

NOTES

CLASS 6

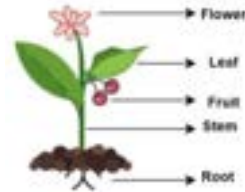
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GETTING TO KNOW PLANTS

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 are 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:

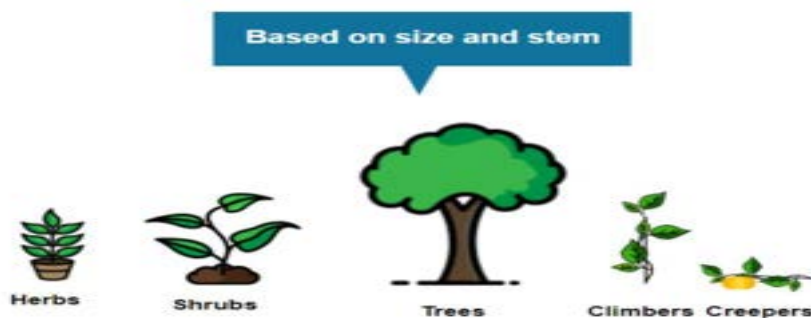
- These are the biggest plants that have woody, hard stems with a lot of branches.
- Their wood is often used to make houses and furniture.
- Example - Mango, Neem, Teak, etc.

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.

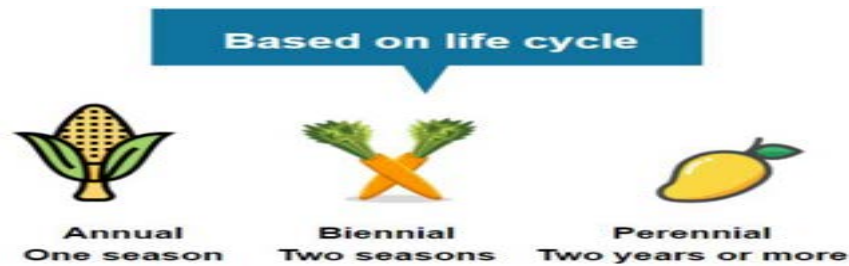


b) Biennials:

- 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.

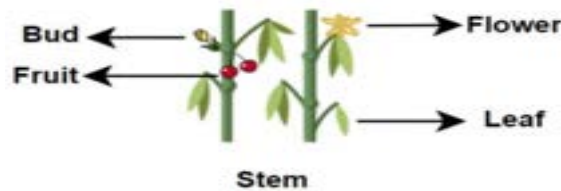


Parts of a Plant:

- 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:

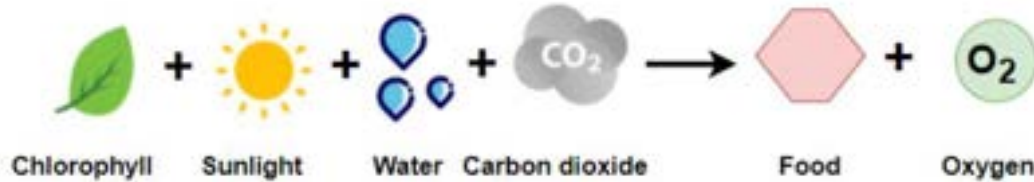
a) Transpiration:

- 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.

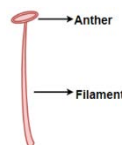


b) Petals:

- 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:

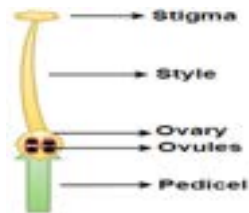
- These are the male parts of the flowers. They are long thread-like in shape with a swollen portion at the end. These are also of different sizes and numbers.
- Each stamen is made of a long thin tube called filament.
- The swollen portion at the end of the filament is called another which carries the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



d) Pistil:

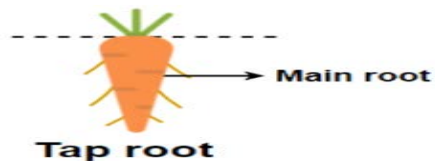


- It is the female part of the flower. They are usually present in the middle of the flower. It consists of three parts namely, stigma, style and ovary. It is attached to the plant by the pedicel.
- The sticky part at the top end of the pistil that receives the pollen grains is the stigma.
- It is connected 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.



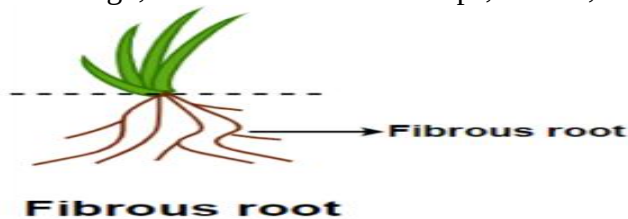
Root System:

- 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.

SOME IMPORTANT QUESTIONS

1. List few plants found around your house.

Answer: Mango, Neem, Grass, Chilli, Palak and Banyan tree.

2. Are all the plants same in size?

Answer: No, all plants are of different sizes.

3. What are the major parts of plants?

Answer: Stem, root, leaves and flowers.

4. How many kinds of plants are there?

Answer: There are three kinds of plants:

(i) Herbs (ii) Shrubs (iii) Trees

5. Name two plants that belong to herbs.

Answer: (i) Tomato (ii) Potato

6. Give two examples of shrubs.

Answer: (i) Lemon (ii) Orange

7. Give two examples of trees.

Answer: (i) Mango (ii) Neem

8. Define petiole.

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

9. What is lamina?

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

10. What are veins?

Answer: The lines on the leaf are called veins.

11. What is midrib?

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

12. What is leaf venation?

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

13. How many types of leaf venation are there?

Answer: There are two types of leaf venation:

(i) Reticulate venation (ii) Parallel venation

14. What is transpiration?

Answer: 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.

Answer: This process is called photosynthesis.

16. What are the raw materials for photosynthesis?

Answer: (i) Sunlight (ii) Water (iii) Carbon dioxide (iv) Chlorophyll

17. Where does the photosynthesis take place in plants?

Answer: It takes place in the leaves.

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

Answer: Roots.



19. What are tap roots?

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

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

Answer: Gram and mustard.

21. Name two plants which have fibrous root.

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

22. What are lateral roots?

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

23. What are fibrous roots?

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

24. Does the stem prepare food for any plant?

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

25. Name the prominent parts of a flower.

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

26. What are sepals? What are their functions?

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

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

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

28. What are stamens?

Answer: 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.

29. Name various parts of stamen.

Answer: There are two parts of a stamen:

(i) Anther (ii) Filament. These are the male part of the flowers.

30. What is pistil?

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

31. Name the various parts of pistil.

Answer: There are three parts of pistil:

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

32. What are ovules?

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

33. Define photosynthesis.

Answer: The process by which leaves make food for plants is called photosynthesis.

34. What is pollination?

Answer: The transfer of pollen from anther to stigma is called pollination.

35. Where do we find ovules in a flower?

Answer: Ovules are present inside the ovary of flower.

36. What are weeds?

Answer: Unwanted plants that grow in a field are called weeds.

37. Which part of the plant absorbs water and mineral from the soil?

Answer: Root



38. What is leaf venation?

Answer: The design made by vein in leaf is called leaf venation.

39. Define transpiration.

Answer: The loss of water in the form of vapour from plant parts is termed as transpiration.

40. What are parts of stamen?

Answer: Anther and filament are the two parts of stamen.

41. What is the innermost swollen called part of pistil?

Answer: Ovary is the innermost swollen part of pistil.

42. Where is food stored in plant?

Answer: Food is stored leaves and in some plants in roots in the form of starch.

Short Questions and Answers

1: What types of plants are called trees?

Answer: Plants which are tall and have hard, thick brown stem are called trees. The stem has branches in the upper part, much above the ground.

2: What is the difference between stem of shrubs and trees?

Answer: Stem in shrubs is hard but not very thick whereas trees have hard, thick brown stem.

3: What are creepers?

Answer: The plants with weak stem that cannot stand upright and spread on ground are called creepers.

4: What is the difference between creepers and climbers?

Answer: The plants with weak stem that cannot stand upright and spread on ground are called creepers. Whereas plants take support on neighbouring structures and climb up are called climbers.

5: Write the difference between reticulate and parallel venation. Give examples.

Answer: If the design made by veins in the leaf is net like on both side of mid rib, the venation is reticulate. E.g. rose. If the veins are parallel to each other, the venation is parallel. E.g. wheat.

6: What is photosynthesis?

Answer: Leaves prepare their food in presence of sunlight by using water and CO₂. This is called photosynthesis.

7: Write any two functions of root?

Answer: a) Roots help in holding plant firmly in the soil.
b) Roots help in absorption of water and minerals from the soil.

8: Where is food stored in plant and in what form?

Answer: Food is stored in plant in leaves and in some plants in roots. Food is stored in plants in the form of starch.

9: What are the different types of root found in plant?

Answer: Some plants have a main root called tap root and smaller roots called lateral roots. Whereas other plants have fibrous roots.

10: How are leaf venation and types of roots in a plant related?

Answer: Plants having the reticulate venation have tap roots while plants having the leaves with parallel venation have fibrous roots.

11: What is the function of stem in plant?

Answer: The stem conducts water from roots to the leaves (and other parts of plant) and food from leaves to other plant parts.

12: By which process plants prepare its food? And where it takes place?

Answer: Plants prepare its food by photosynthesis. It takes place in the leaves of plant.



13: In which part of flower ovary is found? What can be seen in innermost part of an ovary?

Answer: Ovary is found in pistil. Ovules can be seen in innermost part of an ovary.

14: Photosynthesis takes place in leaves. What do plants use for photosynthesis?

Answer: Plants use carbon dioxide and water for photosynthesis. It takes place in presence of sunlight and chlorophyll.

15: From where plant gets water?

Answer: Plants get water from soil through roots. It is conducted to all plant parts by stem.

16: Which are two gases involved in photosynthesis? How?

Answer: Carbon dioxide and oxygen are involved in photosynthesis. Carbon dioxide is used whereas oxygen is released in photosynthesis.

17: What is the function of ovary?

Answer: Fertilization takes place in ovary.

18. What are weeds?

Answer: 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.

19. Classify plants and give an example of each.

Answer: 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

20. What are herbs? Give two examples.

Answer: 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.

21. What are shrubs? Give two examples.

Answer: 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.

22. What are trees? Give two examples.

Answer: 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.

23. What are creepers? Write an example.

Answer: 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.

24. What are climbers?

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

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

Answer: 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.

26. What are unisexual and bisexual flowers?

Answer: 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.

27. Name a plant that eats insect.

Answer: Pitcher plant.



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

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

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

Answer: Banyan tree.

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

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

31. Why are petals colourful?

Answer: The colourful petals attract insects for pollination.

32. Why does white flowers bloom at night?

Answer: White colour attracts night insects for pollination.

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

Answer: 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.

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

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

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

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

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

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

37. Name the male part of a flower.

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

38. Name the female part of a flower.

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

Long Answer Type Questions

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

Answer: 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.

2. Explain the structure of a typical flower.

Answer: A typical flower contains the following parts:

Stalk: The part by which a flower is attached to the branch is called stalk.

Sepals: The small green leaf-like structures of the flower are called sepals,

Petals: The big coloured leaf-like structures are called petals. Different flowers have petals of different colours.

Stamen: It is the male part of the flower. It has two parts: (a) Filament and (b) Anther.



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.



3. Explain an activity to test the presence of starch in a leaf.

Answer: 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.

4. Explain that sunlight is essential for photosynthesis.

Answer: 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.

Answer: 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.

Answer: 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.

7. Read the function of parts of a plant given here:

- (a) Fixes plant to the soil
- (b) Prepares starch
- (c) Takes part in reproduction
- (d) Supports branches and bears flowers

In the given diagram, write the names of the parts whose functions you have just read at the appropriate space.



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