

## CHAPTER 6 TISSUES

### EXERCISES

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#### 1. What is a tissue?

Solution:

A tissue is defined as a cluster of cells, which are similar in structure and work together to perform a particular function.

#### 2. What is the utility of tissues in multicellular organisms?

Solution:

The use of tissues in multicellular organisms is to provide structural and mechanical strength as well as to allow division of labour.

### EXERCISES

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#### 1. Name the types of simple tissues.

Solution:

The types of simple tissues are as follows:

- Parenchyma
- Collenchyma
- Sclerenchyma

#### 2. Where is apical meristem found?

Solution:

In plants, apical meristem is typically found at:

- The tip of the shoot
- Root of the plant

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

Solution:

The sclerenchymatous tissue, which is a type of permanent tissue makes up the husk of the coconut. These tissues causes the plant to become stiff and hard. The cells of this tissue are dead and their cell walls are thickened because of the presence of lignin.

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

Solution:

The phloem constitutes of the following four elements, they are:

- Sieve tube
- Companion cells
- Phloem parenchyma
- Phloem fibres

## **EXERCISES**

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**1. Name the tissue responsible for movement of our body.**

Solution:

Two tissues jointly are responsible for the movement of our body, namely:

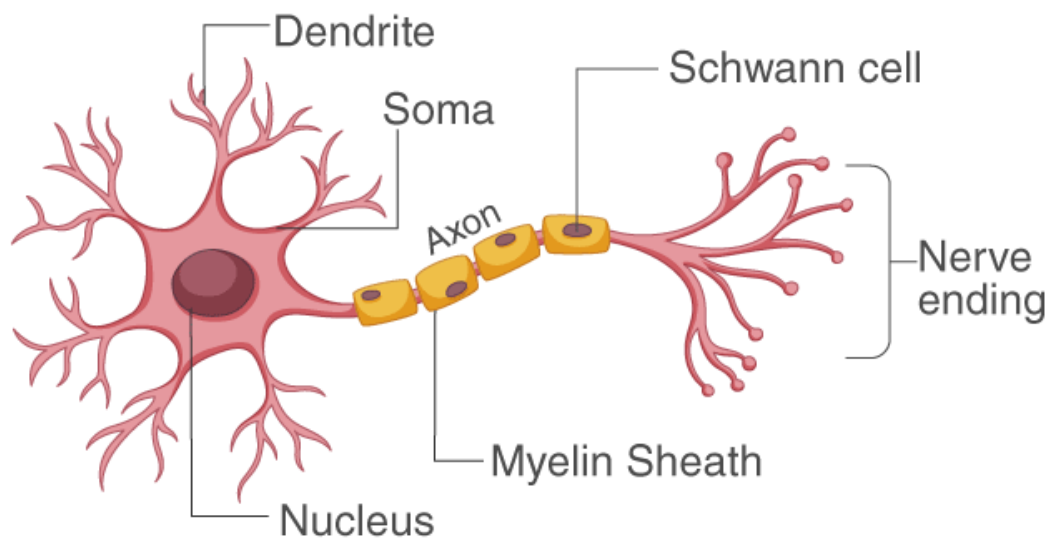
- Muscular tissue
  
- Nervous tissue

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

Solution:

A neuron is a nerve cell consisting of the cell body with a nucleus and cytoplasm from which a long and thin hair-like structure emerges. Every neuron has one elongated part known as the axon, and several short and small branched structures known as dendrites. A single neuron can even be a meter long.

## STRUCTURE OF NEURON



### 3. Give three features of cardiac muscles.

Solution:

Cardiac muscles are specialized tissues that are evolved to pump blood throughout the body.

The following are the features of cardiac muscles:

- They are cylindrical in shape.
- Striated muscle fibers.
- They are uninucleated and branched.
- These muscles are involuntary in nature.

### 4. What are the functions of areolar tissue?

Solution:

Areolar tissues are typically observed in animals. They are connective tissues and are found in between skin and muscles. They are also located around blood vessels and nerves, and are present in the bone marrow. The space inside the organs is filled with these tissues. They support the delicate internal organs and assist in tissue repair in case of damage.

## EXERCISES

PAGE NO:70

### 1. Define the term 'tissue'.

Solution:

A tissue is defined as a cluster of cells, which are similar in structure and work together to perform a particular function.

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

Solution:

The xylem tissue is made up of four main elements, namely:

- Vessels
- Tracheids
- Xylem fibres
- Xylem parenchyma

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

Solution:

Simple tissues are made up of one type of cells which coordinate to perform a common function.

Complex tissues are made up of more than one type of cells. All these coordinate to perform a common function.

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

Solution:

Parenchyma: The cells have thin cell walls made up of cellulose.

Collenchyma: The cells have cell walls thickened at the corners due to pectin deposition.

Sclerenchyma: Their walls are thickened due to lignin deposition.

### **5. What are the functions of the stomata?**

Solution:

Stomata are the tiny pores present on the outer layer of the cells, the epidermis. Stomata bring about the exchange of gases and transpiration.

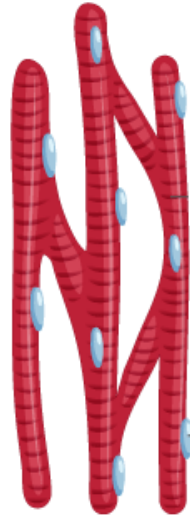
### **6. Show the difference between the three types of muscle fibres diagrammatically.**

Solution:

There are three types of muscle fibres, they are:

1. Cardiac muscles

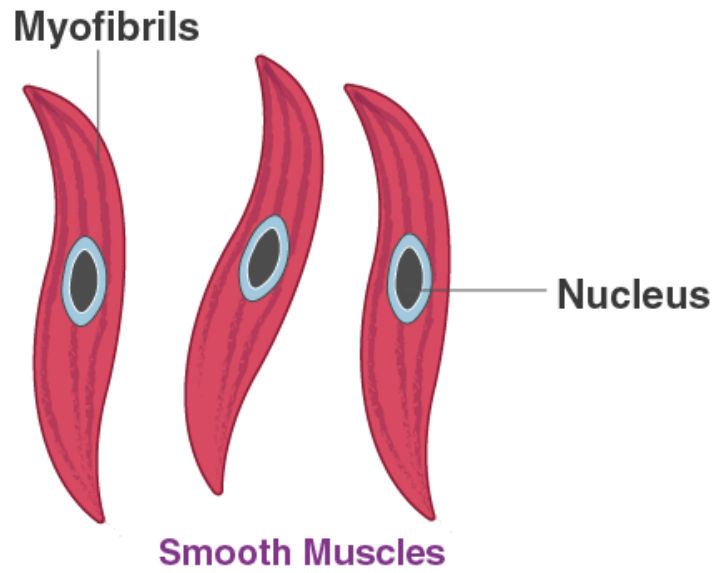
- Present in the heart.
- Involuntary in nature.
- They have 1 nucleus.
- The muscle fibers are branched.



**Cardiac Muscles**

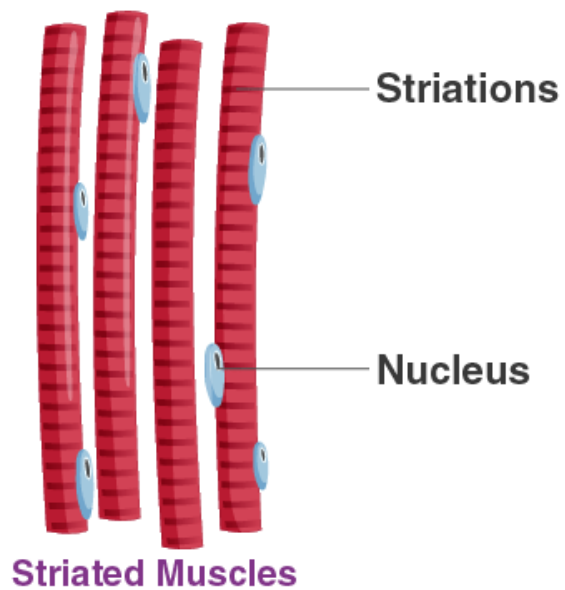
## 2. Smooth muscles

- Found in lungs and alimentary canal.
- Involuntary in nature.
- They have 1 nucleus.
- They are spindle-shaped.



### 3. Striated muscles

- They are connected with bones
- Voluntary in nature.
- They are long and cylindrical muscle fibers.
- They possess many nuclei.
- Striated muscles are unbranched.





## 7. What is the specific function of the cardiac muscle?

Solution:

The cardiac muscles are branched and cylindrical. They are uninucleated and are involuntary in nature. The cardiac muscles bring about a rhythmic contraction and relaxation throughout one's lifetime.

## 8. Differentiate between striated, un-striated and cardiac muscles on the basis of their structure and site/location in the body.

Solution:

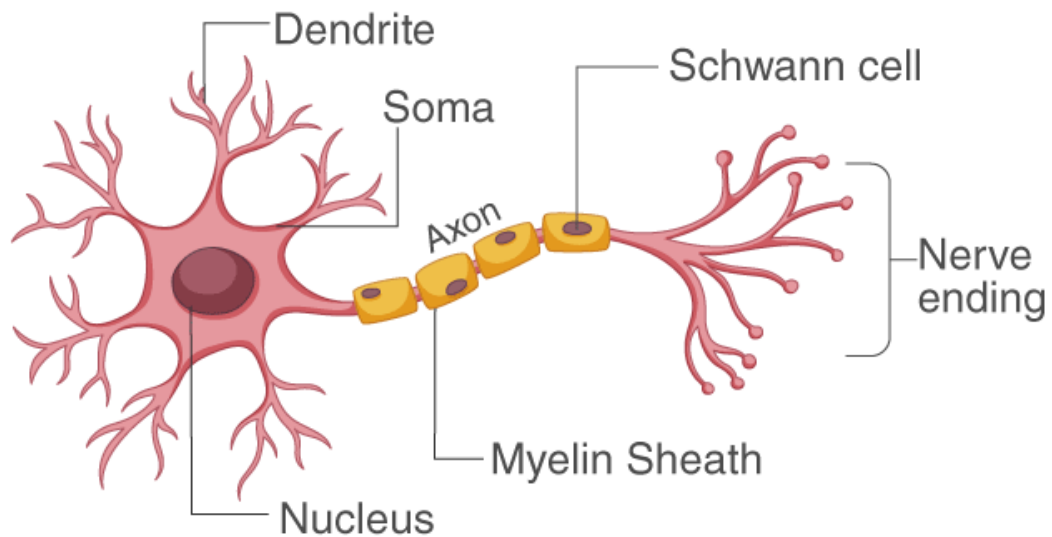
<b>Character</b>	<b>Striated Muscles</b>	<b>Unstriated Muscles</b>	<b>Cardiac Muscles</b>
1. Shape	Cells are long, cylindrical, non-tapering and are unbranched.	Cells are long with tapering ends and are unbranched.	Cells are non-tapering and cylindrical in shape and are branched.
2. Location in body	In hands, legs and skeletal muscles.	The wall of stomach, intestine, ureter and bronchi, etc.	In the heart.
3. Light and dark bands	Present.	Absent.	Present but less prominent.

## 9. Draw a labelled diagram of a neuron.

Solution:

Diagram of a neuron along with the labelling is as follows:

## STRUCTURE OF NEURON



**10. Name the following.**

**(a) Tissue that forms the inner lining of our mouth.**

**(b) Tissue that connects muscle to bone in humans.**

**(c) Tissue that transports food in plants.**

**(d) Tissue that stores fat in our body.**

**(e) Connective tissue with a fluid matrix.**

**(f) Tissue present in the brain.**

Solution:

(a) Tissue that forms the inner lining of our mouth – The epithelial tissue, Squamous epithelium.

- (b) Tissue that connects muscle to bone in humans – Tendon
- (c) Tissue that transports food in plants – Phloem
- (d) Tissue that stores fat in our body – Adipose tissue
- (e) Connective tissue with a fluid matrix – Blood, it is a fluid connective tissue
- (f) Tissue present in the brain – Nervous tissue

**11. Identify the type of tissue in the following:**

**Skin, bark of tree, bone, lining of kidney tubule, vascular bundle.**

Solution:

- Skin: Stratified squamous epithelial tissue
- Bark of tree: Protective tissue and cork
- Bone: Connective tissue
- Lining of kidney tubule: Cuboidal epithelial tissue
- Vascular bundle: Conducting tissue (xylem and phloem), complex permanent tissue

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

Solution:

The parenchyma is found in:

- The pith of stems and roots
- When parenchyma contains chlorophyll it is called a chlorenchyma. It is found in green leaves
- Parenchyma found in aquatic plants has large air cavities which enables them to float, and are hence called aerenchyma.

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

Solution:

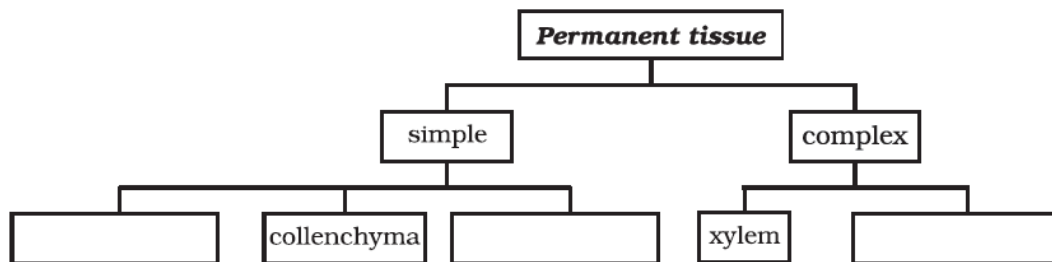
The epidermis in plants forms an uninterrupted and continuous layer that has no intercellular spaces. It provides protection.

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

Solution:

Cork cells are dead. The arrangement of cells is so dense, that there is no intercellular space. Deposition of suberin is observed on the walls of the cells that make them impervious to water and gases.

**15. Complete the following chart.**



Solution:

The completed chart is as follows:

