

# NCERT SOLUTIONS

**CLASS - 9th**



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Class : 9th  
Subject : SCIENCE  
Chapter : 6  
Chapter Name : TISSUES

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Q1 What is a tissue?

Answer. Tissue is a group of cells that are similar in structure and are organised together to perform a specific task.

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Q2 What is the utility of tissues in multi-cellular organisms?

Answer. In unicellular organisms, a single cell performs all the basic functions such as respiration, movement, excretion, digestion, etc. But in multicellular organisms, cells are grouped to form tissues. These tissues are specialised to carry out a particular function at a definite place in the body. For example, the muscle cells form muscular tissues which helps in movement, nerve cells form the nervous tissue which helps in transmission of messages. This is known as division of labour in multicellular organisms. It is because of this division of labour that multicellular organisms are able to perform all functions efficiently.

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Q1 Name types of simple tissues?

Answer. Simple permanent tissues are of three types: Parenchyma, Collenchyma, and Sclerenchyma. Parenchyma tissue is of further two types - aerenchyma and chlorenchyma.

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Q2 Where is apical meristem found?

Answer. Apical meristem is present at the growing tips of stems and roots. Their main function is to initiate growth in new cells of seedlings, at the tip of roots, and shoots.

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Q3 Which tissue makes up the husk of coconut?

Answer. The husk of a coconut is made up of sclerenchyma tissue.

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Q4 What are the constituents of phloem?

Answer. Phloem is the food conducting tissue in plants. It is made up of four components:

- (i) Sieve tubes
- (ii) Companion cells
- (iii) Phloem parenchyma
- (iv) Phloem fibres

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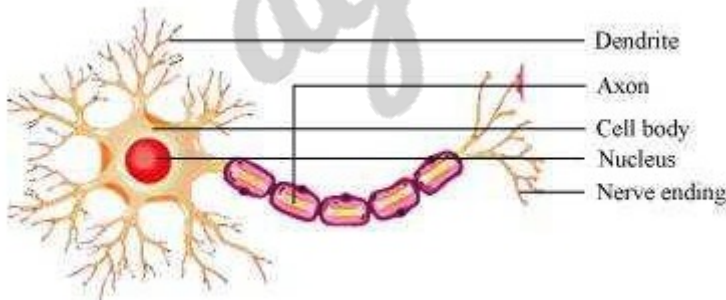
Q1 Name the tissue responsible for movement in our body

Answer. The muscular tissue is responsible for movement in our body.

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Q2 What does a neuron look like?

Answer. A neuron consists of a cell body with a nucleus and cytoplasm. It has two important extensions known as the axon and dendrites. An axon is a long thread-like extension of nerve cells that transmits impulses away from the cell body. Dendrites, on the other hand, are thread-like extensions of cell body that receive nerve impulses. Thus, the axon transmits impulses away from the cell body, whereas the dendrite receives nerve impulses. This coordinated function helps in transmitting impulses very quickly.



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Q3 Give three features of cardiac muscles.

Answer. Three features of cardiac muscles are:

- (i) Cardiac muscles are involuntary muscles that contract rapidly, but do not get fatigued.
- (ii) The cells of cardiac muscles are cylindrical, branched, and uninucleate
- (iii) They control the contraction and relaxation of the heart.

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Q4 What are the functions of areolar tissue?

Answer. Functions of areolar tissue:

- (i) It helps in supporting internal organs.
- (ii) It helps in repairing the tissues of the skin and muscles.

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Q1 Define the term “tissue”?

Answer. Tissue is a group of cells that are similar in structure and are organized together to perform a specific task.

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Q2 How many types of elements together make up the xylem tissue? Name them.

Answer. There are four different types of cells that make up the xylem tissue. They are:

- (i) Tracheids
- (ii) Vessels
- (iii) Xylem parenchyma
- (iv) Xylem fibres

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Q3 How are simple tissues different from complex tissues in plants?

Answer.

Simple tissue	Complex tissue
These tissues consist of only one type of cells.	These tissues are made up of more than one type of cells.
The cells are more or less similar in structure and perform similar functions.	Different types of cells perform different functions. For example, in the xylem tissue, tracheids help in water transport, whereas parenchyma stores food.
Three types of simple tissues in plants are parenchyma, collenchyma, and sclerenchyma.	Two types of complex permanent tissues in plants are xylem and phloem.

Question 4:

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Q4 Differentiate between parenchyma, collenchyma and sclerenchyma on the basis of their cell wall.

Answer.

<b>Parenchyma</b>	<b>Collenchyma</b>	<b>Sclerenchyma</b>
Cell walls are relatively thin, and the cells in parenchyma tissues are loosely packed.	The cell wall is irregularly thickened at the corners, and there is very little space between the cells.	The cell walls are uniformly thickened, and there are no intercellular spaces.
The cell wall in this tissue is made up of cellulose.	Pectin and hemicellulose are the major constituents of the cell wall.	An additional layer of the cell wall composed mainly of lignin is found.

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Q5 What are the functions of the stomata?

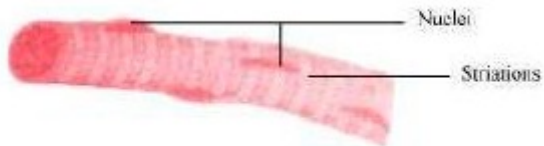
Answer. Functions of the stomata:

- (i) They allow the exchange of gases (CO<sub>2</sub> and O<sub>2</sub>) with the atmosphere.
- (ii) Evaporation of water from the leaf surface occurs through the stomata. Thus, the stomata help in the process of transpiration.

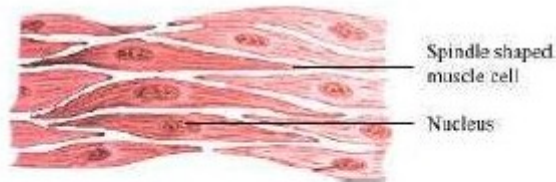
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Q6 Diagrammatically show the difference between the three types of muscle fibres.

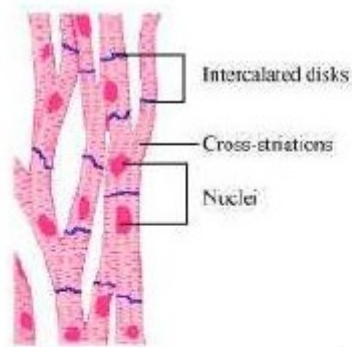
Answer. The three types of muscle fibres are: Striated muscles, smooth muscles (unstriated muscle fibre), and cardiac muscles.



**Striated muscle fibres**



**Unstriated muscle fibres**



**Cardiac muscle fibres**

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Q7 What is the specific function of the cardiac muscle?

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

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Q8 Differentiate between striated, unstriated and cardiac muscles on the basis of their structure and site/location in the body.

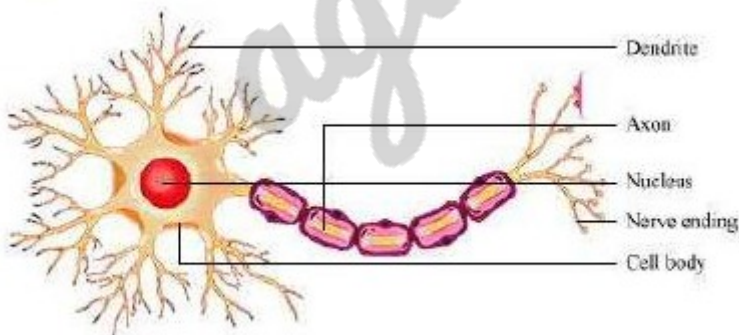
Answer.

Striated muscle	Unstriated muscle	Cardiac muscle
<b>On the basis of structure:</b>		
Cells are cylindrical	Cells are long	Cells are cylindrical
Cells are not branched	Cells are not branched	Cells are branched
Cells are multinucleate	Cells are uninucleate	Cells are uninucleate
Alternate light and dark bands are present	There are no bands present	Faint bands are present
Its ends are blunt	Its ends are tapering	Its ends are flat and wavy
<b>On the basis of location:</b>		
These muscles are present in body parts such as hands, legs, tongue, etc.	These muscles control the movement of food in the alimentary canal, the contraction and relaxation of blood vessels, etc.	These muscles control the contraction and relaxation of the heart

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Q9 Draw a labelled diagram of a neuron?

Answer.



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Q10 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.

Answer. (a) Tissue that forms the inner lining of our mouth -> Epithelial tissue

(b) Tissue that connects muscle to bone in humans -> Dense regular connective tissue (tendons)

(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

(f) Tissue present in the brain -> Nervous tissue

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Q11 Identify the type of tissue in the following: skin, bark of tree, bone, lining of kidney tubule, vascular bundle?

Answer. Skin: Stratified squamous epithelial tissue

Bark of tree: Simple permanent tissue

Bone: Connective tissue

Lining of kidney tubule: Cuboidal epithelial tissue

Vascular bundle: Complex permanent tissue

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Q12 Name the regions in which parenchyma tissue is present?

Answer. Leaves, fruits, and flowers are the regions where the parenchyma tissue is present.

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Q13 What is the role of epidermis in plants?

Answer. Epidermis is present on the outer surface of the entire plant body. The cells of the epidermal tissue form a continuous layer without any intercellular space. It performs the following important functions:

(i) It is a protective tissue of the plant body

(ii) It protects the plant against mechanical injury

(iii) It allows exchange of gases through the stomata

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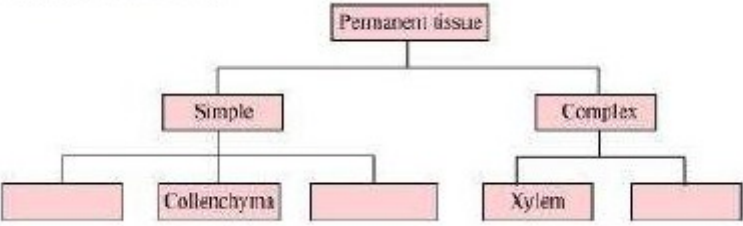
Q14 How does the cork act as a protective tissue?

Answer. The outer protective layer or bark of a tree is known as the cork. It is made up of dead cells. Therefore, it protects the plant against mechanical injury, temperature extremes, etc. It also prevents the loss of water by evaporation.

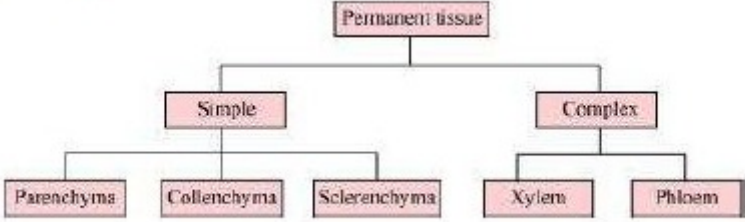


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Q15 Complete the following chart:



Answer.



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