

## NCERT Solutions for Class 9 Science Chapter 6 Tissues

**Q 1.** Name types of simple tissues .

**Answer:**

**Simple permanent tissues are of three types:**

(i) Parenchyma (ii) Collenchyma and (iii) Sclerenchyma.

**Parenchyma tissue can be further divided into two types:**

(a) aerenchyma and (b) chlorenchyma.

**Q 2.** Where is the apical meristem found?

**Answer:**

The apical meristem is found at the growing tips of roots and shoots of plants. Its main function is to increase the length of the stem and root by initiating the growth of new cells.

**Q 3.** Which tissue makes up the husk of coconut?

**Answer:**

The husk of a coconut is made up of sclerenchyma tissue. It is a permanent tissue whose cells are dead.

They are long and narrow as the walls are thickened due to lignin. This tissue makes the husk hard and thick.

**Q 4.** What are the constituents of the phloem?

**Answer:**

Phloem is a conducting or vascular tissue of the plants which transports food from leaves to other parts of the plant. Phloem is made up of four types of elements:

(i) sieve tubes (ii) companion cells (iii) phloem fibers and (iv) phloem parenchyma.

Out of these four, only phloem fibers are dead cells.

## **NCERT solutions for class 9 science chapter 6 Tissues**

### **Topic 6.3 Animal Tissues**

**Q 1.** Name the tissue responsible for movement in our body.

**Answer:**

The muscular tissue is responsible for movement in our body.

Muscular tissue consists of muscle fibres which are elongated cells. The movement is caused when these muscles contract and relax.

**Q 2.** What does a neuron look like?

**Answer:**

Neurons or nerve cells are the structural and functional unit of the nervous tissue. The brain, spinal cord, and nerves are all composed of the nervous tissue.

A neuron consists of a cell body with a nucleus and cytoplasm, from which long thin hair-like parts arise. Each neuron consists of axons, a single long part (process), and dendrites, which are the short, branched parts (processes).

The axon transmits impulses away from the cell body, whereas the dendrite receives nerve impulses from other nerve cells or external stimuli.

**Q 3.** Give three features of cardiac muscles.

**Answer:**

Heart, which pumps blood throughout the body, is made up of cardiac muscles. Three features of cardiac muscle are:

- (i) Cardiac muscles are involuntary. They cannot be controlled by a will.
- (ii) Cardiac muscle cells are cylindrical, branched and uninucleate.
- (iii) Cardiac muscles show rhythmic contraction and relaxation throughout life.

**Q 4.** What are the functions of areolar tissue?

**Answer:**

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

### **NCERT Solutions for Class 9 Science Chapter 6 Tissues: Solved Exercise Questions-**

**Q 1.** Define the term “tissue”.

**Answer:**

Tissue is a group of cells that are similar in structure and perform that same function.

**For example** Blood, phloem, muscles.

**Q 2.** How many types of elements together make up the xylem tissue? Name them.

**Answer:**

Xylem transports water and minerals vertically from the roots to various parts of the plants. Xylem tissue consists of four different types of cells:

(i) Tracheids (ii) Vessels (iii) Xylem Parenchyma (iv) Xylem fibres

Out of these four, only Xylem Parenchyma is a living cell.

**Q 3.** How are simple tissues different from complex tissues in plants?

**Answer:**

Simple tissues are different from complex tissues in plants in the following ways

Simple tissues	Complex tissues
Simple tissues are composed of a single type of cells.	Complex tissues are composed of cells of more than one type.

These tissues are protective and supportive in function.	The function is the conduction of water, minerals and food products to different parts of the body
Three types of simple tissues are: parenchyma, collenchyma, and sclerenchyma	Two types of complex tissues are: Xylem and Phloem

**Q 4.** Differentiate between parenchyma, collenchyma and sclerenchyma on the basis of their cell wall.

**Answer:**

<b>Parenchyma</b>	<b>Collenchyma</b>	<b>Sclerenchyma</b>
The cell wall is thin and are very loosely packed.	The cell wall is thick at corners with very little space between cells.	The cell wall is thick uniformly with no intercellular spacings.
Cell Wall is Primary	Cell Wall is Primary	The cell wall is Secondary

Cell wall made up of cellulose	The cell wall is made up of pectin and hemicellulose	The cell wall has an additional layer of lignin.
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**Q 5.** What are the functions of the stomata?

**Answer:**

Stomata are the small pores on the surface of the leaf. Functions of the stomata are :

- (i) They allow the exchange of gases ( $\text{CO}_2$  and  $\text{O}_2$ ) with the atmosphere.
- (ii) Transpiration (loss of water in the form of water vapour) also takes place through stomata.

**Q 6.** Diagrammatically show the difference between the three types of muscle fibres.

**Answer:**

The three types of muscle fibers are:

- (i) Striated muscle
- (b) Smooth muscle (Unstriated)
- (c) Cardiac muscle

**Q 7.** What is the specific function of the cardiac muscle?

**Answer:**

The cardiac muscles are present in the wall of the heart.

The specific function of the cardiac muscle is to control the continuous rhythmic contraction and relaxation of the heart.

**Q 8.** Differentiate between striated, unstriated and cardiac muscles on the basis of their structure and site/location in the body.

**Answer:**

<b>Striated Muscle</b>	<b>Unstriated Muscle</b>	<b>Cardiac Muscle</b>
These are voluntary muscles.	These are involuntary muscles.	These are involuntary muscles.
The cells are long, cylindrical.	The cells are long with pointed ends.	The cells are cylindrical.
Cells are unbranched	Cells are unbranched	Cells are branched
Cells are multinucleate.	Cells are uninucleate.	Cells are uninucleate
These muscles are present in limbs and join the bones.	These muscles are found in the alimentary	These muscles are only found in the wall of the heart.

	canal, bronchi of the lungs, etc.	
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**Q 9.** Draw a labelled diagram of a neuron.

**Answer:**

A neuron consists of a cell body with a nucleus and cytoplasm, from which long thin hair-like parts arise. Each neuron consists of axons, a single long part (process), and dendrites, which are the short, branched parts (processes).

The axon transmits impulses away from the cell body, whereas the dendrite receives nerve impulses from other nerve cells or external stimuli.

**Q 10. (a)** Name the following.

- Tissue that forms the inner lining of our mouth.

**Answer:**

Tissue that forms the inner lining of our mouth is **epithelial tissue**.

( Epithelial tissue cells are tightly packed and form a continuous sheet with almost no intercellular spaces )

**Q 10.(b)** Name the following.

- Tissue that connects muscle to bone in humans.



**Answer:**

Tissue that connects muscle to bone in humans is a **tendon**.

( Tendons are connective tissue. They are fibrous tissue with great strength but limited flexibility )

**Q 10. (c)** Name the following.

- Tissue that transports food in plants.

**Answer:**

Tissue that transports food in plants is **phloem**.

(Phloem transports food manufactured in the leaves to other parts of the plant.)

**Q 10.(d)** Name the following.

- Tissue that stores fat in our body.

**Answer:**

Tissue that stores fat in our body **adipose tissue**.

( Adipose tissue is found below the skin and between internal organs. The cells of this tissue are filled with fat globules which act as an insulator )

**Q 10. (e)** Name the following.

- Connective tissue with a fluid matrix

**Answer:**

Connective tissue with a fluid matrix is **Blood**.

( Blood flows to transport oxygen, food, hormones and waste material )

**Q 10.(f)** Name the following.

- Tissue present in the brain .

**Answer:**

Tissue present in the brain is **nervous tissue**.

( The brain, spinal cord and nerves are all composed of the nervous tissue. The cells of this tissue are called nerve cells or neurons. )

**Q 11.** Identify the type of tissue in the following: skin, bark of tree, bone, lining of kidney tubule, vascular bundle.

**Answer:**

The type of tissue in the following are:

**Skin** - Stratified squamous epithelial tissue

**The bark** of a tree - Simple permanent tissue

**Bone** – Skeletal connective tissue

**Lining of kidney tubules** - Cuboidal epithelial tissue

**Vascular bundle** - Complex permanent tissue

**Q 12.** Name the regions in which parenchyma tissue is present.

**Answer:**

The parenchyma tissue is present in leaves, fruits, and flowers.

Parenchyma is the most common simple permanent tissue consisting of relatively unspecialized cells with thin cell walls (living cells). This tissue generally stores food and chlorophyll.

**Q 13.** What is the role of the epidermis in plants?

**Answer:**

The epidermis is the outermost layer of cells of a plant body. The epidermis is usually made of a single layer of cells.

**Following are the roles of the epidermis:**

1. The entire surface of plants living in very dry habitats has an outer covering of epidermis to protect against water loss.
2. To protect against loss of water, mechanical injury and invasion by parasitic fungi, epidermal cells on the aerial parts of the plant often secrete a waxy, water-resistant layer on their outer surface.
3. Stomata present on epidermis help in gaseous exchange and transpiration.

Since it has a protective role to play, epidermal tissue cells form a continuous layer with no intercellular space.

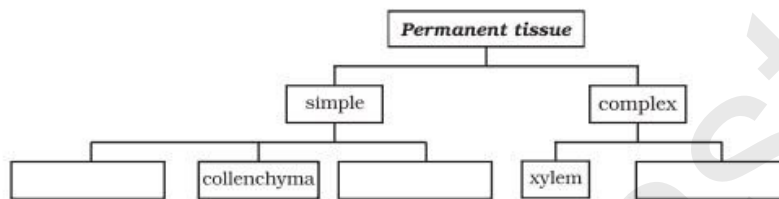
**Q 14.** How does the cork act as a protective tissue?

**Answer:**

Cork is the outer protective layer of the bark of a tree. The cork cells are dead and compactly packed with no intercellular space. Their cell walls are coated with a waxy substance, suberin, which does not allow water and gases to pass through.

Therefore, it protects the plant against mechanical injury and also prevents the loss of water by evaporation.

**Q 15.** Complete the following chart:



**Answer:**

Simple permanent tissue is of three types: **Parenchyma**, Collenchyma and **Sclerenchyma**

Complex permanent tissue is of two types: Xylem and **Phloem**

Thus, the completed chart is :

