CHAPTER 13
TISSUE

SOLUTIONS

TEXTUAL QUESTIONS AND ANSWERS

Try to answer the questions (Page 194)

1. What is tissue?

Ans: A group of cells similar in structure and work together to perform a particular function is called a tissue.

2. Name the simple tissues of plants?

Ans: They are - parenchyma, collenchyma and sclerenchyma.

3. Classify meristems on their position in the plant body.

Ans: Meristematic tissues are classified into three types based on their position. They are:

(a) Apical meristem

(b) Intercalary meristem

(c) Lateral meristem

4. What is the function of apical meristem?

Ans: It is responsible for elongation of stems and roots.

5. What are the constituent elements of xylem and phloem?

(a) The constituent elements of xylem are tracheids, vessels, xylem parenchyma and xylem fibres.

(b) The constituent elements of phloem are sieve tubes, companion cells, phloem parenchyma and phloem fibres.

6. How do stomata open?

Ans: Stomata remain open in the day time and closes at night. The opening and closing of stomata are due to turgidity and flaccidity of the guard cells.

Try to answer the questions (Page 198)

1. What are the four main types of animal tissues?

Ans: The four types of animal tissues are:

(a) Epithelial tissue

(b) Connective tissue

(c) Muscular tissue

(d) Nervous tissue

2. **Name the tissue responsible for movement in our body**.

Ans: Muscular tissue.

3. **Name the type of epithelial tissue present in the inner lining of the stomach and intestine**.

Ans: Columnar epithelium.

4. **What is the function of WBC**?

Ans: WBC fights against infections and diseases. (by producing antibodies and provide immunity in the body)

5. **What are the functions of areolar tissue?**

Ans: The functions of areolar tissue are:

(a) It fills the space inside the organs such as bone marrow and supports internal organs.

(b) It helps in repair of the tissues after injury.

6. **What does the neuron look like?**

Ans: Neuron looks like a long thread giving the appearance of a miniature tree.

EXERCISES

1. **Define tissue.**

Ans: A group of cells similar in structure and work together to perform a particular function is called a tissue.

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

Ans: Tissues provide highest possible efficiency of functions by enabling division of labour.

3. **Name types of simple tissue.**

Ans: Parenchyma, collenchyma and sclerenchyma.

4. **Where is apical meristem found?**

Ans: It is found at the apices of roots and shoots.

5. **Which tissues make up the husk of coconut?**

Ans: The husk of coconut is made of sclerenchyma.

6. **What are the constituents of phloem?**

Ans: The constituents of phloem are sieve tubes, companion cells, phloem parenchyma and phloem fibres.

7. What are the elements that make up xylem tissues?

Ans: The constituent elements of xylem are tracheids, vessels, xylem parenchyma and xylem fibres.

8. Differentiate simple tissue and complex tissue of plants.

Ans: The **differences** are given below:

Simple permanent tissue	Complex permanent tissue
1. They consist of a group of similar types of cells	**1.** They consist of more than one type of cells
2. Parenchyma, collenchyma and **sclerenchyma** are the three simple permanent tissues.	**2. Xylem** and **phloem** are the two permanent tissues.
3. They are not conducting tissues.	**3.** They are conducting tissue.

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

Ans:

DIFFERENCES AMONGST PARENCHYMA, COLLENCHYMA AND SCLERENCHYMA ON THE BASIS OF THEIR CELL WALLS		
PARENCHYMA	**COLLENCHYMA**	**SCLERENCHYMA**
The cells of **parenchyma** have thin cell walls.	The cells of **collenchyma** have irregularly thickened walls at the corner due to the deposition of cellulose, hemicellulose and pectin.	The cells of **sclerenchyma** are regularly thickened with lignin.

10. What are stomata and what are the functions of stomata?

Ans: Stomata are numerous, small pores present on the surface of the leaves. Stomata are concerned with transpiration and exchange of gases between the atmosphere and the internal tissues of the plant.

11. Name the tissue responsible for movement in our body.

Ans: Muscular tissue.

12. What does a neuron look like?

Ans: Neurons look like a long thread giving the appearance of a miniature tree.

13. Give three features of cardiac muscles.

Ans: The three features of cardiac muscles are

(a) They are striated.

(b) They are cylindrical, branched and uninucleated.

(c) They are involuntary, non-fatigued.

14. **What are the functions of areolar tissue?**

Ans:

(a) It fills the space inside the organs such as bone marrow and supports internal organs.

(b) It helps in repair of the tissues after injury.

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

Ans:

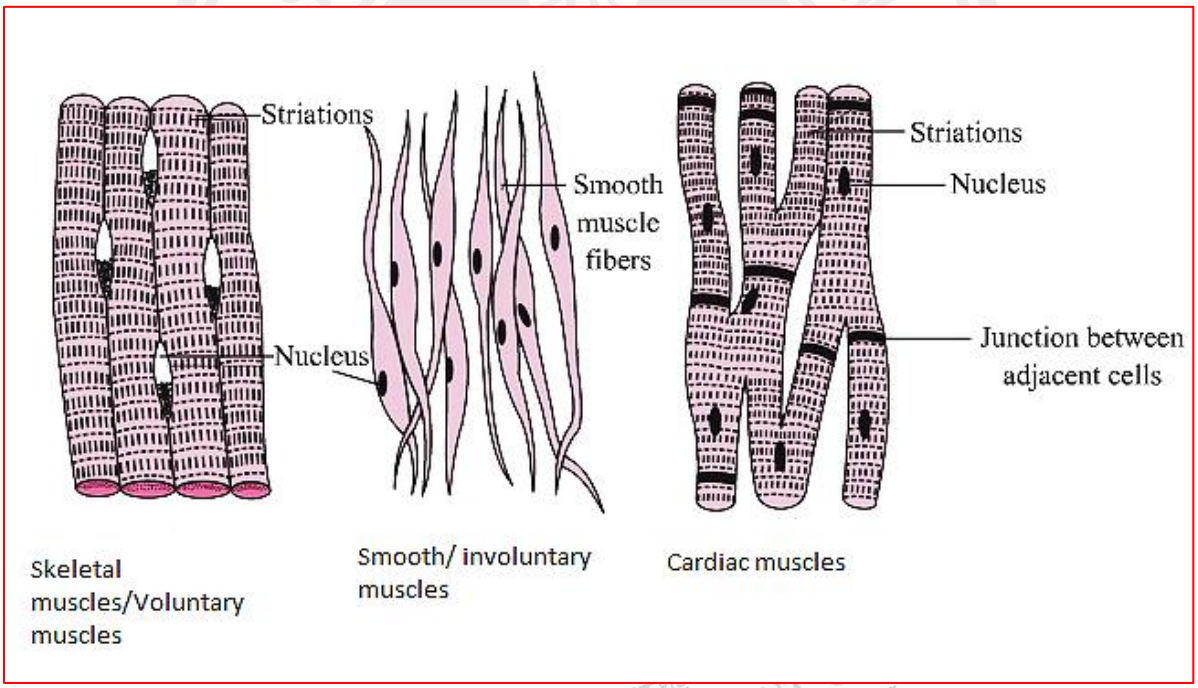


Fig. Diagrams showing the differences amongst Skeletal/Striated, Smooth and Cardiac Muscle Fibres

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

Ans: The specific function of cardiac muscle is the contraction and relaxation of heart muscles that pump and distribute blood to various part of body.

17. **Differentiate between striated, smooth and cardiac muscles** on the basis of their structures and site/location in the body.

Ans:

FEATURES	STRIATED MUSCLE	SMOOTH MUSCLE	CARDIAC MUSCLE
STRUCTURES	➢ Cylindrical, unbranched, multinucleated and bear dark and light bands.	➢ Spindle, unbranched and have single nucleus and absent.	➢ Cylindrical, branched and have single nucleus and bear faint dark and light bands.
LOCATIONS	➢ Voluntary, present attached to bones in limbs.	➢ Involuntary, found in iris of eye, ureters and bronchi of lungs.	➢ Involuntary, non-fatigued muscle fibres present in the walls of heart etc.

18. **Draw a labelled diagram of a neuron.**

Ans:

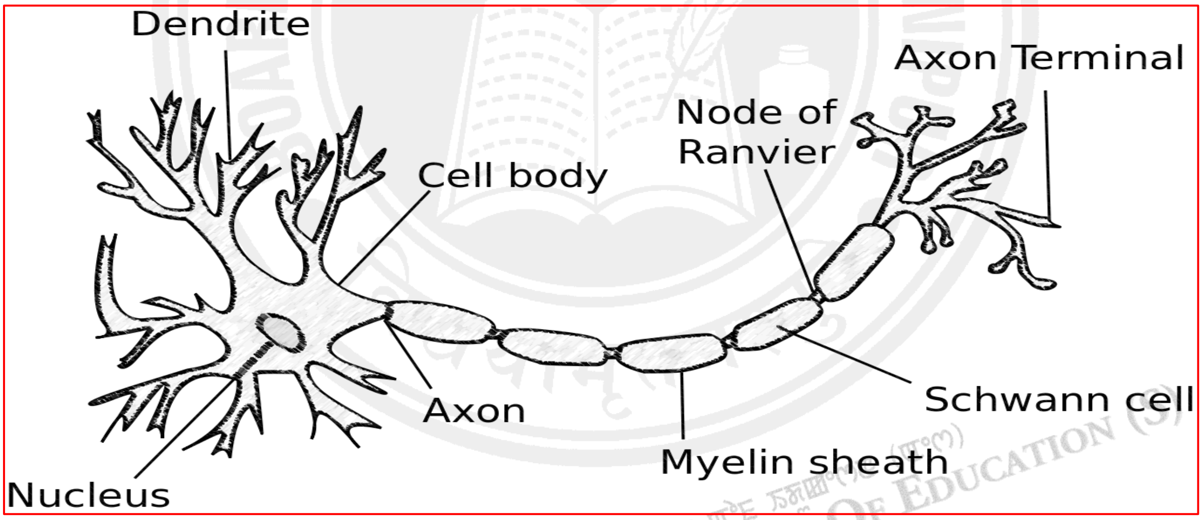


Fig. A structure of a Neuron

19. **Name the following:**

A. Tissue that forms the inner lining of our mouth. - **Squamous epithelial tissu**

B. Tissue that connects the muscle to bone in humans. - **Tendons**

C. Plant tissue that transports food. - **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.**

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

Ans: Epithelial tissue, secondary epidermis, connective tissue, cuboidal epithelium, xylem and phloem

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

Ans: All soft parts of root, stem, leaves, flowers and fruits.

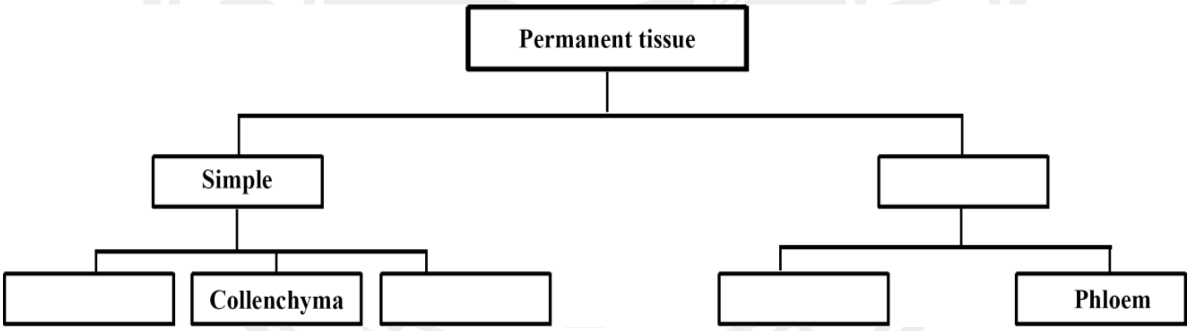
22. **What is the function of epidermis in plants?**

Ans: Protection against desiccation (loss of water from the plant body), infection and mechanical injury.

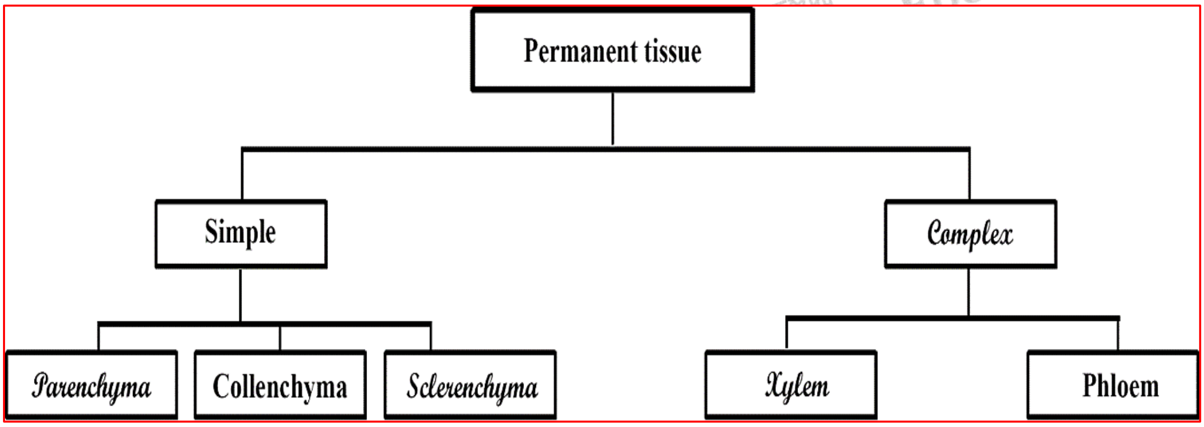
23. **How does the cork act as a protective tissue?**

Ans: The dead cork cells are compactly arranged without intercellular spaces and also have heavy deposition of chemical known as **suberin** in their walls that make them impervious to water and gases.

24. **Complete the table.**



Ans:



EXTRA QUESTIONS AND ANSWERS

1. Differentiate between plant tissue and animal tissue by giving four suitable points.
Ans:

DIFFERENCES	
PLANT TISSUE	**ANIMAL TISSUE**
1. Most of the plant tissues are dead and provide support and strength. **2.** Simple in organization and show indefinite growth. **3.** Dividing and non-dividing tissues are located at specific region.	**1.** Animal tissues are made up of living cells **2.** Much more complex in organization and show definite growth. **3.** Such specific regions are absent.

2. Write three characteristics of meristematic tissues.

Ans:

(a) They have the power of division.

(b) They are compactly arranged without intercellular spaces.

(c) They possess dense or abundant cytoplasm with prominent nuclei without vacuoles

3. What is the function of intercalary meristem?

Ans: The function of intercalary meristem is to increase the length of organ in which they occur.

4. Write one example of the lateral meristem.

Ans: Cork cambium is an example of lateral meristem.

5. How do opening and closing of the stomata take place?

Ans: The opening and closing of stomata are due to turgidity and flaccidity of the guard cells.

6. How do the cells of the cork are heavily thickened?

Ans: The cells of the cork are heavily thickened by the deposition of a chemical called **suberin.**

7. Why are xylem and phloem known as vascular or conductive tissue?

Ans: Because they are responsible for transportation of water, minerals and food materials to various parts of plant body.

8. Write two main functions of xylem tissue.

Ans:

(a) They carry water and mineral salts upward from the roots to aerial parts of the plant.

(b) Above all, it also provides mechanical strength to the plant body.

9. Mention one function of phloem tissue.

Ans: Phloem transports organic food materials prepared through photosynthesis in leaves to other parts of the plant.

10. Classify epithelial tissue based on the number of layers of cells.

Ans: Epithelial tissue may be **single** epithelium i.e. composed of a single layer of cells, or **stratified** i.e. made up of several layers of cells.

11. Write two main functions of epithelial cells.

Ans: It forms an outer layer of the skin and protects the underlying cells from drying and injury.

It helps in absorption of water, nutrients and elimination of waste products.

12. Classify epithelial tissue depending on the structure and function they perform.

Ans: Types of epithelial tissue:

(i) Squamous epithelium

(ii) Columnar epithelium

(iii) Ciliated epithelium

(iv) Cuboidal epithelium

(v) Glandular epithelium.

13. Mention the two types of squamous epithelium.

Ans: The two types of squamous epithelium are:

(i) Simple squamous epithelium

(ii) Stratified squamous epithelium.

14. Name the tissue which forms the delicate lining of the blood vessels, and cavities found in alveoli, oesophagus, mouth etc.

Ans: Simple squamous epithelium.

15. Mention one function of simple squamous epithelium.

Ans: It forms a selectively permeable surface through which transportation of substances occur.

16. Name the tissue found in the skin.

Ans: Stratified squamous epithelium.

17. What is the function of stratified squamous epithelium?

Ans: The functions of stratified squamous epithelium are:

(i) It prevents our body from wear and tear.

(ii) It is highly resistant to mechanical injury and is water proof.

18. Mention one function of columnar epithelium.

Ans: It facilitates movement of substances like food across the epithelial barrier.

19. Mention one site in our body where ciliated columnar epithelium is present.

Ans: It is found in the respiratory tract.

20. Name the epithelial tissue found in the lining of kidney tubules and ducts of salivary glands.

Ans: Cuboidal epithelium.

21. Write the functions of cuboidal epithelium.

Ans: The functions of cuboidal epithelium are:

(i) It provides mechanical support.

(ii) It also helps in the absorption, excretion and secretion.

22. Name the fluid connective tissue. State its main component and their functions.

Ans: Blood is a fluid connective tissue. It consists of **plasma, blood cells** like **RBCs, WBCs and platelets**. RBCs carry oxygen, WBCs fight infections and platelets help in clotting of blood.

23. Write two functions of bone.

Ans:

(i) It provides shape and support to the body.

(ii) It also protects the main organs of the body and anchors the muscles.

24. Name the two substances responsible for the hardness of bone.

Ans: Calcium and phosphorus compounds are responsible for hardness of bone.

25. Differentiate between bone and ligament.

Ans: The **differentiation** between bone and ligament are given below:

BONE	LIGAMENT
1. They are hard connective.	**1.** They are soft connective tissue.
2. Bone provides shape and support.	**2.** Ligament connects bone to bones.
3. They are non-flexible.	**3.** They are highly elastic.

26. What are tendons?

Ans: Tendons are tough connective tissue that connects muscles to bones.

27. Differentiate between bone and cartilage.

Ans:

DIFFERENCES	
BONE	**CARTILAGE**
1. Cells are arranged in lamellae.	**1.** Cells are widely spaced.
2. Matrix is hard.(calcium and phosphorus)	**2.** Matrix is solid.
3. Tissue is non flexible	**3.** Tissue is flexible.
4. Provide shape, support to the body; and protects vital organs.	**4.** Provide support, flexibility and also make bone surfaces smooth at joints.

28. Name the connective tissue present between the skin and muscles.

Ans: Areolar tissue

29. Write two functions of adipose tissue.

Ans: The two functions of adipose tissue are given below:

(a) It acts as storage of fat

(b) It acts as insulator and reduces the loss of heat from the body.

30. Name the special protein present in the muscles which is responsible for the movement in our body.

Ans: Contractile protein

31. Classify muscles depending on their location, structure and function.

Ans:

FEATURES	STRIATED MUSCLE	SMOOTH MUSCLE	CARDIAC MUSCLE
Structures	Cylindrical, unbranched, multinucleated and bear dark and light bands.	Spindle, unbranched and have single nucleus and absent.	Cylindrical, branched and have single nucleus and bear faint dark and light bands.
Locations	Voluntary, present attached to bones in limbs.	Involuntary, found in iris of eye, ureters and bronchi of lungs.	Involuntary, non-fatigued muscle fibres present in the walls of heart etc.
Functions	Movement of skeletal muscles.	Control movement of involuntary muscles.	Control contraction and relaxation of heart.

32. Why are striated muscles known as voluntary muscles?

Ans: Striated muscles are known as voluntary muscles because their movement can be controlled by our will and desire.

33. Which type of muscle is also known as skeletal muscle and why?

Ans: Striated muscles are known as skeletal muscle because they are mostly attached to bones and are responsible for body movement.

34. Which muscle is known as involuntary muscle and why?

Ans: Smooth muscle is known as involuntary muscle as it does not move at our will.

35. What are the three important parts of a neuron?

Ans: The three parts of a neuron are dendrites, cyton (or perikarya) and axon.

36. Describe the structure of a neuron.

Ans: A neuron consists of a cell body, dendrites and axon. The cell body contains a nucleus and cytoplasm. Dendrites are long thin hair like outgrowth, usually several arising from cell body while axon is a single long outgrowth that connects to another neuron or target organ.

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