IV.Long Answer Type Questions

Question 1. Write a note on plant tissues.
Answer: Plant tissues consist of two main types of tissue.

Meristematic tissue
The cells in this tissue divide very fast and helps in the growth of plants. Cells are round, oval, polygonal, no intercellular spaces. Present at tips of root, shoot, at nodes and at the sides of the stem.

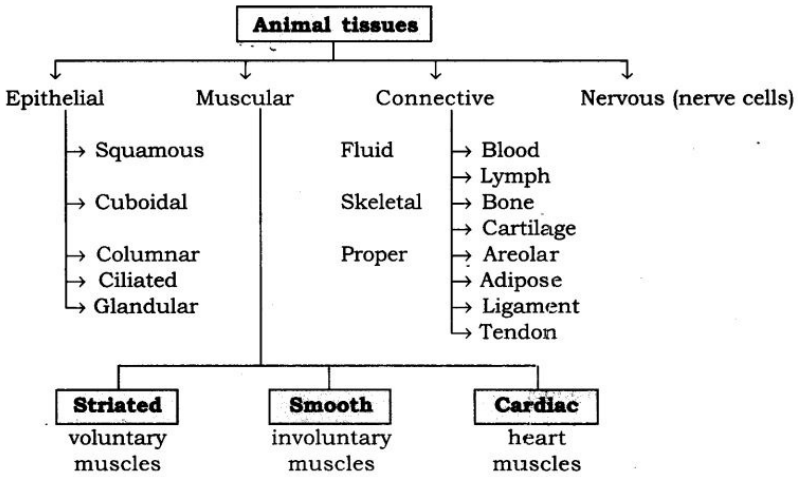
and

Permanent tissue
The cells of meristematic tissue stops dividing, matures and forms permanent tissue. There are two types of permanent tissues.

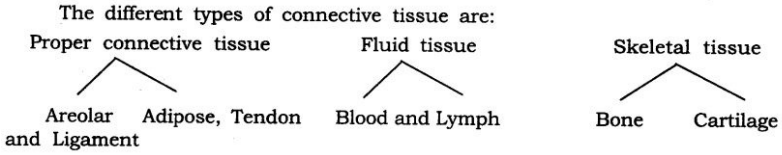
- **Simple tissue**: All cells are same in structure and perform same function. Types of simple tissue are parenchyma, collenchyma and sclerenchyma.
- **Complex tissue**: It consists of group of different types of cells to perform same function. Types of complex tissue are xylem and phloem.

Parenchyma: Present in soft parts of the plant.
Collenchyma: Provides mechanical support to plant present in stalks. Sclerenchyma: They provide strength and flexibility to the plants.
Xylem: Conduct water in plants from root to shoot. Consists of tracheids, vessels, xylem parenchyma and xylem fibres.
Phloem: Conduct food to all parts of plant. Consist of sieve tubes, companion cell, phloem parenchyma and phloem fibres.

Question 2. Show the types of animal tissues using flow chart.
Answer:



Question 3. What is connective tissue? Explain its types.
Answer: The connective tissue consists of different types of cells, all of them perform same function.



1. Areolar connective tissue: It is found between the skin and muscles, around blood vessels and nerves and in the bone marrow. Areolar tissue fills the space inside the organs. It supports internal organs and helps in repair of tissues.

2. Adipose tissue: Adipose tissue stores fat, found below the skin and between internal organs. The cells of this tissue are filled with fat globules. It acts as insulator due to fat storage.
3. Blood: It has a fluid called plasma, in plasma are present red blood cells, white blood cells and platelets. Blood flows all over the body and helps in the transport of gases, digested food, hormones and waste material to different parts of the body.
4. Lymph: Lymph carries digested fat and lot of white blood cells in the plasma. Bone: It forms the framework that supports the body. It supports the different parts of our body. It is strong and non-flexible tissue.
5. Cartilage: It is present in nose, ear, trachea and larynx. It smoothens bone surfaces at joints.
6. Tendon: It connects bone and muscles. These tissues are fibrous, flexible and with lot of strength.
7. Ligament: It connects bone to 'bone. It is elastic, has lot of strength.

Question 4.Describe 'epidermis' in plants.
Answer: Epidermis forms the entire outermost layer of the plant. It is made up of single cell layer. It protects all the internal parts of the plant.

- On aerial parts, epidermis secretes waxy, water-resistant layer on their outer surface. This helps in protection against loss of water, mechanical injury and invasion of parasitic fungi.
- In leaves, epidermis consists of small pores called stomata. These pores helps in the transpiration and exchange of gases, like oxygen and carbon dioxide for plants.
- In roots, epidermis have long hair-like parts that provide greater surface for water absorption.
- In desert plants, epidermis has a thick waxy coating of cutin which acts as a water proofing agent.

Question 5. Explain the "complex tissue" of plants.
Answer: Complex tissues are made up of more than one type of cells. All these cells co-ordinate to perform common function. These are—xylem and phloem. Both are conducting tissues and form a vascular bundle.

1. Xylem consists of—tracheids, vessels, xylem parenchyma and xylem fibres. Most of these cells are dead. Tracheids and vessels helps in water transportation, parenchyma stores food and helps in the sideways conduction of water and fibres are mainly supportive in function.
2. Phloem is made up of four types of elements—sieve tubes, companion cells, phloem fibres and phloem parenchyma. It helps in the transportation of food in both the directions, i.e. from leaves to roots and to other parts of the plant.

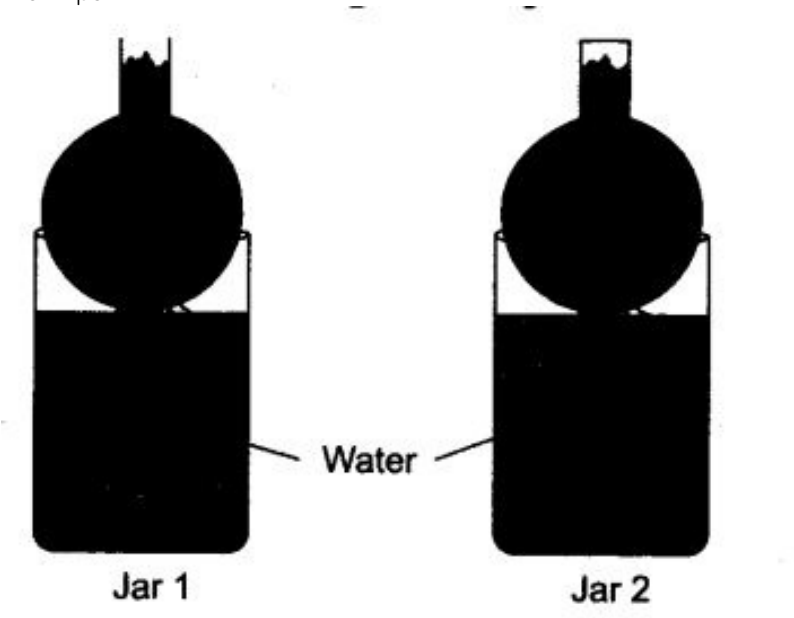
V. Activity-Based Questions

Question 1. • Take two glass jars and fill them with water.
• Now, take two onion bulbs and place one on each jar, as shown in the figure given below.

Length	*Day 1*	*Day 2*	*Day 3*	*Day 4*	*Day 5*	*Day 6*	*Day 7*
Jar 1	3 cm	3.5 cm	4 cm	4.5 cm	5 cm	5.2 cm	5.4 cm
Jar 2	3 cm	3.5 cm	4 cm	4.5 cm	3.5 cm	3.5 cm	3.5 cm

• Observe the growth of roots in both the bulbs for a few days.
• Measure the length of roots on day 1, 2 and 3.
• On day 4, cut the root tips of the onion bulb in jar 2 by about 1cm.
After this, observe the growth of roots in both the jars and measure their lengths each day for five more days and record the observations in tables, like the table
From the above observations, answer the following questions:
(a) Which of the two onions has longer roots? Why?

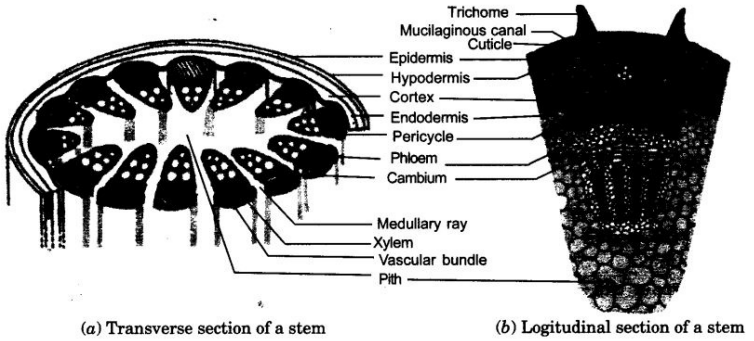
(b) Do the roots continue growing even after we have removed their tips?
(c) Why would tips stop growing in jar 2 after we cut them?
Answer: (a) The onion in jar 1 has longer roots, as the growth of roots continues in it due to intact root tips.
(b) The roots did not continue to grow in jar 2 after cutting down their tips.



Growth of roots in onion bulb

(c) The tips of root stopped growing in jar 2 because the tips of these roots were cut down and the tissues which helps in the growth of roots i.e., meristematic tissues are removed from it.

Question 2. • Take a plant stem and with the help of your teacher cut into very thin slices or sections.
• Now, stain the slices with safranin. Place one neatly cut section on a slide, and put a drop of glycerine.
• Cover with a cover-slip and observe under a microscope. Observe the various types of cells and their arrangement.
• Answer the following on the basis of your observations:
(a) Are all cells similar in structure?
(b) How many types of cells can be seen?
(c) Can we think of reasons why there would be so many types of cells?

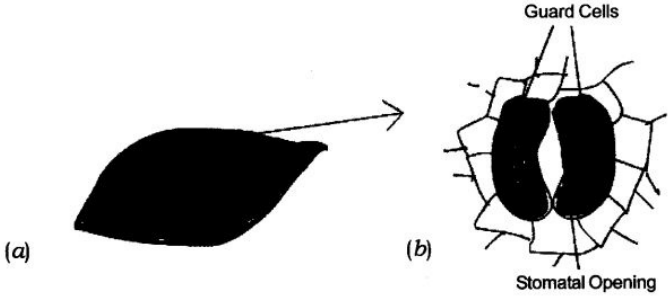


(a) Transverse section of a stem (b) Logitudinal section of a stem

Answer:
(a) No, all cells are not similar in structure, we see variety of cells with different shape and size.
(b) We can see at least ten different types of cells in the slide. .
(c) Yes, there are variety of cells so that each group of cell does a specific role in the overall growth of plant.

Question 3. • Take a freshly plucked leaf of Rheo.
• Stretch and break it by applying pressure.
• While breaking it, keep it stretched gently so that some peel or

skin projects out from the cut.
• Remove this peel and put it in a petridish filled with water.
• Add a few drops of safranin.
• Wait for a couple of minutes and then transfer it onto a slide. Gently place a cover slip over it.
Answer: (a) The slide shows epidermal cells with stomatal pores as shown in Fig. (a).
(b) On focusing stomata pores under microscope. We can see guard cells and stomata pore as shown in Fig. (b).



Stomata

VI. Value-Based Questions

Question 1. A group of students completed the project of finding the botanical names of all the trees present in the school campus. They prepared metal plates with names carved on it, to fix it on the plant trunks. Shreya was concerned that if the metal plate is fixed into tree many cells of the tree may get damaged. But the group members explained her that the outer layer of trunk does not have living cells and there won't be any damage to the tree.
(a) What type of cells are present on the outer layer of the bark/tree trunk?
(b) How does the cprk act as a protective tissue?
(c) What value of the group is seen in the above cast?
Answer: (a) On the outer layer of the tree trunk/bark all thick layer of dead cells is present which acts as protective tissue.
(b) In cork, all cells are dead without intercellular spaces, the walls of the cells have deposition of suberin.
(c) The students in a group show team effort, peer learning and co-operatiye.

Question 2. A paralytic patient was unable to walk. 'The family member of the patient took the outmost care of the patient.
(a) Name two tissues responsible for the movement of a body.
(b) Name the tissues present in brain and spine.
(c) What value of the family members is seen in the above case?
Answer: (a) The two tissues responsible for movement of the body are muscular tissue and nervous tissue.
(b) The tissues present in brain and spine are nervous tissues.
(c) The family members showed the value of being caring, responsible, dutiful and kind.

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