NCERT Solutions for Class 9 Science Chapter 6: NCERT Solutions for Class 9 Science Chapter 6, "Tissues," help you learn about different types of tissues in plants and animals. This chapter explains plant tissues like meristematic and permanent tissues, and animal tissues such as epithelial, connective, muscular, and nervous tissues.

The solutions give clear explanations and pictures to make it easy to understand. Studying these solutions helps you know how tissues work in living things and prepares you for exams.

NCERT Solutions for Class 9 Science Chapter 6 Overview

The NCERT Solutions for Class 9 Science Chapter 6, "Tissues," prepared by subject experts of Physics Wallah, provide a clear and detailed overview of the chapter.

These solutions cover all the important concepts, such as the different types of tissues found in plants and animals, their structure, and their functions.

Tissues

Tissues are groups of similar cells that work together to perform a specific function in an organism. In plants and animals, tissues form the building blocks that make up organs and systems.

Types of Tissues in Plants:

Meristematic Tissue: Responsible for plant growth. Found in areas like the tips of roots and shoots.

Permanent Tissue: Differentiated cells that no longer divide. Includes:

- **Simple Permanent Tissue:** Made of one type of cell, such as parenchyma, collenchyma, and sclerenchyma.
- **Complex Permanent Tissue:** Made of more than one type of cell, such as xylem and phloem, which help in the transportation of water, nutrients, and food.

Types of Tissues in Animals:

Epithelial Tissue: Covers and protects body surfaces and internal organs. Examples include skin and the lining of the digestive tract.

Connective Tissue: Supports and binds other tissues. Includes bone, blood, and fat.

Muscular Tissue: Enables movement. Includes skeletal muscles, smooth muscles, and cardiac muscles.

Nervous Tissue: Transmits signals throughout the body. Found in the brain, spinal cord, and nerves.

NCERT Solutions for Class 9 Science Chapter 6 PDF

The PDF link for NCERT Solutions for Class 9 Science Chapter 6, "Tissues," is available below. This resource is made by experts of Physics Wallah. It covers important topics like different types of tissues in plants and animals, their structures, and their functions. The solutions have clear explanations and helpful pictures, making it easy to understand.This PDF is a valuable resource for students to improve their knowledge and get ready for exams.

NCERT Solutions for Class 9 Science Chapter 6 PDF

NCERT Solutions for Class 9 Science Chapter 6 Tissues

Below we have provided NCERT Solutions for Class 9 Science Chapter 6 Tissues for the ease of the students –

NCERT Solutions for Class 9 Science Chapter 6 Tissues Exercise 6.1 Page: 69

1. What is a tissue?

Solution:

A tissue is defined as a cluster of cells that are similar in structure and work together to perform a particular function. These cells are organized to carry out specific tasks within an organism, such as providing support, enabling movement, or transporting nutrients. Tissues are the building blocks of organs and play a crucial role in the overall functioning of living organisms.

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

Solution:

In multicellular organisms, tissues provide structural and mechanical strength, allowing the organism to maintain its shape and withstand various forces. Tissues enable the division of labor, where different types of tissues perform specialized functions.

This specialization allows for more efficient and effective functioning of the organism, as each tissue type can focus on a specific task, such as movement, nutrient

NCERT Solutions for Class 9 Science Chapter 6 Tissues Exercise 6.2 Page: 73

3. Name the types of simple tissues.

Solution:

The types of simple tissues are as follows:

1. Parenchyma
2. Collenchyma
3. Sclerenchyma

4. Where is apical meristem found?

Solution:

In plants, apical meristem is typically found at:

- The tip of the shoot
- Root of the plant

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

Solution:

Sclerenchymatous tissue is a type of permanent tissue found in plants, including in the husk of the coconut. This tissue provides structural support and makes the plant parts stiff and hard.

The cells of sclerenchyma tissue are dead at maturity, and their cell walls are heavily thickened with lignin, a substance that strengthens the cell walls and makes them resistant to bending and stretching. This characteristic helps in providing mechanical support and protection to the plant.

6. What are the constituents of phloem?

Solution:

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

1. Sieve tube
2. Companion cells
3. Phloem parenchyma
4. Phloem fibres

NCERT Solutions for Class 9 Science Chapter 6 Tissues Exercise 6.3 Page: 77

7. Name the tissue responsible for movement of our body.

Solution:

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

1. Muscular tissue
2. Nervous tissue

8. What does a neuron look like?

Solution:

A neuron, or nerve cell, is composed of a cell body containing a nucleus and cytoplasm. It features a unique structure with a long, thin extension known as an axon, which transmits electrical signals to other cells or neurons.

Neurons possess several shorter, branched structures called dendrites, which receive signals from other neurons and convey them towards the cell body. Neurons are remarkable for their varied sizes; some axons can extend up to a meter in length, facilitating communication across considerable distances within the body's nervous system.

9. Give three features of cardiac muscles.

Solution:

Cardiac muscles are specialized tissues designed to pump blood throughout the body. They exhibit several distinct features:

- **Cylindrical Shape:** Cardiac muscle cells are cylindrical in shape.
- **Striated Muscle Fibers:** Like skeletal muscles, cardiac muscle fibers have a striped appearance due to the arrangement of contractile proteins.
- **Uninucleated and Branched:** Each cardiac muscle cell has a single nucleus and often branches to connect with neighboring cells.
- **Involuntary Nature:** Contractions of cardiac muscles are involuntary, meaning they occur without conscious control, ensuring continuous pumping of blood throughout the body.

10. What is areolar tissue?

Solution:

Areolar tissue is a type of connective tissue commonly found in animals. It serves several key roles:

- **Location:** Areolar tissue is located between the skin and muscles, around blood vessels and nerves, and within organs such as the bone marrow.
- **Function:** It fills the spaces inside organs, providing support to delicate structures and facilitating tissue repair in case of damage.

- **Structure:** Areolar tissue is characterized by its loose arrangement of collagen and elastin fibers, which give it flexibility and resilience.

NCERT Solutions for Class 9 Science Chapter 6 Tissues Exercise Page: 78

1. Define the term 'tissue'.

Solution:

A tissue is a group of cells that are similar in structure and work together to perform a specific function in an organism. These cells are organized to perform specialized tasks that contribute to the overall function and health of the organism. Tissues can be found in plants and animals, where they play essential roles in maintaining structure, providing support, and facilitating various physiological processes necessary for survival.

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

Solution:

The xylem tissue in plants is composed of four main elements:

- **Vessels:** These are elongated cells aligned end-to-end, forming continuous tubes for water and mineral transport.
- **Tracheids:** Similar to vessels but narrower and with tapered ends, tracheids also transport water and provide structural support.
- **Xylem Fibers:** These cells are long and slender, providing mechanical support to the plant.
- **Xylem Parenchyma:** These are living cells that store starch, oils, and other substances, and also facilitate lateral movement of water and nutrients.

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

Solution:

The following are the differences:

- **Simple tissues:** These are composed of a single type of cell that performs a specific function. Examples include parenchyma, collenchyma, and sclerenchyma in plants, each serving roles like storage, support, or protection.
- **Complex tissues:** These involve multiple types of cells working together to perform specialized functions. For instance, xylem and phloem in plants coordinate to transport water, nutrients, and organic substances throughout the plant.

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

Solution:

The following are the differences between different tissues based on cell wall:

Parenchyma:

- Cell walls are thin and primarily made up of cellulose.
- These tissues are often involved in functions like photosynthesis, storage, and secretion.

Collenchyma:

- Cell walls are thicker at the corners due to the deposition of pectin.
- They provide flexible structural support to young parts of the plant, such as stems and petioles.

Sclerenchyma:

- Cell walls are very thick due to the deposition of lignin, making them rigid and strong.
- These tissues provide mechanical support and protection to mature parts of the plant, such as the seed coats and vascular bundles.

5. What are the functions of the stomata?

Solution:

Stomata are small pores found on the outer layer (epidermis) of leaves and stems of plants. They play several important roles:

- **Gas Exchange:** Stomata allow for the exchange of gases, such as oxygen and carbon dioxide, between the plant and its environment. This process is crucial for photosynthesis (uptake of carbon dioxide) and respiration (release of oxygen).
- **Transpiration:** Stomata also regulate the process of transpiration, where water vapor exits the plant through these pores. This helps in cooling the plant and maintaining its internal water balance.

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

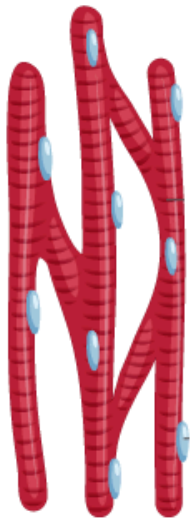
Solution:

There are three types of muscle fibres, they are:

1. Cardiac muscles

- Present in the heart.
- Involuntary in nature.

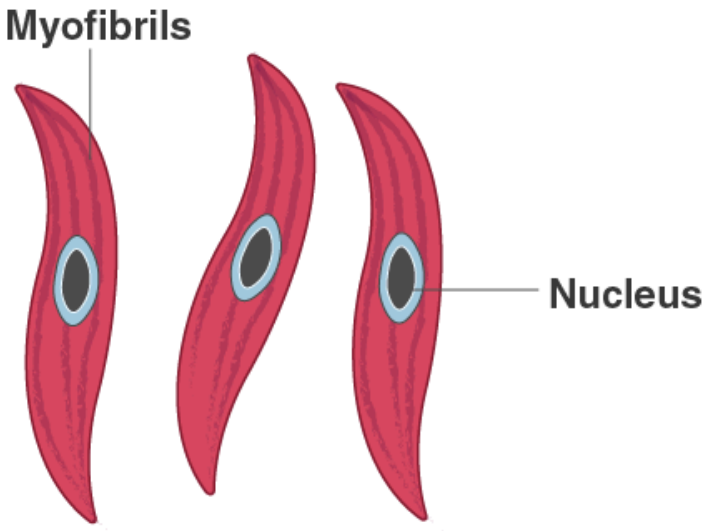
- They have 1 nucleus.
- The muscle fibers are branched.



Cardiac Muscles

2. Smooth muscles

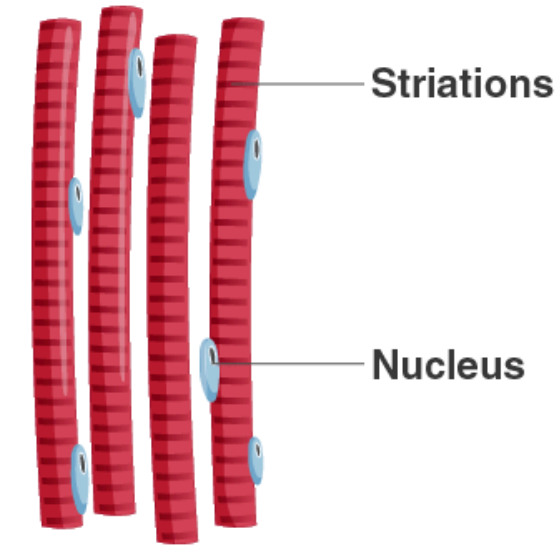
- Found in lungs and alimentary canal.
- Involuntary in nature.
- They have 1 nucleus.
- They are spindle-shaped.



Smooth Muscles

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.



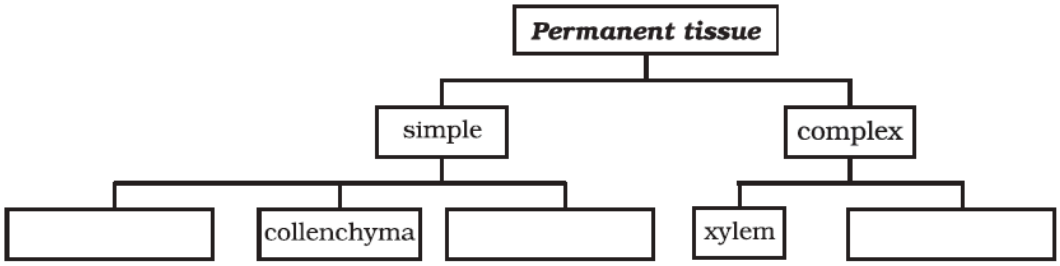
Striated Muscles

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

Solution:

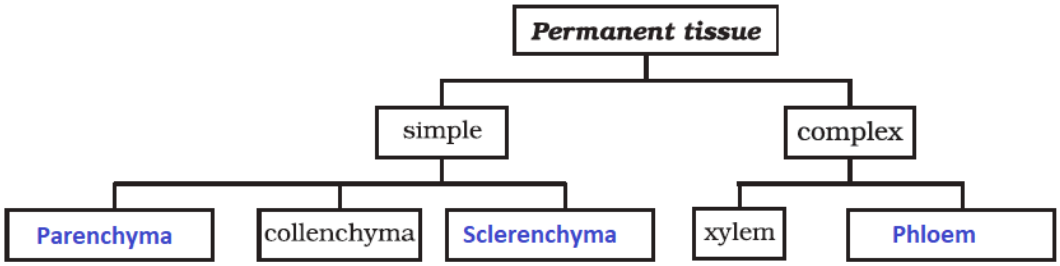
Cardiac muscles are characterized by their branched and cylindrical shape. They are uninucleated and function involuntarily, meaning they contract and relax rhythmically throughout an individual's lifetime. These muscles are essential for maintaining the continuous pumping action of the heart, which circulates blood throughout the body, supplying oxygen and nutrients to tissues and organs while removing metabolic waste products.

8. Complete the following chart.



Solution:

The completed chart is as follows:



Benefits of NCERT Solutions for Class 9 Science Chapter 6 Tissues

Clear Understanding: The solutions provide detailed explanations and diagrams, making it easier for students to understand the different types of tissues and their functions.

Accurate Information: Prepared by subject experts, these solutions ensure that students get precise and reliable information.

Exam Preparation: The solutions cover all important topics and questions, helping students prepare thoroughly for exams.

Step-by-Step Guidance: The solutions break down complex concepts into simple steps, aiding in better comprehension and retention.

Practice and Revision: By working through these solutions, students can practice and revise the chapter effectively, reinforcing their learning.

Confidence Building: With clear and thorough explanations, students can build confidence in their understanding of the subject, leading to better performance in exams.