

Science

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(Chapter – 6) (Tissues)

(Class – IX)

Exercises

Question 1:

Define the term ‘tissue’?

Answer 1:

The group of cells similar in structure that work together to achieve a particular function forms a tissue. This group of cells has a common origin.

Question 2:

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

Answer 2:

Xylem is a complex tissue. It is made up of following four kinds of cells or elements:

- (a) Tracheids
- (b) Vessels
- (c) Xylem parenchyma
- (d) Xylem fibres.



Question 3:

How are simple tissues different from complex tissues in plants?

Answer 3:

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.

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(Chapter – 6) (Tissues)

(Class – IX)

Question 4:

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

Answer 4:

The differences between cell walls of parenchyma, collenchyma and sclerenchyma are given in the following table:

Parenchyma	Collenchyma	Sclerenchyma
1. Cell wall is primary	1. Cell wall is primary.	1. Cell wall is secondary.
2. Cells have thin walls and made up of cellulose.	2. Cell walls are thickened at the corners due to protein deposition.	2. Cell wall is very thick due to lignin deposition.

Question 5:

What are the functions of *Stomata*?

Answer 5:

The small pores present in the epidermis of the leaf are stomata. Stomata are enclosed by two kidney shaped cells called guard cells.

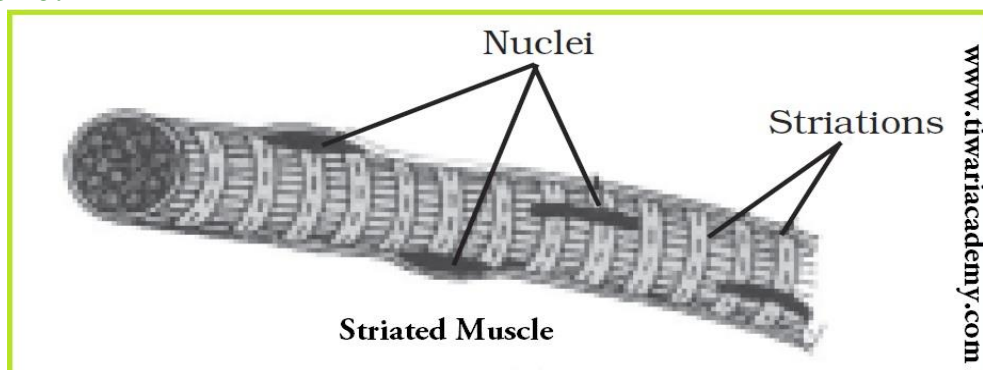
Functions of Stomata

- Exchange of gases, particularly CO₂ and O₂, with atmosphere.
- Loss of water in the form of vapour during transpiration.

Question 6:

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

Answer 6:



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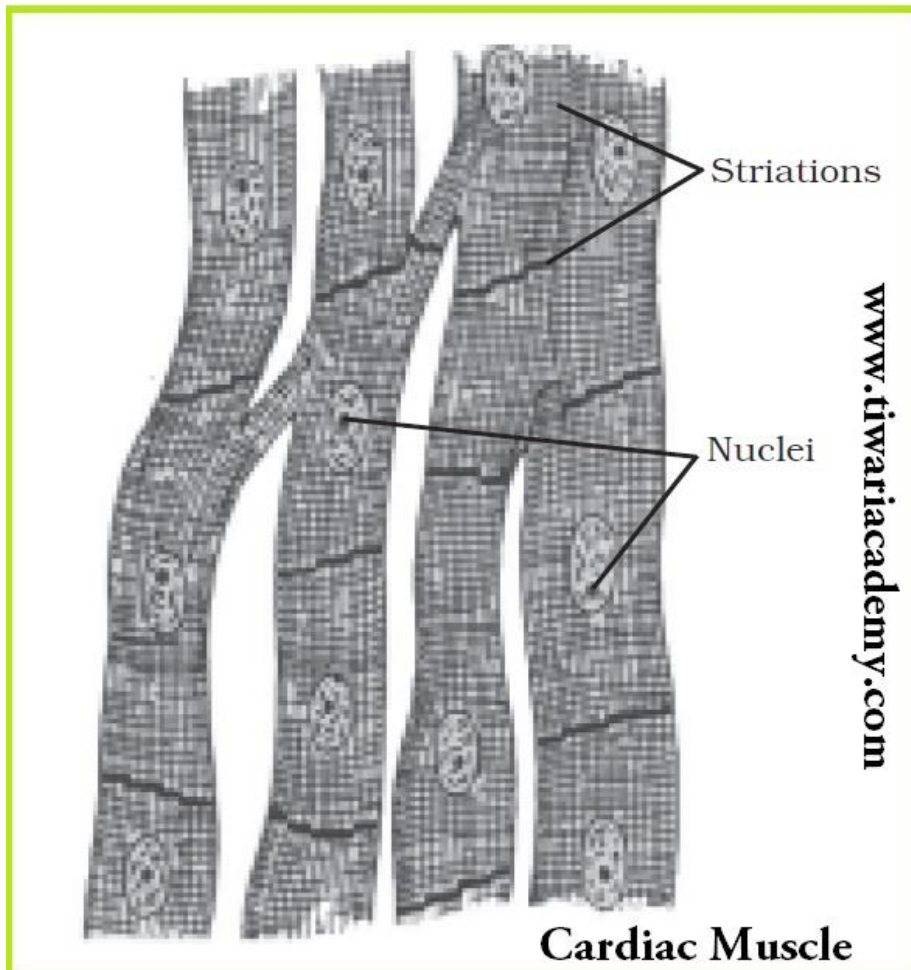
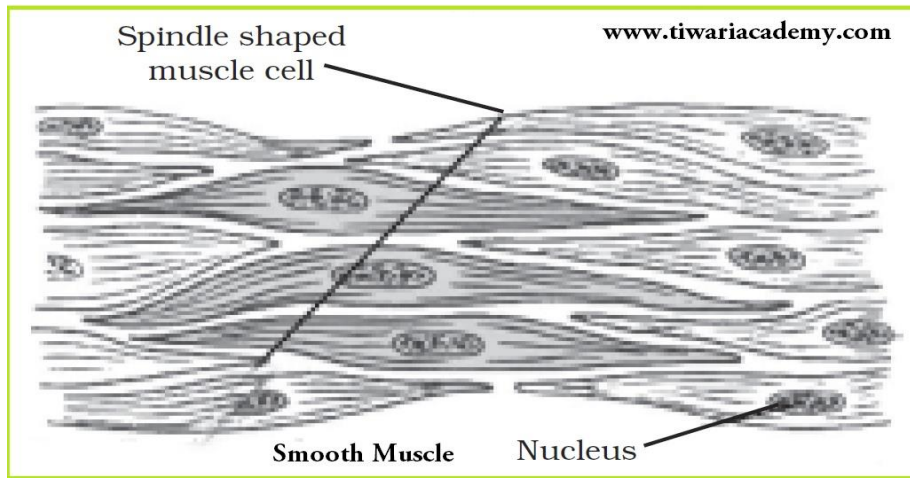
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(Chapter – 6) (Tissues)

(Class – IX)

Question 7:

What is the specific function of cardiac muscle?

Answer 7:

Cardiac muscles are involuntary muscles which show characteristics of both smooth and striated muscles. These muscles occur in the walls of the heart.

Functions of Cardiac Muscles

- Cardiac muscles contract and relax rapidly, rhythmically and tirelessly throughout life. They contract endlessly from early embryonic stage until death.
- The contraction and relaxation of heart muscles help to pump and distribute blood to various parts of body.

Question 8:

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

Answer 8:

Striated, Unstriated and Cardiac muscles are three types of muscle tissues. Their different characteristics are as follows:

Character	Striated Muscles	Unstriated Muscles	Cardiac Muscles
1. Shape of cells	Cells are long cylindrical, non-tapering and un-branched	Cells are long with tapering ends (spindle shape) and un-branched.	Cells are non-tapering, cylindrical and branched.
2. Nucleus	Many nuclei (multi-nucleated) which are situated towards the periphery of muscle fibre.	The cells have only one nucleus (uni-nucleated) situated in the center.	Each cell contains one or two nuclei situated in the center.
3. Striation	Transverse alternate light and dark bands present.	Striations or strips are absent.	Cells have faint striations.
4. Mode of Contraction	Voluntary contract rapidly but soon undergo fatigue.	Involuntarily not at our will. Contract comparatively slow but do not fatigue.	Involuntary, rhythmically contract and relax throughout life without fatigue under normal conditions.
5. Example of location	Hands, legs and other skeletal muscles.	Stomach wall, intestine, ureter, bronchi etc.	Present in heart.

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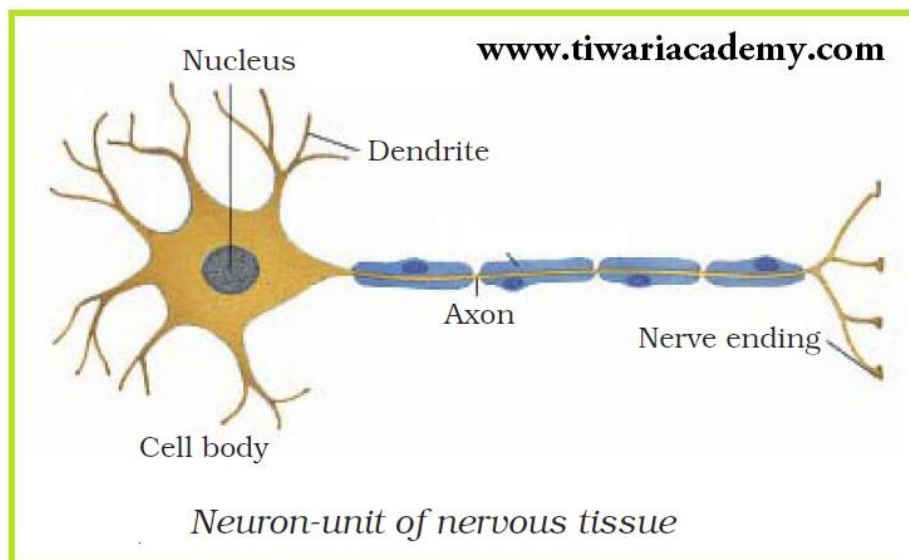
(Chapter – 6) (Tissues)

(Class – IX)

Question 9:

Draw a labelled diagram of neuron.

Answer 9:



Question 10:

Name the following:

- (a) Tissue that forms 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 brain.

Answer 10:

- (a) Squamous epithelium
- (b) Tendon
- (c) Phloem
- (d) Adipose tissue
- (e) Blood
- (f) Nervous tissue.

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(Chapter – 6) (Tissues)

(Class – IX)

Question 11:

Identify the type of tissue in the following:

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

Answer 11:

- Skin - *Stratified Squamous epithelium*
- Bark of tree - *Cork protective tissue*
- Bone - *Connective tissue*
- Lining of kidney tubule - *Cuboidal epithelium (Cuboidal epithelial tissue)*
- Vascular bundle - *Complex permanent tissue (Xylem and Phloem)*

Question 12:

Name the regions in which parenchyma tissue is present.

Answer 12:

Parenchyma is a simple permanent tissue of angiospermic plants. It is present in cortex and pith of stem and roots. It is also present in mesophyll of leaves. When it contains chlorophyll, it is called Chlorenchyma, found in green leaves.

Question 13:

What is the role of epidermis in plants?

Answer 13:

Epidermis is a protective tissue of angiospermic plants. It provides protections to underlying tissues. Epidermis forms outer covering of various plant organs such as roots, stem, leaves, and flowers and remains in direct contact with the environment. Any substance whether solid, liquid or gas can enter into the plant or move outside only after passing through this layer. Epidermis helps in absorption, secretion, gaseous exchange and transpiration. It helps in preventing the entry of pathogens.

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(Chapter – 6) (Tissues)

(Class – IX)

Question 14:

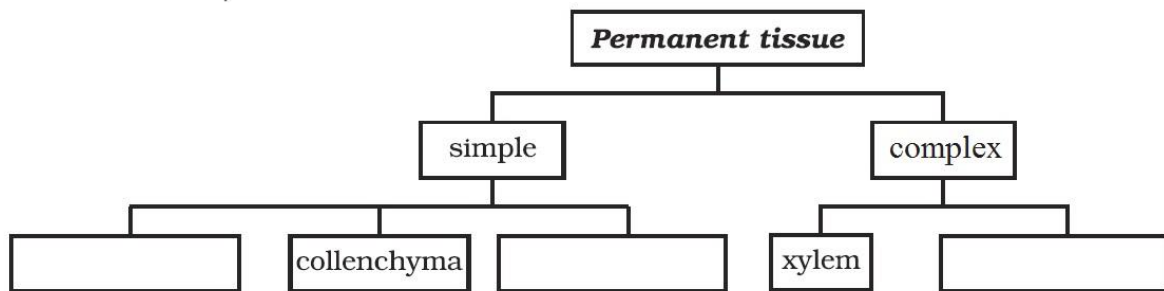
How does the cork act as a protective tissue?

Answer 14:

The cork cells are dead cells and do not have any intercellular spaces. The cell wall of the cork cells are coated with suberin (a waxy substance). Suberin makes these cells impermeable to water and gases. Cork is protective in function; it protects underlying tissues from desiccation, infection and mechanical injury.

Question 15:

Complete the table:



Answer 15:

