

Ch 6 Plant Tissues Class 9 Important Questions

NCERT Science

Q.1 Why are xylem and phloem called complex tissues? How are they different from one other ? [NCERT Exemplar]

Answer:

Xylem and phloem are called as complex tissues as they are made up of more than one type of cells. Following are the differences between xylem and phloem:

Xylem	Phloem
1. Xylem mainly consists of dead cells (except xylem parenchyma).	1. Phloem consists of living cells (except phloem fibre).
2. It conducts water and minerals from roots to aerial parts of the plant.	2. It translocates prepared food from leaves to storage organs and growing parts of the body.

Q.2

Why are plants and animals made of different types of tissue?

Answer:

Plants and animals are two different types of organisms. Plants are autotrophic organisms, so they prepare their own food by photosynthesis. Moreover, plants are stationary or fixed organisms. Since they do not consume or need much energy, so most of the tissues of plants are supportive. Most of these tissues such as xylem, phloem, sclerenchyma and cork are dead tissues, i.e., they do not contain living protoplasm.

Animals on the other hand, are heterotrophic organisms. They have to move in search of food, mate and shelter; so they need more energy as compared to plants. Most of these tissues contain living protoplasm.

There are some tissues in plants which divide throughout life. They divide for the growth and reproduction of the plants. In contrast to plants, growth in animals is uniform.

Q.3

Differentiate between parenchyma and collenchyma.

Answer:

Parenchyma	Collenchyma
1. The tissue consists of thin-walled cells.	1. The tissue consists of localised thickening in their cell walls.
2. It is distributed in almost all the parts of the plant body.	2. It occurs mostly in the aerial parts of the plants restricted to the outer layers.
3. The cells of parenchyma assimilate and store food. They also store waste products.	3. Collenchyma are the chief mechanical tissue of the young parts of the plant.
4. Parenchyma cells are loosely packed.	4. Collenchyma cells are compactly packed.

Q.4

Differentiate between collenchyma and sclerenchyma.

Answer:

Collenchyma	Sclerenchyma
1. It consists of living cells.	1. It consists of dead cells.
2. The cells contain cytoplasm.	2. Cytoplasm is absent in these cells.
3. Its cell wall is cellulosic.	3. Its cell wall is lignified.
4. The thickening of cell wall is not uniform.	4. Cell wall thickening is uniform.
5. Lumen of cell is wide.	5. Lumen of the cell is narrow.
6. It provides mechanical support and elasticity to the plant body.	6. It is chiefly a mechanical tissue.

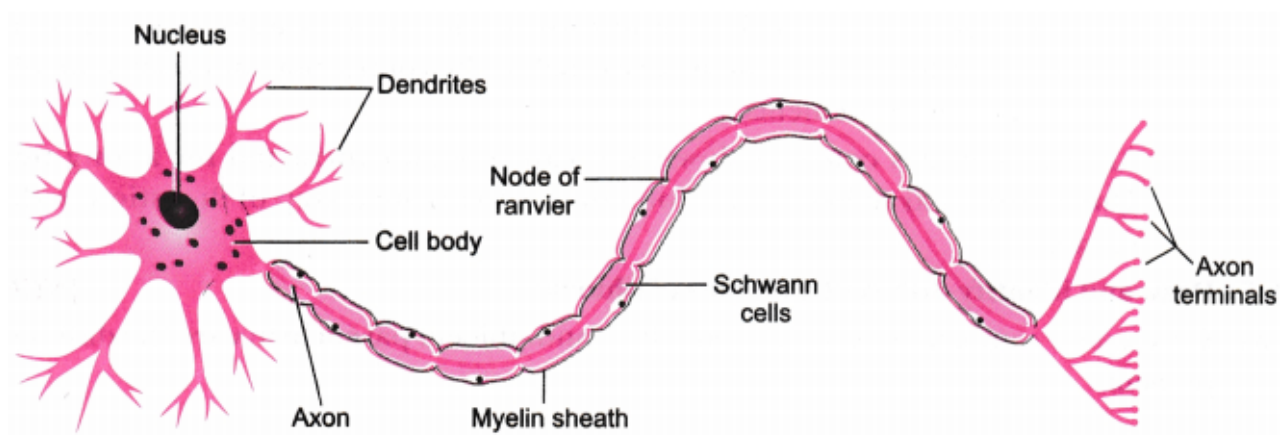
Q.5

What is a neuron? Write the structure and functions of a neuron.

Answer:

Nervous tissue contains highly specialised unit cells called nerve cells or neurons. Each neuron has the following three parts:

- The cyton or cell body: It contains a central nucleus and cytoplasm with characteristic deeply stained particles, called Nissl granules.
- The dendrites: These are short processes arising from the cyton.
- The axon: It is a single, long, cylindrical process of uniform diameter. It carries impulses away from the cell body.



Functions:

Neurons have the ability to receive stimuli from within or outside the body and conduct impulses to different parts of the body. The impulses travel from one neuron to another neuron and finally to the brain or spinal cord.

Q.6

Differentiate between meristematic tissue and permanent tissue.

Answer:

Meristematic tissue	Permanent tissue
1. The cells divide repeatedly.	1. The cells are derived from meristematic tissue and do not divide.
2. The cells are undifferentiated.	2. The cells are fully differentiated.
3. The cells are small and isodiametric.	3. The cells are variable in shape and size.
4. Intercellular spaces are generally absent.	4. Visible intercellular spaces are present.
5. Vacuoles are absent.	5. Large vacuoles are present in mature cells.
6. Metabolism occurs at high rate.	6. Metabolism occurs at low rate.
7. The cell walls are thin.	7. Cell walls may be thin or thick.

Q. 7

Briefly describe striated and smooth muscles with their functions.

Answer:

The striated muscle fibres are long or elongated, non-tapering, cylindrical and unbranched. These cells have a number of nuclei called sarcolemma. These muscle fibres shows alternate dark and light stripes or striations and so they are called as striated muscles. These muscles occur in muscles of limbs, body wall, face, neck, etc.

Functions of striated muscles:

- Striated muscles are powerful and undergo rapid contraction and expansion.
- Striated muscles provide the force for locomotion and all other voluntary movements of the body.

The smooth muscles are also known as unstriated or involuntary muscles. Smooth muscles occur as bundles or sheets of elongated fusiform or spindle-shaped cells or fibres. They are held together by loose connective tissue. These muscle fibres are uninucleate and do not bear any bands, stripes or striation across them.

These muscles are found in the walls of the alimentary canal and internal organs, ducts of glands and blood vessels. Smooth muscles are also found in the stomach, intestine, ureters, bronchi, iris of the eye, etc.

Functions of smooth muscles:

- Smooth muscles do not work according to our will, so they are also called involuntary muscles. Movement of food in the alimentary canal or the contraction and relaxation of blood vessels are involuntary movements.
- Smooth muscles contract slowly but can remain contracted for a long period of time. Due to this characteristic, the food passes to the next step of digestion in the alimentary canal.

Q.8

Describe the types of connective tissues along with their functions.

Answer:

There are five types of connective tissues:

(i) Areolar connective tissue: It is a loose and cellular connective tissue. It joins skin to muscles, fills spaces inside organs, and is found around muscles, blood vessels and nerves.

Functions:

- It acts as a supporting and packing tissue between organs lying in the body cavity.
- It helps in repair of tissues after an injury.
- It also helps in combating foreign toxins.
- It fixes skin to underlying muscles.

(ii) Dense regular connective tissue: It is a fibrous connective tissue, characterised by ordered and densely packed collection of fibres and cells. Dense regular connective tissue is the principal component of tendons and ligaments.

Functions:

- Tendons: Tendons are cord-like, strong, inelastic structures that join skeletal muscles to bones.
- Ligament: They are an elastic structure which connects bones to bones.

(iii) Adipose tissue: Adipose tissue is basically an aggregation of fat cells. The adipose tissue is abundant below the skin, between the internal organs and in the yellow bone marrow.

Functions:

- It serves as a fat reservoir.
- It provides shape to the limbs and the body.
- It keeps visceral organs in position.
- It forms shock-absorbing cushions around kidneys and eyeballs.
- It acts as an insulator. Being a poor conductor of heat, it reduces heat loss from body, i.e., it regulates body temperature.

(iv) Skeletal tissue: The skeletal or supporting tissue includes bone and cartilage which form the endoskeleton of vertebrate body.