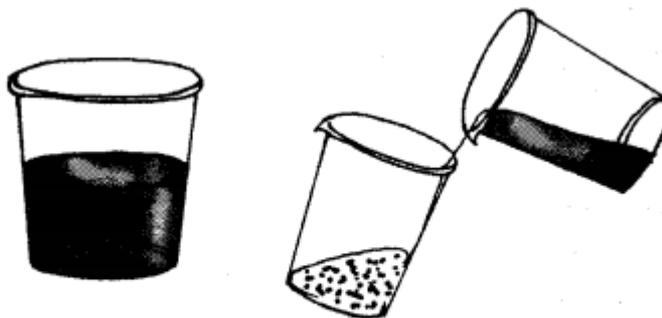


Fig. 5.11 Separating two components of a mixture by sedimentation and decantation.

6. 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.

7. 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.

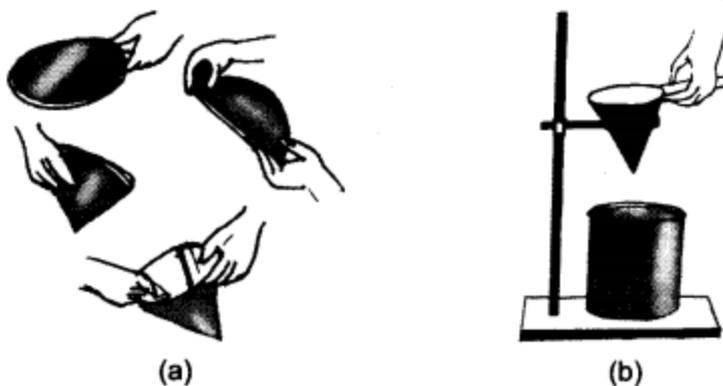


Fig. 5.12 (a) Folding a filter paper to make a cone
(b) Filtration using a filter paper

8. Fill in the blanks:

- (a) The method of separating seeds of paddy from its stalks is called .
 (b) 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 _____.
 (a) Salt is obtained from sea water by the process of _____.
 (b) 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 _____.

Ans.

- (a) threshing
 (b) filtration
 (b) evaporation
 (d) sedimentation and decantation

9. True or false?

- (a) A mixture of milk and water can be separated by filtration.
- (b) A mixture of powdered salt and sugar can be separated by the process of winnowing.
- (c) Separation of sugar from tea can be done with filtration.
- (d) Grain and husk can be separated with the process of decantation.

Ans.

- (a) False
- (b) False
- (c) False
- (d) False

10. 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.

EXTRA QUESTIONS

1. What is strainer?

Ans. Strainer is a kind of sieve which is used to separate a liquid from solid.

2. Name the method used to separate cream from curd.

Ans. Centrifugation.

3. How will you separate mango from a mixture of mango and apple?

Ans. By picking.

4. You are given a mixture of salt and sand. Can you separate them by picking?

Ans. No, we cannot separate them by picking.

5. Name the method used to separate the pieces of stone from grain.

Ans. Handpicking.

6. How can you separate grains from stalk?

Ans. We separate grains from stalk by threshing.

7. What types of material can we separate by using handpicking?

Ans. The materials having different size and colour can be separated by handpicking.

8. Name the other methods used to separate solid materials of different size.

Ans. Sieving.

9. Name the process used to separate heavier and lighter components of a mixture.

Ans. Winnowing.

10. Can the above stated method be used if both the components have same weight?

Ans. No, this method cannot be used.

11. What is evaporation?

Ans. The process of conversion of water into vapour is called evaporation.

12. Name the method by which we get salt from ocean water.

Ans. Evaporation.

13. Define condensation.

Ans. The process of conversion of water vapour into liquid form is called condensation.

14. Write opposite process of evaporation.

Ans. Condensation.

SHORT ANSWER TYPE QUESTIONS

1. What is mixture?

Ans. When two or more than two substances are mixed together in any ratio then it is called a mixture.

2. Write various methods of separation of components from their mixture.

Ans.

1. Handpicking
2. Threshing
3. Winnowing
4. Sedimentation
5. Decantation
6. Filtration
7. Evaporation
8. Condensation

3. 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.

4. What do you mean by threshing? Where is it used?

Ans. Threshing is a process in which we separate grain from stalks. This process is used by farmer to separate gram, wheat, rice, mustard seeds in his field.

5. Write three methods of separation.

Ans. Handpicking, threshing and winnowing.

6. 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.

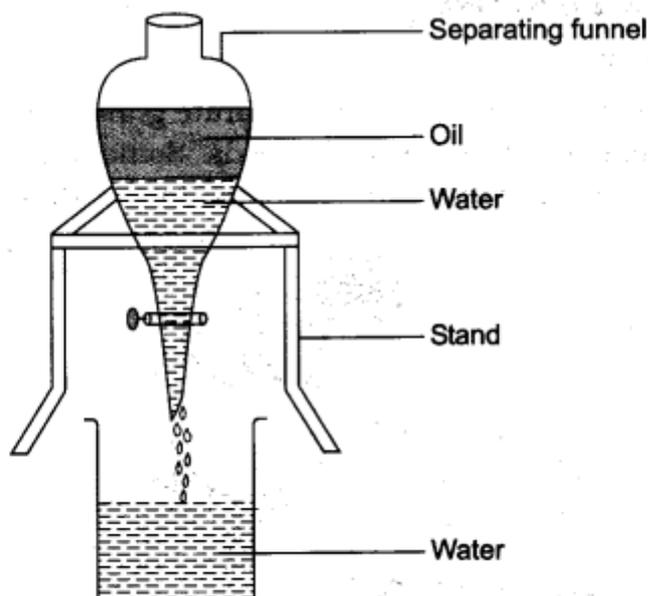


Fig. 5.13 Separation of liquids by separating funnel

7. What is evaporation?

Ans. The process of conversion of water into vapour is called evaporation. This process takes place continuously where water is present. Common salt from sea water is obtained using this method.

8. Define winnowing.

Ans. The process is used to separate components from a mixture in which one component is heavier or

lighter than other is called winnowing. Winnowing is done with the help of wind or by blowing air.

9. What do you mean by sieving? Give an example.

Ans. Sieving allows the fine flour particles to pass through the holes of the sieve while the bigger particles or impurities remain on the sieve. For example, in a flour mill, impurities like husk and stones are removed from wheat before grinding it.

10. Match the column:

<i>Separation process</i>	<i>Purpose for which we do the separation</i>	<i>What do we do with the separated components?</i>
(1) Separate stones from rice	(a) To separate two different but useful components.	(i) We throw away the solid component.
(2) Churning milk to obtain butter	(b) To remove non-useful components.	(ii) We throw away the impurities.
(3) Separate tea leaves	(c) To remove impurities or harmful components.	(iii) We use both the components.

Ans. (1)-(c)-(ii), (2)-(a)-(iii), (3)-(b)-(i)

1. What is threshing?

Ans. Threshing is a process that is used to separate grain from stalks. In this process the stalks are beaten to free the grain seeds. Sometimes threshing is done with the help of bullocks. Machines are also used to thresh large quantities of grain.



Fig. 5.14 Threshing

2. 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.

3. 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.

4. Where is decantation used? Give two examples.

Ans.

- (i) Decantation is used to separate insoluble solids or liquid from liquid. Rain water is a mixture of mud and water. It is purified by decantation.
- (ii) Oil and water also get separated by this method because oil floats up.

5. How will you prepare cheese (paneer)?

Ans. For making paneer, a few drops of lemon juice are added to milk as it boils. This gives a mixture of particles of solid paneer and liquid. The paneer is then separated by filtering the mixture through a fine cloth or strainer.

6. Explain the method that can be used for separating the following mixture:

- (i) Sand and husk
- (ii) Wheat, sugar and stalk
- (iii) Water and petrol
- (iv) Rice and salt
- (v) Sand and salt

Ans.

- (i) Mixture of sand and husk: Sand and husk can be separated by the method of winnowing.
- (ii) Mixture of wheat, sugar and stalk: For separating stalk from the mixture we should follow the winnowing method because stalk is lighter than other two components and get separated. Wheat and sugar can be separated by sieving because they are in different sizes.
- (iii) Mixture of water and petrol: Water does not dissolve in petrol. So, it can be separated by the use of separating funnel.
- (iv) Mixture of rice and salt: Rice and salt can be separated by sieving.
- (v) Mixture of sand and salt: Sand and salt is mixed with water, salt dissolves in water and sand can be separated solution by sedimentation and decantation followed by filtration. After that using evaporation common salt is separated

CLASS 6- 2022-23
CHAPTER - 7
GETTING TO KNOW PLANTS

Introduction:

A variety of plants are seen everywhere. Some of them are small or tall, with thick stems or tender stems, and with different types and colours of leaves, flowers, and fruits. But all these plants have the same common parts, which is root, stem, leaves, buds, flowers, and fruits, though they may be different in colour, size, or shape.

Classification of Plants:

As the plants are different in their sizes or type of stems the similar type of plants can be classified into some groups based on these characteristics. They can be classified as follows:

1) Based on Size of the Plant and The Type of Stem:

The plants have different sizes and have different types of stems, it can be hard, tender, or soft. The different types are as follows:

a) Herbs:

- These are the plants that have green tender stems and are usually short in size.
- These are mostly the plants that provide us with herbs that are used in cooking and as medicines.
- **Examples - Tulsi, mint, mustard, wheat, etc.**

b) Shrubs:

- These plants have a hard stem and have small branches starting from the base of the plant.
- They do not grow very big, but are bigger than herbs.
- Example - Rose, sunflower, tea, etc.

c) Trees:

- These are the biggest plants that have woody, hard stems with a lot of branches.
- Their wood is often used to make houses and furniture.
- Example - Mango, neem, teak, etc.

d) Creepers:

- These types of plants have very weak stems and are not able to stand up, so they spread and grow on the ground.
- Example - Pumpkin, cucumber, etc.

e) Climbers:

- These are again plants with weak stems but they climb onto something like a tree for support to grow.
- Example - Money-plant, pea plant, etc.

2) Based on the Life Cycle of Plants:

The plants can be grouped on the basis of the time taken by them to complete their life cycle.

a) Annuals:

- These are the plants that take one season to complete their life cycle.
- Example - Wheat, rice, corn, etc.

b) Biennials:

- These plants take two seasons for the completion of their life cycle.
- Example - Carrots, onion, banana, etc.

c) Perennials:

- These plants take more than two years to complete their life cycle and usually have a long lifespan.
- Examples - Mango, apple, etc

3) Based on Flowers:

The plants may have flowers or may not have them. So, they can be broadly grouped as:

a) Flowering Plants:

- These are the plants that bear flowers.
- Example - rose, jasmine, papaya, etc.

b) Non-Flowering Plants:

- These plants do not bear flowers.
- Example - Ferns, moss.

Parts of a Plant:

- A plant has mainly two parts, one that stays above the ground or soil, which is called the shoot system and the portion below the soil called the root system.

- Many parts of the plants are edible, that is it can be eaten. Example - Leaves; spinach, cabbage, onion. Stem; celery. Flower; cauliflower, broccoli. Fruits; mango, banana. Seeds; pulses. Roots; carrots, radish.

Shoot System:

This contains all the portions above the soil like stem, leaves, buds, flower, fruit.

1) Stem:

- The main part of the plant on which all the other parts are borne is called the stem. It bears the branches, leaves, buds, flowers, and fruit.
- It keeps the plant in an upright position and provides support to the plant.
- The main function of the stems is to transport the water and the minerals from the soil to different parts of the plant.
- A simple experiment can be used to observe this. When a freshly cut stem of a plant is kept in a red coloured solution of water, and then it is seen that the red colour is seen in the stem, if it is cut and also in the leaves after some time.
- Sometimes the stem is also modified to store food as in potato (underground) or to threadlike structures called tendrils for climbing.

2) Leaf:

- The leaf is a structure that is attached to the stem of the plant and is generally green in colour. It may be of other colours too as in some ornamental plants.
- The point by which the leaf is attached to the stem is called the petiole of the leaf.
- The broader flat part of the leaf is called the lamina.
- There are some lines on the leaf which are called veins. A central main line that is visible in the leaf is called the midrib.
- The design made by the veins of the leaf are termed as leaf venation. This venation can be of two types:
 - a) Reticulate venation: This is a net like design formed by the veins on both the sides of the midrib. Example - mango leaf.
 - b) Parallel venation: In this type of venation the design of the veins are parallel to each other. Example - grass.
- The leaf has two main functions:

a) Transpiration:

- This is the process by which the leaves lose water in the form of water droplets from the leaves, by evaporation.
- This maintains the balance of water in the plant for its survival.
- This can be easily observed by tying a polythene cover on a leaf of a plant. Water droplets appear inside it after some time which shows that leaves lose water.

b) Photosynthesis:

- The other main function of the leaves is to make food for the plant. The green pigment in the leaves called chlorophyll in the presence of sunlight, carbon dioxide, and water, prepares food for the plant.
- The oxygen is released in this process and the food is used and stored in the plant.

3) Buds:

The buds are basically a shoot that is in the stage of development. It appears as a small projection from the stem.

4) Flowers:

- The flowers are the colourful part of the plant which are beautiful to look at. They may be scented also. It makes it easy to identify the plants by the colour and shape of the flowers, like roses and marigolds.
- The main parts of a flower are as follows:

a) Sepals:

- They are the outermost layer of small leaf-like structures of a flower.
- They are mostly green in colour and their function is to protect the flower and give support to the petals.

b) Petals:

- These are the coloured layer after sepals. They could be of various colours and shapes. Like roses and sunflowers possess distinct shapes and colours.
- These are brightly coloured to attract insects and birds for pollination. They also protect the inner layers of the flower.

c) Stamen:

- These are the male parts of the flowers. They are long thread-like in shape with a swollen portion at the end. These are also of different sizes and numbers.
- Each stamen is made of a long thin tube called filament.
- The swollen portion at the end of the filament is called another which carries the pollen grains.

d) Pistil:

- It is the female part of the flower. They are usually present in the middle of the flower. It consists of three parts namely, stigma, style and ovary. It is attached to the plant by the pedicel.
- The sticky part at the top end of the pistil that receives the pollen grains is the stigma.
- It is connected to a long thin tube called the style which carries the pollen grains to the ovary.
- The ovary is a swollen part at the end of the pistil that contains the ovules or the developing seeds.

Root System:

- It consists of the parts of the plants that are below the soil, that is roots.
- The roots are very important for the plants as they absorb water and minerals from the soil. This is then transported to the different parts of the plants by the stem for preparing food and so it helps in the growth of the plant.
- The roots also function as an anchor for the plant as it holds the plant firmly to the ground and lets it stand straight.
- The roots also store food and these are edible.
- The roots can be of two different types:

1) Tap Roots:

- This type of root has one main or primary root that grows down into the ground. It has many small roots coming from it.
- This root is firmer and more difficult to pull out as it holds strongly in the ground and goes deep into the soil.
- They often store food in them and so are beneficial to humans. They can be of different shapes.
- Example - roots of trees like mango, etc and others like turnips, carrots, etc.

2) Fibrous Roots:

- This type of root does not have a main root and it has many roots that are almost of the same size.
- They spread like a thread-like structure in the soil and so they don't go deep into the soil. These can be easily pulled out.

- Examples - onion, grass, etc.

NCERT QUESTIONS

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.

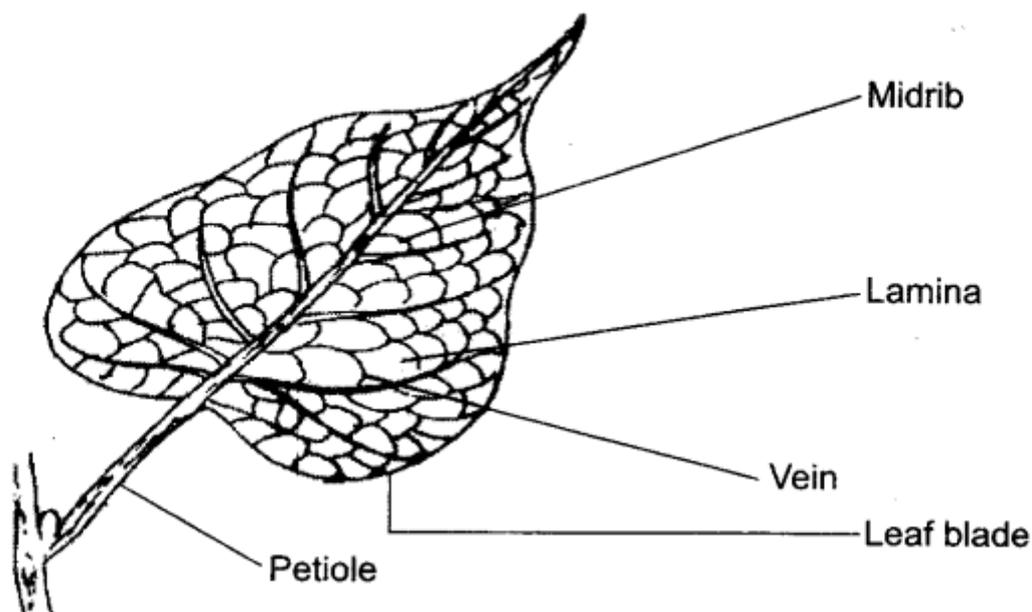
Ans:

- (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.

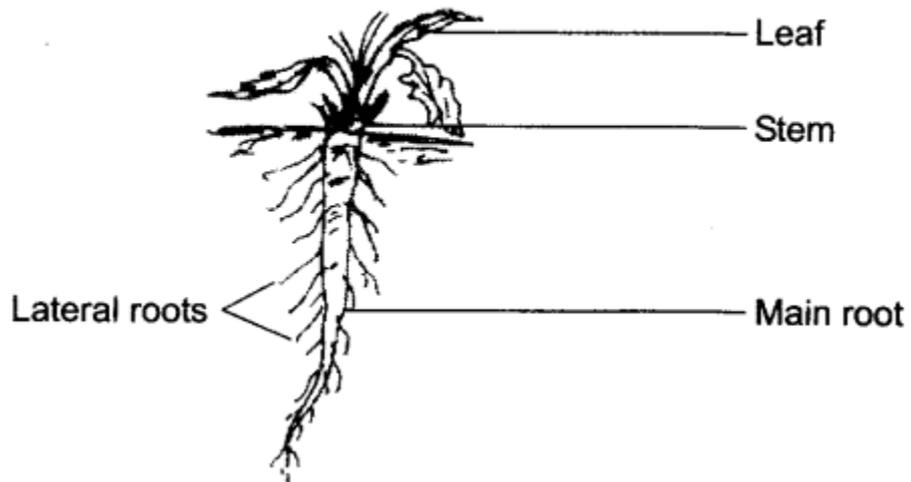
2. Draw (a) a leaf, (b) a tap root and (c) a flower, you have studied for Table 7.3 of the textbook.

Ans:

(a) **Leaf:**



(b) Tap root:



(c) Flower:

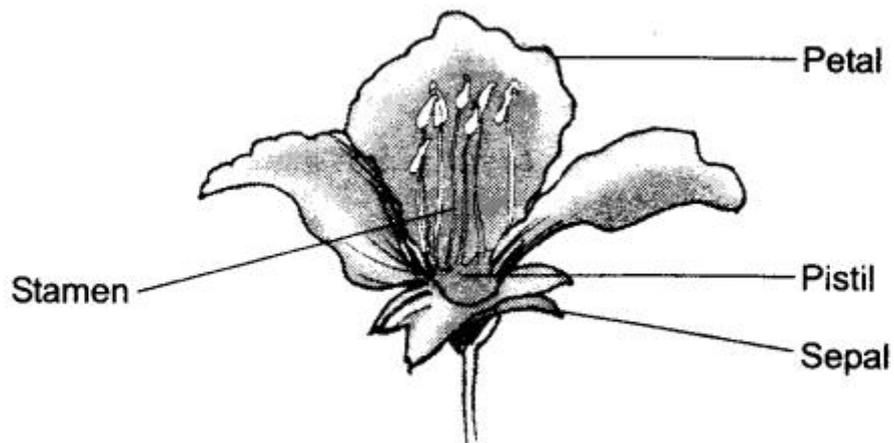


Fig. 7.5

3. 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.

4. 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.

5. Which of the following leaves have reticulate venation?

Wheat, tulsi, maize, grass, coriander (dhania), china rose.

Ans: Tulsi, china rose.

6. If a plant has fibrous root, what type of venation are its leaves likely to have?

Ans: Parallel venation.

7. If a plant has leaves with reticulate venation, what kind of roots will it have?

Ans: Tap root.

8. Is it possible for you to recognise the leaves without seeing them? How?

Ans: We cannot exactly recognise the leaves without seeing them. We may be able to have some idea by touching and smelling them.

9. Write the names of the parts of a flower in sequence, from outside to inside.

Ans: The names of various parts of a flower from outside to inside are:

- (i) Sepals
- (ii) Petals
- (iii) Stamens
- (iv) Pistil

10. 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:

<i>S. No.</i>	<i>Name of the plant</i>	<i>Whether seen</i>	<i>Whether have flowers</i>
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

11. 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.

12. 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.

13. Name two flowers, each with joined and separate sepals.

Ans:

Flowers with joined sepals:

(i) Datura

(ii) Loki

Flowers with separate sepals:

(i) Gurhal

(ii) Mustard

VERY SHORT ANSWER TYPE QUESTIONS

1. List few plants found around your house.

Ans: Mango, neem, grass, chilli, palak and banyan tree.

2. Are all the plants same in size?

Ans: No, all plants are of different sizes.

3. What are the major parts of plants?

Ans: Stem, root, leaves and flowers.

4. How many kinds of plants are there?

Ans: There are three kinds of plants:

(i) Herbs

(ii) Shrubs

(iii) Trees

5. Name two plants that belong to herbs.

Ans:

(i) Tomato

(ii) Potato

6. Give two examples of shrubs.

Ans:

(i) Lemon

(ii) Orange

7. Give two examples of trees.

Ans:

(i) Mango

(ii) Neem

8. Define petiole.

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

9. What is lamina?

Ans: The broad green flat part of leaf is called lamina.

10. What are veins?

Ans: The lines on the leaf are called veins.

11. What is midrib?

Ans: A thick vein in the middle of the leaf is called midrib.

12. What is leaf venation?

Ans: The design made by veins in a leaf is called leaf venation.

13. How many types of leaf venation are there?

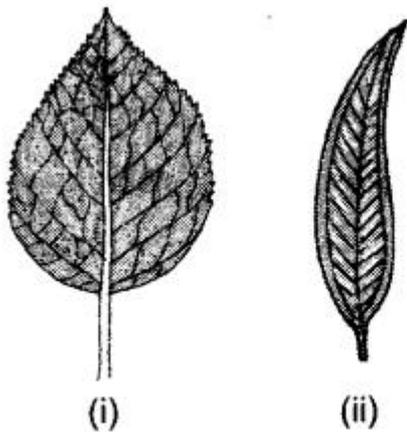


Fig. 7.6

Ans: There are two types of leaf venation:

- (i) Reticulate venation
- (ii) Parallel venation

14. What is transpiration?

Ans: The process by which water comes out from the leaves in the form of vapour is called transpiration.

15. Name the process by which leaves can prepare their food.

Ans: This process is called photosynthesis.

16. What are the raw materials for photosynthesis?

Ans:

- (i) Sunlight
- (ii) Water
- (iii) Carbon dioxide
- (iv) Chlorophyll

17. Where does the photosynthesis take place in plants?

Ans: It takes place in the leaves.

18. Name the part of plant which helps in holding the plant in the soil.

Ans: Roots.

19. Name the types of roots shown in the Fig. 7.7.

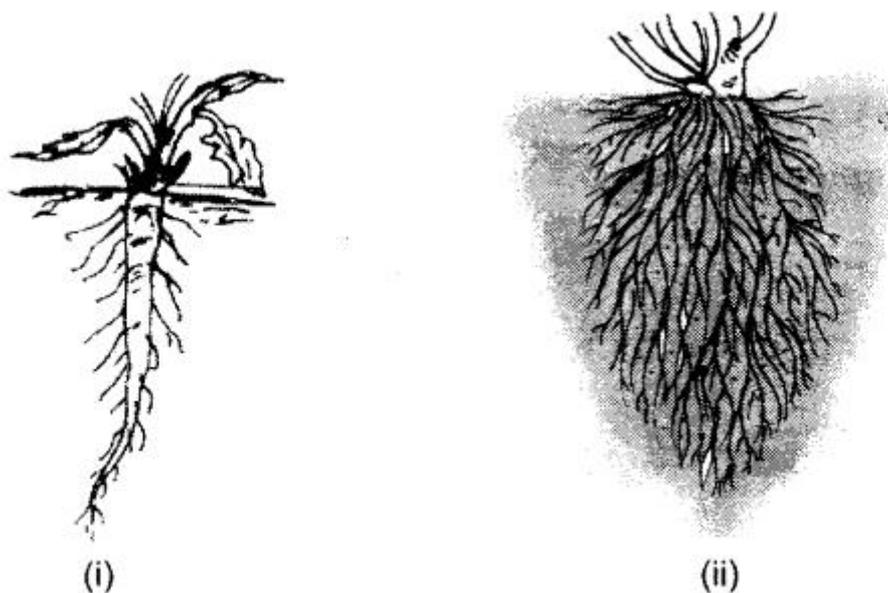


Fig. 7.7

Ans: (i) Tap roots (ii) Fibrous roots

20. What are tap roots?

Ans: The roots in which one root is main root and other lateral roots grow on it are called tap roots.

21. Give names of two plants which have tap root.

Ans: Gram and mustard.

Q. 22. Name two plants which have fibrous root.

Ans: (i) Wheat plant (ii) Maize plant

23. What are lateral roots?

Ans: The smaller roots that grow on the main tap root are called lateral roots.

24. What are fibrous roots?

Ans: The roots which do not have any main root but all the roots are similar are called fibrous root.

25. Does the stem prepare food for any plant?

Ans: Yes, there are some plants whose stem prepares food, e.g. cactus.

26. Name the prominent parts of a flower.

Ans: The prominent parts of a flower are petals, sepals, stamens and pistil.

27. What are sepals? What are their functions?

Ans: The small green coloured leaf-like structures are called sepals. It protects flower when it is in stage of bud.

28. What are petals? Why are they generally coloured?

Ans: The coloured big leaf-like structures present in flower are called petals. Petals are coloured so as to attract insects for pollination.

29. What are stamens?

Ans: When we remove sepals and petals from the flower then we see some filaments in the flower which are called stamens. These, are the male part of the flower.

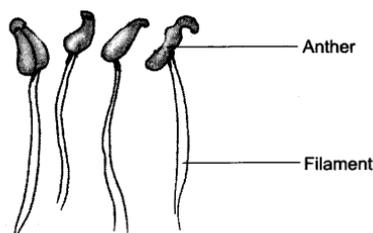


Fig. 7.8 Stamens

30. Name various parts of stamen.

Ans: There are two parts of a stamen:

(i) Anther (ii) Filament.

These are the male part of the flowers.

31. What is pistil?

Ans: The innermost part of a flower is called pistil. These are the female part of the flowers.

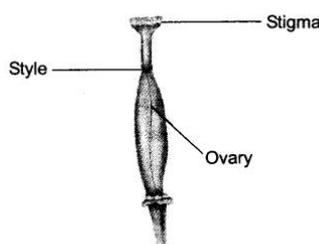


Fig. 7.9 Pistil

32. Name the various parts of pistil.

Ans: There are three parts of pistil:

(i) Stigma (ii) Style (iii) Ovary

33. What are ovules?

Ans: These are small bead-like structures inside the ovary.

SHORT ANSWER TYPE QUESTIONS

1. What are weeds?

Ans: The unwanted plants that grow in the fields with the main crops or in their surroundings are called weeds. Weeds are the plants which are not grown by the farmers. For example, grass.

2. Classify plants and give an example of each.

Ans: On the basis of various characteristics most of the plants can be classified into three categories:

(i) Herbs, e.g. tomato

(ii) Shrubs, e.g. lemon

(iii) Trees, e.g. mango

3. What are herbs? Give two examples.

Ans: The plants with green and tender stems are called herbs. They are usually short and may have no or less branches. For example, tomato, potato.

4. What are shrubs? Give two examples.

Ans: The plants which have a hard but not a very thick stem are called shrubs. Such plants have the stem branching out near the base. For example, lemon, rose plants.

5. What are trees? Give two examples.

Ans: The plants which are very tall and have hard and thick brown stem are called trees. The stems have branches in upper part and much above the ground. For example, mango, neem.

6. What are creepers? Write an example.

Ans. The plants with weak stem that cannot stand upright and spread on the ground are called creepers. Various types of grasses are the examples of creepers.

7. What are climbers?

Ans: The plants that take support of neighbouring structures and climb up are called climbers. They have weak stem. For example, grapes, money plant, beans.

8. Explain an activity to show that stem conducts water and other substances.

Ans: Take some water in a glass. Add few drops of red ink to the water. Cut the stem of a herb plant from its base. Put it in the glass as shown in figure. We will see that some parts of the stem become red. This activity shows that stem conducts water.



Fig. 7.10 What does the stem do?

9. Explain the structure of a leaf with the help of a labelled diagram.

Ans: There are two main parts of leaf:

- (i) **Petiole:** The part of the leaf by which it is attached to the stem is called petiole.
- (ii) **Lamina:** The broad, green part of the leaf is called lamina.

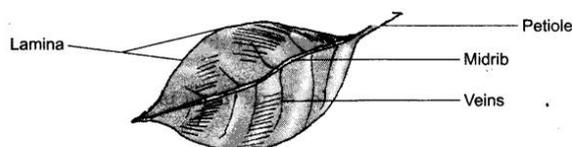


Fig. 7.11 A leaf

The lamina contains following parts:

- (i) **Veins:** There are various types of lines on the leaf. These lines are called veins
- (ii) **Midrib:** There is a thick vein in the middle of the leaf. This vein is called midrib.

10. Explain the main functions of leaf.

Ans: There are following two main functions of leaf:

(i) **Transpiration:** The extra water comes out of the leaves in the form of vapour. This process is called transpiration.

(ii) **Photosynthesis:** The process by which leaves prepare their food from water and carbon dioxide, in the presence of sunlight and a green-coloured substance, is called photosynthesis.

11. What are unisexual and bisexual flowers?

Ans: Unisexual flower has either male (stamen) or female (pistil) parts.

Bisexual flowers have both male and female whorl in the flowers, i.e., they have both stamen and pistil.

12. Name a plant that eats insect.

Ans: Pitcher plant.

13. Pitcher plant has green leaves which can prepare food by photosynthesis then why does it eat insects?

Ans: To get nitrogenous compounds which it cannot absorb from the soil.

14. Name a plant that has underground as well as aerial (above the ground) root system.

Ans: Banyan tree.

15. Why do we see dew drops on leaves in the early morning?

Ans: At night the water lost by leaves does not get evaporated and gets collected on the leaves in the form of dew drops.

16. Why are petals colourful?

Ans: The colourful petals attract insects for pollination.

17. Why does white flowers bloom at night?

Ans: White colour attracts night insects for pollination.

18. What do you mean by a complete and incomplete flower?

Ans: The flower with all whorls, i.e., sepals, petals, stamen and carpel in it is a complete flower. If any one of this is absent in a flower it is called an incomplete flower.

19. Leaves need oxygen and carbon-dioxide (for photosynthesis). How do they get these gases?

Ans: Leaves take in these gases from atmosphere through small pores present on them called stomata.

20. How can one destarch the leaves of potted plant without plucking, them?

Ans: By keeping it in dark for 2-3 days.

21. What is the relation between leaf venation and the type of roots?

Ans: The plants having tap root have reticulate venation. The plants having fibrous roots have parallel venation.

22. Name the male part of a flower. Write names of its parts and draw a diagram.

Ans: The male part of a flower is called stamen. It has two parts: (i) Filament and (ii) Anther.

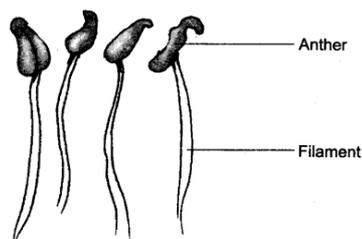


Fig. 7.12 Parts of a stamen

23. Name the female part of a flower. Write names of its parts and draw a diagram.

Ans: The female part of a flower is called pistil. It has three parts: (i) Stigma, (ii) Style, and (iii) Ovary.

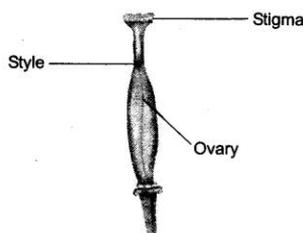


Fig. 7.13 Parts of a pistil

24. Differentiate between tap root and fibrous root.

Ans:

<i>Tap root</i>	<i>Fibrous root</i>
1. Tap root has only one main and long root. The smaller roots that grow from the main root are called <i>lateral roots</i> . 2. Tap root goes deep into the soil. 3. Tap roots are found in plants which have <i>reticulate venation</i> in their leaves.	Fibrous roots do not have a main root. All roots seem similar. They do not go deep into the soil. These are found in plants which have <i>parallel venation</i> in their leaves.

LONG ANSWER TYPE QUESTIONS

1. What do you mean by leaf venation? Explain various types of leaf venation with example.

Ans: Leaf venation: The design made by veins in a leaf is called leaf venation. There are the following two types of leaf venation:

(i) Reticulate venation: If the design of veins makes a net-like structure on both the sides of midrib then it is called reticulate venation. For example, mango leaf, gram leaf.

(ii) Parallel venation: If the veins are parallel to each other or to midrib then such type of venation is

called parallel venation. For example, wheat leaf, barley leaf.

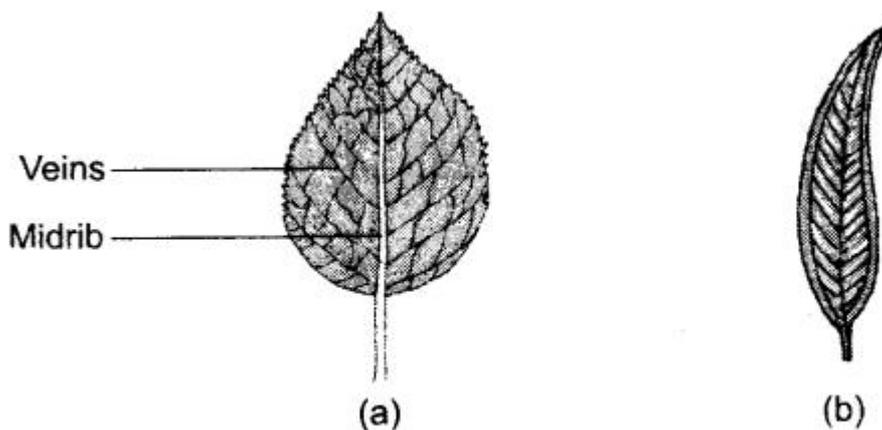


Fig. 7.14 Leaf venation—(a) Reticulate and (b) Parallel

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.

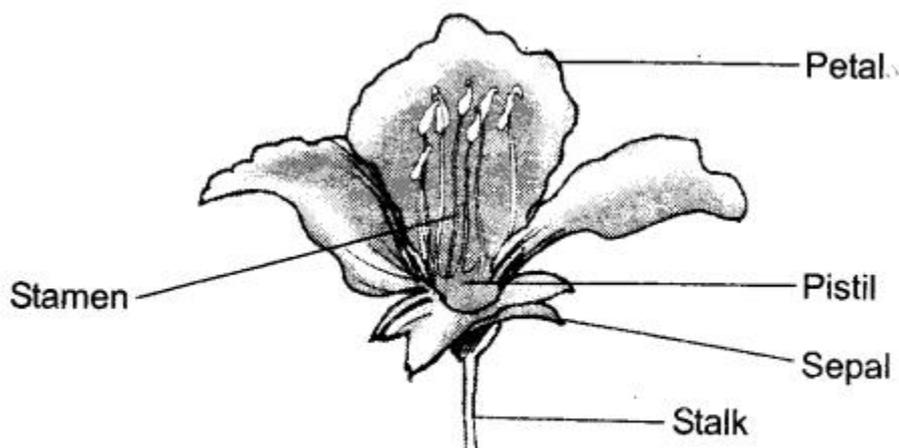


Fig. 7.15 Parts of a flower

3. 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.

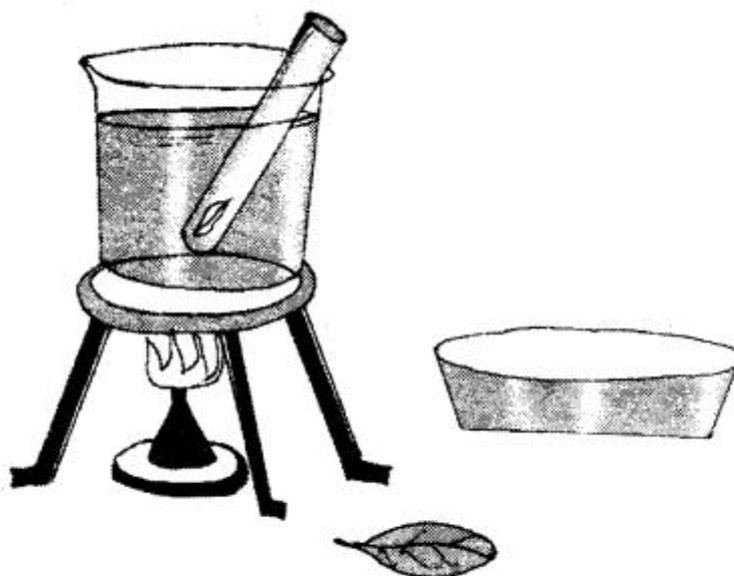


Fig. 7.16 Starch test

4. Explain that sunlight is essential for photosynthesis.

Ans: Take a potted plant having green leaves. Place it in a dark room for a day or two so that all the starch present in leaves is used by the plant. Now cover a portion of leaf with black paper and keep the plant in the sun for a day. Pluck the leaf, remove the black paper and test it for the starch. We see that only that part of the leaf becomes blue-black which was open to sun. The covered part does not become blue-black. This shows that no starch is formed because it gets no sunlight.

5. Explain 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.

6. Explain various kinds of roots with the help of an example.

Ans: There are following two types of roots:

- (i) **Tap roots:** The roots which have one main root and other smaller lateral roots are called tap roots. For example, mustard plant, gram.
- (ii) **Fibrous roots:** The roots which have no main root but all the roots appear similar are called fibrous

roots. For example, maize, wheat.

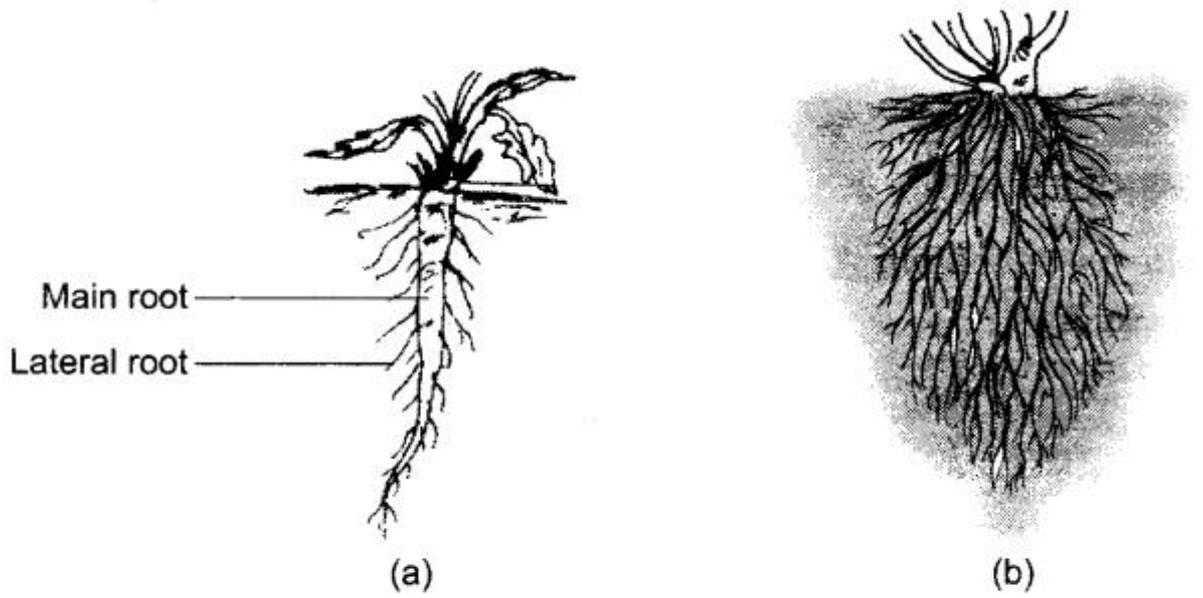


Fig. 7.17 (a) Tap root and (b) Fibrous root

CLASS 6- 2022-23

CHAPTER - 8

BODY MOVEMENTS

Movements

The ability of organisms to change position, by using their body parts, is called movement.

To know more about Movements, visit the link below;

- [Human Body and Its Movements](#)
- [Types of Movements](#)

Skeletal System

Skeleton

- Skeleton is the internal structure in organisms, which helps in bringing about movement.
- It forms a framework that gives the shape of the body and provides support to organisms.
- The skeleton is made up of bones.
- Different kinds of bones are joined to each other in a particular manner.
- These joints facilitate various types of movements.
- In higher animals, bones, muscles and cartilage together make the movement possible.

Muscles

- Muscles are parts of the body that help in bringing about movement.
- Muscles may be attached to bones, (humans) or may work alone (earthworm).

Cartilage

- Part of the skeleton that is not hard as bones and can be bent, is cartilage.
- They are found in the upper part of the ear, the tip of the nose and at the tips of long bones.

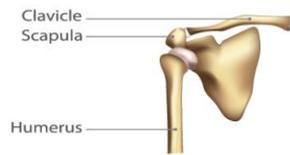
Functions of Human Skeletal System

Joints

- Joints are the points where two parts of the skeleton are fitted together to make movement possible.
- Examples are hip joint, elbow joint, knee joint, etc

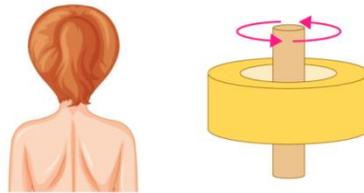
Ball and Socket Joint

- Ball and socket joint, where the rounded end of one bone fits into the cavity of the other bone.
- It brings in movement in all directions.
- It is seen in the hips and shoulders of the human body.



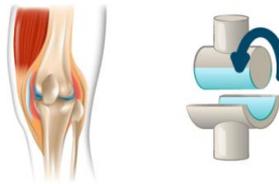
Pivot Joint

- A pivotal joint is where a cylindrical bone rotates in a ring.
- It joins the neck to the head.
- It allows to bend the head forward and backwards and turn the head to our left or right.



Hinge Joints

- Hinge joints bring about movement in only back and forth direction.
- The knees and elbows have hinge joints.
- The following image is a hinge joint in the elbow.



Fixed Joints

- Fixed joints are immovable joints because the bones are joined together.
- Such joints are found in the skull.

Gaits of Animals

The different patterns of movement of animals due to the differences in their skeletal structure are called gaits of animals.

Earthworm

- The earthworm does not have any internal skeleton.
- The body is made up of many rings joined end to end and muscles attached to these rings help to extend and shorten the body.
- The skin of earthworm also has a large number of tiny bristles that help it get a good grip on the ground.
- Repeated extension and contraction of the body muscles, enable the earthworm to move through the soil.

Snail

- Snails move with the help of their muscular, flat foot.
- They glide along a solid surface which is lubricated with mucus.
- This motion is powered by succeeding waves of muscular contractions of the foot.

Cockroach

- The body of a cockroach is covered with a hard outer skeleton that is made of different units joined together.
- It has three pairs of legs for walking and two pairs of wings attached to the breast for flying.
- It has distinct muscles that are used for movement.
- The muscles attached to the legs help in walking.
- The breast muscles attached to the wings help in flying, although they are not good flyers.

Birds

- Birds have a special skeletal and muscular structures that help them to fly.
- The forelimbs are modified to become wings and the bones inside are hollow to suit flying.
- The bones of the hind limbs are used for perching and walking.
- The shoulder bones and breastbones are strong and support muscles of flight, which move the wings up and down.

Fish

- Fishes have a streamlined body that helps them swim with least resistance.
- They use tail fin for small jerks through water and other fins assist swimming.
- The tail fin is also used for changing directions.

Snakes

- Snakes do not have legs for movement but use their long backbone along with muscles for movement.
- Their body curves into many loops, which gives it a forward push by pressing against the ground.

NCERT QUESTIONS

1. Fill in the blanks:

- (a) Joints of the bones help in the _____ of the body.
(b) A combination of bones and cartilages forms the _____ of the body.
(c) The bones at the elbow are joined by a _____
(d) The contraction of the _____ pulls the bones during

Ans:

- (a) movement
(b) skeleton
(c) hinge
(d) muscle

2. Indicate 'true' and 'false' among the following sentences:

- (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

3. 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
	(f) shows very slow movement
	(g) have a streamlined body

Ans:

Column I

- (i) Upper jaw
 (ii) Fish
 (iii) Ribs
 (iv) Snail
 (v) Cockroach

Column II

- (d) is an immovable joint
 (a) have fins on the body, and (g) have a streamlined body
 (e) protect the heart
 (b) has an outer skeleton, and (f) shows very slow movement
 (c) can fly in the air, and
 (b) has an outer skeleton

4. Answer 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.

SHORT ANSWER TYPE QUESTIONS

1. What do you mean by movement?

Ans: The changing position of the body or any part of the body is called movement.

2. At which part does the arm rotate?

Ans: The arm rotates on the round pit-like structure.

3. If you tie a scale with your arm, are you able to bend your elbow?

Ans: No, we cannot bend our elbow.

4. Name the places where two parts of the body are seen to be joined together.

Ans: These places are called joint.

5. If there are no joints then will it be possible to move?

Ans: No, it is not possible.

6. Can bones be bent?

Ans: No, bones cannot be bent.

7. Can we bend our body at every part?

Ans: No, we can bend our body only at joints.

8. How many types of joints are there?

Ans: There are five types of joints in our body.

9. Name the various types of joint.

Ans:

(i) Ball and socket joints

(ii) Pivotal joints

(iii) Hinge joints

(iv) Fixed joints

(v) Gliding joints

10. What is cavity in bone?

Ans: The hollow space in the bone is called cavity.

11. Give two examples of ball and socket joint.

Ans:

(i) Joint of upper arm and shoulder.

(ii) Joint of thigh and the hip.

12. Give an example of pivotal joint.

Ans. The joint of skull with backbone.

13. Give two examples of hinge joints.

Ans:

(i) Joints in fingers

(ii) Joints in knee

14. Give an example of fixed joint.

Ans: Joint of cranium skull.

15. Give an example of gliding joint.

Ans: The joint in backbone.

16. What is skeleton?

Ans: The framework of bones in our body is called skeleton.

17. What are ribs?

Ans: The bones of the chest are called ribs.

18. What is rib cage?

Ans: Ribs are joined with backbone to form a box. This box is called rib cage.

19. What are shoulder bones?

Ans: The shoulder bones are formed by the collar bone and the shoulder blade. It connects the upper part of the chest and bones of the arm.

20. What are pelvic bones?

Ans: The bones which enclose the body part below the stomach are called pelvic bones.

21. 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.

22. Name the three components of skeleton.

Ans: Skeleton is made up of many bones, joints and cartilage.

23. Name the parts of the body which help in movement.

Ans: Contraction and relaxation of muscles and bones and joints help in movement.

24. Name two animals which move without bones.

Ans: (i) Earthworm (ii) Snail

25. Give an example of animal which can walk, climb and fly in the air.

Ans: Cockroaches.

26. Name the organ in cockroach which helps in walking.

Ans: The three pairs of legs in cockroach help in walking.

27. Which part of the cockroach help in flying?

Ans: There are two pairs of wings attached to the breast which help them in flying.

28. Name a bird which can swim in water.

Ans. Duck.

29. What do you mean by streamlined?

Ans: If the body tapers at both the ends then such, shape of the body is said to be streamlined.

30. How does the snake move?

Ans: Snakes have a long backbone and many thin muscles which help in the movement. The snake's body curves into many loops. Each loop of the snake gives it a forward push by pressing against the ground.

31. What do you mean by fractured bone?

Ans: Fractured bone means broken bone.

32. Why are fractured bones plastered?

Ans. Plaster keeps broken bones at their right place so that they grow and join properly.

33. Name organs that are protected by the rib cage?

Ans: Heart and Lungs.

34. Why do we need two muscles together to move a bone?

Ans: A muscle can only pull, it cannot push. Thus, two muscles are required to work together to move a bone. When one muscle contracts, the bone is pulled. When another muscle of the pair pulls, it brings the bone in its original position.

35. Name three animals that have streamlined body.

Ans: Fish, Birds, Snake.

36. Many people suffer from a problem called arthritis. Explain its connection with movement.

Ans: Arthritis is the pain in joints. With this problem people find difficulty in moving from one place to another.

37. 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.

SHORT ANSWER TYPE QUESTIONS

1. What are joints? Write the names of various types of joints.

Ans: The places where two parts of the body seem to be joined together are called joints. There are following types of joints:

- 1. Ball and socket joints
- 2. Pivotal joints
- 3. Hinge joints
- 4. Fixed joints
- 5. Gliding joints

3. What is skeleton? Draw a diagram to show the human skeleton.

Ans: The bones in our body form a framework to give a shape to the body. The framework is called skeleton



Fig. 8.10 Human skeleton (Front view)

3. Write two ways by which we may know the shape of human skeleton.

Ans:

- (i) We can know the shape of skeleton by feeling.
- (ii) We could know the shape by X-ray images of human body

4:Write the differences between bones and cartilage.

Ans:

Bone	Cartilage
(i) They are hard.	(i) They are soft.
(ii) They cannot bend.	(ii) They can bend.
(iii) They are used to make the framework of whole body.	(iii) They help to make some parts of the body.

6. 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.

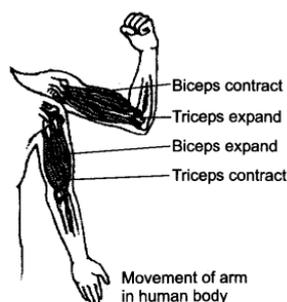


Fig. 8.11 Muscles work in pair

6. 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.

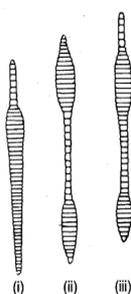


Fig. 8.12

Fig. 8.12 Locomotion in earthworm: (i) Front end elongates, rear end fixes to the ground, (ii) Front end fixes to the ground and rear end pulled forward, (iii) The cycle repeats.

7. How does the snail move?

Ans: The rounded structure on the back of the snail is called shell. It is the outer skeleton (exoskeleton) of snail. When it starts moving a thick structure and the head of the snail may come out of an opening in the shell. The thick structure is called foot, which is made up of strong muscles. It helps snail in moving.

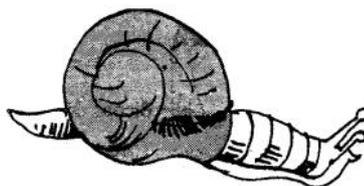


Fig. 8.13 A snail

8. 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.

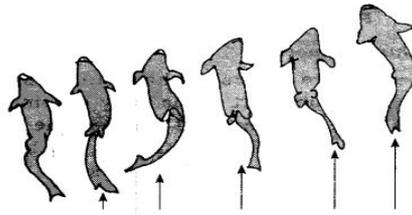


Fig. 8.14 Movement in fish

LONG ANSWER TYPE QUESTIONS

4. Explain various kinds of joints found in our body and give example of each.

Ans: There are five types of joints in our body:

(i) **Fixed joints:** Those joints which do not allow movement are called fixed joint.

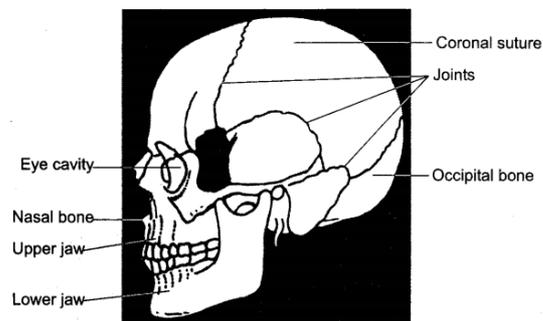


Fig. 8.15 Fixed joint

(ii) **Ball and socket joint:** This joint allows movement in all directions. The rounded end of one bone fits into the hollow space of other bone. For example, joint between upper arm and shoulder.

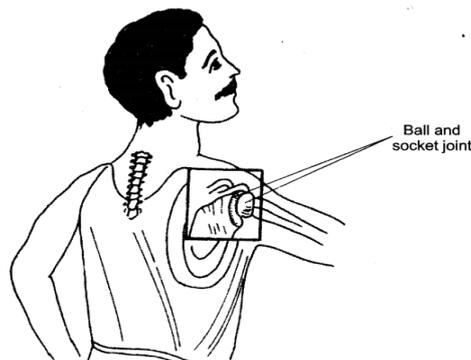


Fig. 8.16 Ball and socket joint

5.

(iii) **Pivotal joint:** This type of joint allow movement in all planes, i.e. up and down, side and other planes. For example, head.

(iv) **Hinge joint:** The joint which allows movement only in one plane is called hinge joint. For example, fingers, knees.

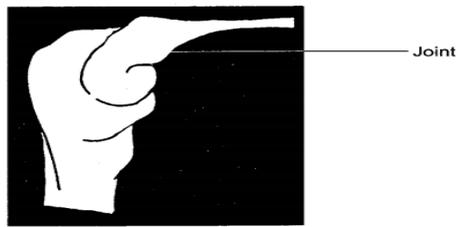


Fig. 8.17 Hinge joint of the knee

(v) **Gliding joint:** These joints allow only a limited amount of movement of sliding nature of cartilage. For example, the joints of backbone.

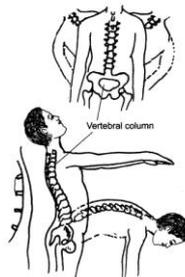


Fig. 8.18 Gliding joint

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