

Things to remember

- 1) The underground part of plant is called root.
- 2) The main characteristics of root are:
  - a) It grows downward into the soil away from the sunlight and towards the force of gravity.
  - b) It has one main, thick primary root with many side branches. The end parts of the root bear root hairs.
- 3) The function of root hairs is to collect water and mineral nutrients that are present in the soil and take these through the roots to the rest of the plant.
- 4) Leaves that are directly attached to the stem without a petiole are called sessile leaves.
- 5) The basal part of a leaf has a stalk called petiole.
- 6) The angle between the upper side of a leaf and the stem is the axil.
- 7) The outer edge of a lamina is called leaf margin.
- 8) Veins help to keep the leaf in an upright position and protect it from wind. It also conduct food and water.
- 9) Nutrition is the process of taking in food and using it for growth and other purposes by the plants and animals.
- 10) The other name of insectivorous plants are carnivorous plants.
- 11) Vegetative buds give rise to new shoots and leaves.
- 12) Reproduction in some plants through roots, stem and leaves is called vegetative propagation.

13) Monocot plants are flowering plants, whose seeds contain one cotyledon.

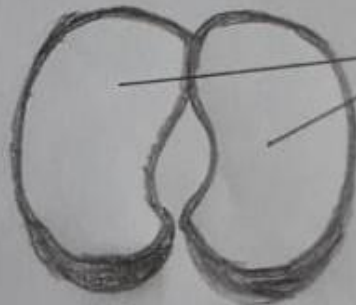
14) Dicot plants are flowering plants, whose seeds contain two cotyledons.

15)



Cotyledon

Corn seed  
(Monocot)



Cotyledons

(Dicot seed)

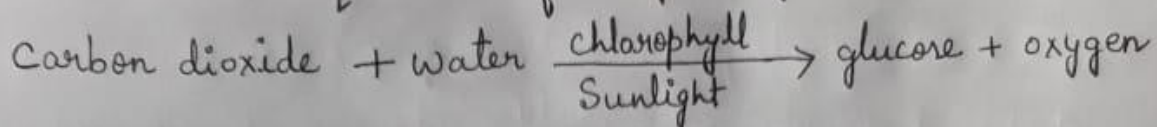
bean seed

16) Adventitious roots arise from an organ - usually a stem or sometimes a leaf.

17) Apical buds or terminal buds help in the vertical growth of a stem.

18) Axillary buds help to produce new branches with leaves and flowers.

19) The word equation for photosynthesis is :



20) Significance of photosynthesis are:

- (i) Food is prepared by the green plants through this process. This food is utilised by the plants themselves, and also used by the animals and human beings.
- (ii) Oxygen is produced at the end of this process, which is released through the stomata of leaves. This oxygen is used for respiration by plants and animals.
- (iii) Carbon dioxide gas from the atmosphere is taken in by the plants to carry out the food production. Thus, it helps to maintain the carbon dioxide level in the atmosphere.

21) Significance of transpiration are:

- (i) Water vapour is released from the leaf surface during transpiration. The water changes into water vapour due to the heat of the plant. Thus, the plant cools itself when it is hot outside. Since, evaporation leaves a cooling effect, the surrounding air also cools down.
- (ii) As water evaporates from the leaf surface, the roots pull up more water from the soil to make up for the water loss. As a result, mineral salts are also carried along with the water from the soil by the roots.

Work to be done in the notebook

Short answer questions (Book pg-10)

1 (i) root system (ii) shoot system (iii) lamina/leaf blade  
(Ans in pg-2) (Ans in pg-2) (Ans in pg-4)

2) What are the four functions of roots?

Ans:- The four functions of roots are:

- It fixes the plant in the soil.
- It absorbs water and minerals from the soil and transport them to the stem.
- It binds the soil together so that it does not get washed away during rain.
- Some of them stores food.

3) Mention the functions of the following:

Ans a) Spines :- Spines in cacti protect the plants from predators, regulate temperature, reduce water loss, collect water from the air etc.

Ans b) Tendrils :- Tendrils help the weak stemmed plants to coil around a support and grow in upward direction to get proper sunlight. They also help to carry out photosynthesis.

Ans c) Scale leaves :- Scale leaves store food and water in plants like onion and ginger. They also protect the buds.

4) Define venation. What are the different types of venation found in the leaves?

Ans:- Arrangement of veins in a leaf blade or lamina is called venation.

The different types of venation found in the leaves are parallel venation and reticulate venation.

5) Describe the modifications of leaf in any one insectivorous plant.

Ans:- A pitcher plant is actually a modified leaf. The apex of the leaf is the lid. The modified leaves form a deep cavity filled with digestive liquid. The cavity walls are smooth and slippery and the walls have hair pointing down. The cavity walls make nectar which lures the insects into it.

6) Write the two main functions of leaves.

Ans:- The two main functions of leaves are:

- a) Production of food by the photosynthesis process.
- b) Losing of water vapour by evaporation to cool the plant.

7) Define: (i) Photosynthesis (ii) Transpiration

Ans:- (i) The process by which a plant leaf prepares food from water and carbon dioxide in the presence of chlorophyll and sunlight is called photosynthesis.

(ii) The process by which water is lost in the form of water vapour by evaporation from the surface of leaves and other aerial parts of a plant is called transpiration.

Extra Question:-

Q. What is Biology?

Ans:- The word, biology is derived from the greek word "bios" meaning life and "logos" meaning study. It is the study of living organisms.

Long answer questions (Write in your notebook)  
1. Giving examples, differentiate between the following:

(i)

tap root

- There is one large, long root (primary root).
- It penetrates deeply into the soil.
- It is found in dicots. e.g. gram, pea etc.
- It can store food.

fibrous root

- There is no primary root.
- It does not penetrate deeply into the soil.
- It is found in monocots. e.g. grass, maize etc.
- It cannot store food.

(ii)

Simple leaf

- The lamina is not divided into leaflets.
- The leaf is attached to the stem by the petiole.
- Axillary bud occurs at the base of the petiole.
- E.g. guava, mango, banana etc.

Compound leaf

- The lamina is divided into leaflets.
- The leaflets are attached to middle vein by the stalk.
- There are no axillary bud at the base of each leaflet.
- E.g. neem, rose, desert cotton etc.

(iii)

parallel venation

- Veins are arranged parallel to one another all over the lamina.
- Found in monocot plants. E.g. banana, bamboo, wheat, grass, maize etc.

reticulate venation

- Veins are arranged like a network or web-like structure all over the lamina.
- Found in dicot plants. E.g. mango, peepal, guava, hibiscus etc.

2) What is the modification seen in Bryophyllum? Explain

Ans:- Bryophyllum leaves produce adventitious buds along their leaf margins. These buds develop roots while on the parent plant and as they mature, they fall off the plant and start growing into new plants called plantlets, when they land on nearby soil.

3) What purpose is served by the spines borne on the leaves of cactus?

Ans:- The purposes of the spines borne on the cactus are:

- Spines trap a layer of air close to the surface of the plants.
- They provide shade, which leads to reduction of water loss.
- They protect the plant from the predators.
- Leaves of cactus are modified into spines to reduce transpiration.
- The spines get stuck to the bodies of animals and get transported elsewhere. On detaching from the animal, they grow into new plants.

4) Explain why leaf survival is so important to the plant?

Ans:- Leaf survival is very important to the plant due to these reasons:

- Green leaves prepare the plant food needed for the plant survival. Chlorophyll helps it to trap sunlight.
- It also carries out transpiration which is loss of water in the form of water vapour. This gives a cooling effect to the plant.
- Loss of water from the leaves, allow the movement of water and minerals from the soil to the plant.
- It also act as food storage organ of the plant.

6. Enlist some of the advantages of transpiration to green plants.

Ans:- Advantages of transpiration to green plants are:

- a) It maintains a proper balance of water in plants.
- b) It loses water from the leaves thus causing cooling effect.
- c) It yields fruits with high sugar and other mineral content.
- d) It helps in developing better roots.
- e) It helps to increase resistance to drought.
- f) It helps to maintain the shape and structure of the plants.

7. Why do some plants have to trap insects?

Ans:- Some plants like insectivorous plants grow in soil poor in nitrogen. So these plants get the required nutrient i.e. nitrogen by trapping insects. The trapped insects are digested by the plants and use the insects proteins to make nitrates. These nitrates help the plants to grow properly and produce flowers and seeds.

Draw and label the following diagrams:

- 1) tap root and fibrous root (book pg. no. 2)
- 2) parts of a leaf (book pg. no. 3)
- 3) simple and compound leaves (book pg. no. 4)
- 4) parallel venation and reticulate venation (book pg. no. 5)