TISSUES

NCERT Textbook Questions

Q.1. What is a tissue?

Ans. A tissue is a group or collection of similar cells which work together to achieve a particular function and have common origin. Blood, phloem and muscles are all examples of tissues.

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

Ans. In multicellular organisms there are millions of cells. Most of these cells are specialised to carry out a few functions. Each specialized function is taken up by a different group of cells or tissues. Since these cells of a tissue carry out only a particular function, they do it very efficiently. For example, in human beings, muscle cells contract and relax to cause movement, nerve cells carry messages and blood flows to transport oxygen, food, hormones and waste materials and so on. Likewise, in plants, vascular tissues (xylem, phloem) conduct water and food from one part of the plant to other parts. So, multicellular organisms show division of labour.

Q.3. Name three types of simple tissues.

Ans. *Three* types of simple tissues of plants are:

1. Parenchyma; 2. Collenchyma; and 3. Sclerenchyma.

Q.4. Where is apical meristem found?

Ans. Apical meristem is found in shoot apex and root apex of an angiospermic plant.

Q.5. Which tissue makes up the husk of coconut?

Ans. Sclerenchymatous fibres.

Q.6. What are constituents of phloem?

Ans. Phloem is a complex tissue of the angiosperm plants. It serves as a conducting tissue and is made up of four types of elements: (*i*) Sieve tube; (*ii*) Companion cells; (*iii*) Phloem fibres (bast fibres), and (*iv*) Phloem parenchyma.

Q.7. Name the tissue responsible for the movement in our body.

Ans. Muscular tissue.

Q.8. What does a neuron look like?

Ans. Neuron or nerve cell is a unit of nervous tissue (brain, spinal cord and nerves) which serves to transmit messages in our body. A neuron consists of **cell body** with a nucleus and cytoplasm, from which long thin hair-like parts arise. Usually, each neuron has a single long part called the **axon,** and many short branched processes (parts) called **dendrites.**

Q.9. Give three features of cardiac muscle.

Ans. (*i*) Cardiac muscles are involuntary.

(*ii*) Cardiac muscle cells are cylindrical, branched and uninucleate.

(*iii*) Cardiac muscles show rhythmic contraction and relaxation throughout the life.

Q.10. What are functions of areolar tissue?

Ans. Areolar tissue is a connective tissue. It fills the space inside the organs, supports internal organs and helps in repair of tissues.

NCERT Exercises

Q.1. Define the term "tissue".

Ans. A tissue is a group or collection of similar or disimilar cells which work together to achieve a particular function. Cells of a tissue have common origin.

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

Ans. Xylem is a complex tissue. It is made up of following four kinds of cells (= elements): (*i*) Tracheids; (*ii*) Vessels; (*iii*) Xylem parenchyma; (*iv*) Xylem fibres.

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

Ans. A simple tissue is made up of only one type of cells where as complex tissue is made up of different types of cells.

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

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

Parenchyma	Collenchyma	Sclerenchyma
1. Cell wall is primary.	1. Cell wall is primary.	1. Cell wall is secondary.
2. Cell wall is thin and made up of cellulose.	2. Cell wall has localised thickening of cellulose.	2. Cell wall is very thick obliterating internal cellular space. Cell wall is thickened due to deposition of lignin.

Q.5. What are the functions of the stomata?

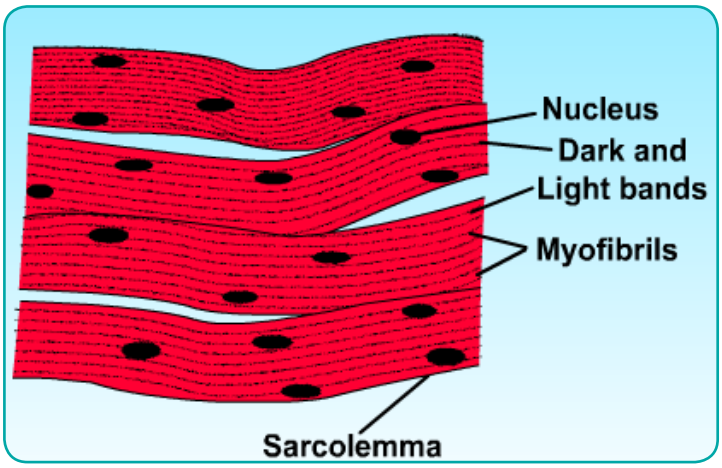
Ans. The important functions of stomata are:

(*i*) Exchange of gases with atmosphere, *e.g.*, entry of carbon dioxide for photosynthesis and of oxygen for respiration.

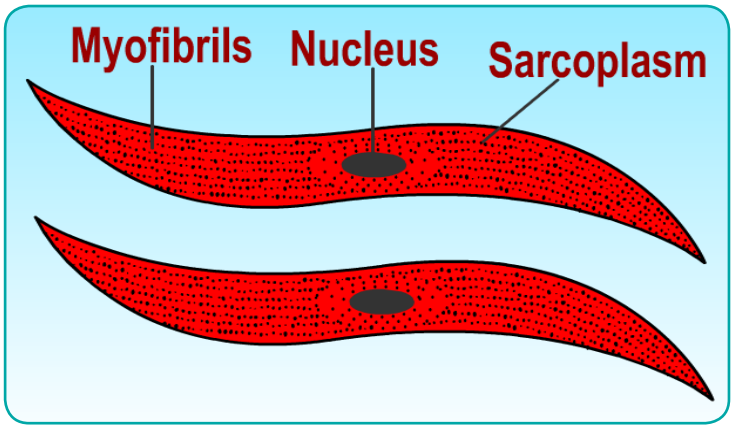
(*ii*) Transpiration, *i.e.*, loss of water in the form of water vapour.

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

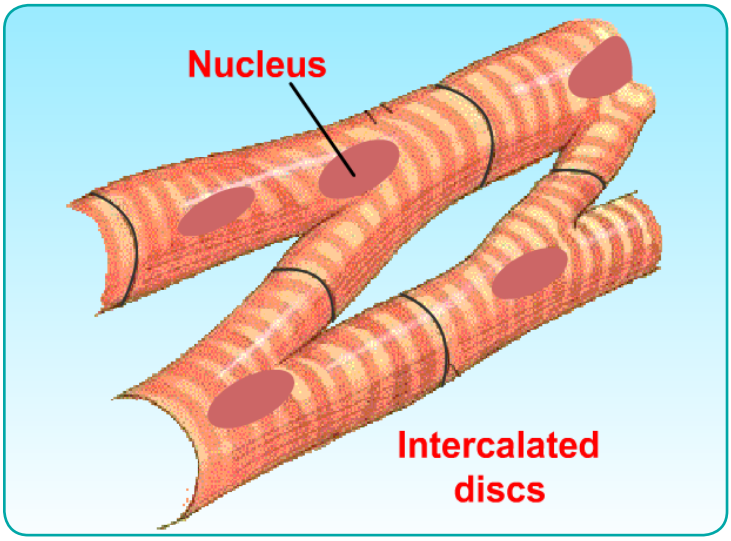
Ans.



Striated Muscles



Smooth Muscles



Cardiac Muscles

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

Ans. Cardiac muscle is present in the heart. It contracts and relaxes rapidly and continuously with a rhythm, but it never gets fatigued.

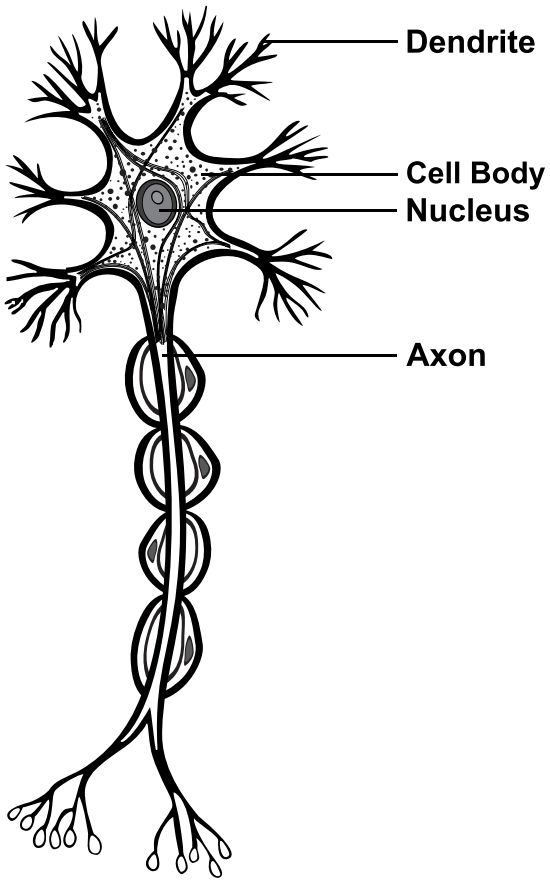
Q.8. Differentiate between striated, unstriated and cardiac muscles on the basis of their structure and site/location in the body.

Ans. Differences between striated, unstriated and cardiac muscles are as follows:

Striated muscle	Unstriated muscle	Cardiac muscle
1. The cells of striated muscles are long, cylindrical unbranched and multinucleated.	1. The cells of unstriated muscles are long, pointed at the ends and uninucleated.	1. The cells of cardiac muscles are cylindrical, branched and uninucleated.
2. Striated muscles are present in our limbs and join the bones.	2. These muscles are present in alimentary canal, blood vessels, iris of the eye, ureter and bronchi.	2. Cardiac muscles are present in the heart (*i.e.* in the wall of heart).

Q.9 Draw a labelled diagram of a neuron.

Ans.



Q.10. Name the following:

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

(*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.

Ans. (*a*) Squamous epithelium; (*b*) Tendon;

(*c*) Phloem; (*d*) Adipose tissue;

(*e*) Vascular tissue (Blood and lymph); (*f*) Nervous tissue.

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

Ans. **Skin:** Epithelial tissue (squamous epithelium);

Bark of tree: Cork (protective tissue);

Bone: Skeletal tissue (connective tissue);

Lining of kidney tubules: Cuboidal epithelial tissue;

Vascular bundle: Complex permanent tissue — xylem and phloem.

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

Ans. *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 the mesophyll of leaves.

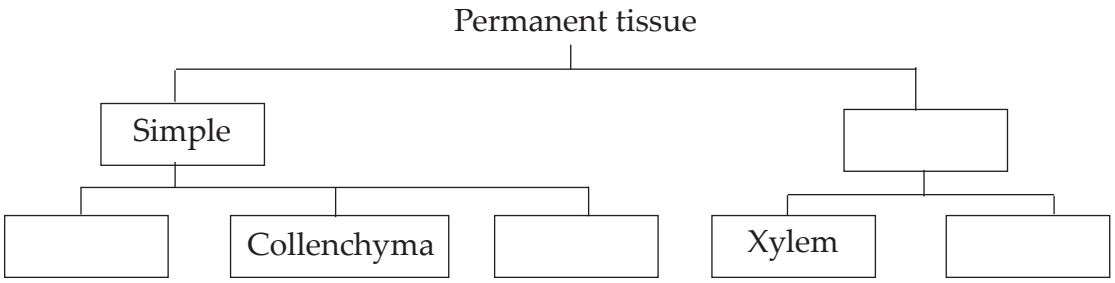
Q.13. What is the role of epidermis in plants?

Ans. Epidermis is a protective tissue of angiospermic plants. It provides protection 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, excretion, gaseous exchange and transpiration. It helps in preventing the entry of pathogens.

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

Ans. The cork cells are dead and do not have any intercellular spaces. The cell walls 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 (loss of water from plant body), infection and mechanical injury.

Q.15. Complete the table:



Ans.