Progress Check

Page: 26

1. What are the two basic types of plant tissues?

Solution:

The two basic types of plant tissues are:

- Meristematic tissue
- Permanent tissue

2. Give the technical terms for the following:

(i) The category of plant tissues that have lost their ability to multiply
(ii) The kind of plant cells with thin walls and usually a single large vacuole.
(iii) Elongated cells which are thickened at the corners
(iv) The two types of tissues which provide the upward movement of water and dissolved materials from the roots to other parts of the plant

Solution:

Listed below are the technical terms:

(i) Permanent tissue
(ii) Parenchyma
(iii) Collenchyma
(iv) Conducting tissue – Xylem and phloem

3. Mention if the following statements are true (T) or false (F)

(i) Phloem cells carry manufactured food from leaves to other parts.
(ii) Veins of leaves have both xylem and phloem
(iii) The older xylem tissue does not participate in transport
(iv) The sclerenchyma consists of actively dividing cells.

Solution:

(i)The statement is true.
(ii)The statement is true.
(iii)The statement is true.
(iv)The statement is false. Sclerenchyma consists of dead cells.

Progress Check

Page: 30

1. **Name the kind of animal tissue in which**
   (i) Cells are flat, cuboidal or columnar, forming protective layer.
   (ii) Cells produce and pour out chemical substance
   (iii) Cells can contract and relax
   (iv) Cells can conduct impulses.

   Solution:

   Listed below are the animal tissues:
   (i) Epithelial tissue
   (ii) Glandular epithelium tissue
   (iii)Muscular tissue
   (iv)Nervous tissue

2. **Give one example of each of the following tissues where they are located.**
   (i) Ciliated columnar epithelium
   (ii) Elastic cartilage
   (iii)Unstriated muscles

Solution:

Listed below are the examples for each:
(i) Ciliated columnar epithelium – Lining of the wind pipe(trachea)
(ii) Elastic cartilage – It is found in the epiglottis, pinna and external auditory canal of the ear
(iii)Unstriated muscles – walls of intestine, muscles of the iris of the eye

3. **Write one specialty of each one of the following:**
   (i) Cartilage
   (ii) Bone
   (iii) Striated muscle
   (iv) Cardiac muscle

Solution:

(i) Cartilage – Non-porous tissue that has thickened intercellular substance (matrix). It does not have blood vessels or nerves rather is elastic and semi-transparent.
(ii) Bone – It is a hard and porous tissue. Consists of osteoblasts(living cells) and a rigid mass of inorganic salts
(iii) Striated muscle – They are under control of will and are composed if long fibers that are striated(dark and light band of fibers running across the fiber) and nucleated
(iv) Cardiac muscle – Involuntary in nature, found only in the wall of the heart. These muscles can contract without exterior stimulation and yet not get fatigued.

4. **Mention if the following statements are true (T) or false (F)**
   (i) Axons of nerve cells are very long.
   (ii) Dendrons bundled together form a nerve.
   (iii) Cardiac muscles get tired soon.
   (iv) Epithelial cells leave space in between.

(v) Perikaryon is the nucleus of a nerve cell.
(vi) Muscles of the iris of the eye are of voluntary type.
(vii) Cartilage has no blood vessels or the nerves in it.

Solution:

(i) The statement is true.
(ii)The statement is false. Dendrons bundles together form a nerve.
(iii)The statement is false. They can contract without exterior stimulation and yet not get fatigued
(iv)The statement is false. They fit tight leaving no space.
(v)The statement is true.
(vi)The statement is false. They are of involuntary type.
(vii)The statement is true.

Review Questions

Page: 31

A. Multiple Choice Type

1. In potato, starch is stored in:
(a) Sclerenchyma
(b) Collenchyma
(c) Parenchyma
(d) Chlorenchyma
Solution:
(c) Parenchyma
Parenchyma has thin walled cells. They have small vacuoles and store starch granules

2. Tendons and ligaments are examples of
(a) Fibrous connective tissue
(b) Cartilage
(c) Muscular tissue
(d) Adipose tissue
Solution:
(a) Fibrous connective tissue
They consist of fibers. The tendons connect muscle to bones and ligaments that connect bone to bone, firmly holding it.

3. Which one of the following pairs in correctly matched?
(a) Meristem – Actively dividing cells
(b) Xylem – Transport of food
(c) Phloem – Transport of water
(d) Sclerenchyma – storage of starch
Solution:
(a) Meristem – Actively dividing cells
Meristematic tissue has cells which can multiply and produce new cells.

4. Parenchyma containing chloroplasts is known as:
(a) Parenchyma
(b) Aerenchyma
(c) Collenchyma
(d) Chlorenchyma
Solution:
(a) Chlorenchyma
Chlorenchyma helps the leaf in the production of food by photosynthesis.

5. Annual rings are the number of:

(a) Internodes in a stem
(b) Rings of vascular bundles in a monocot stem
(c) Barks layers in a woody stem
(d) Layers of xylem in a stem
Solution:
(d) Layers of xylem in a stem
Annual rings are the xylem rings. They determine the age of the tree.

6. **Which of the following cells in plants are said to be nonliving?**
(a) Meristem
(b) Parenchyma
(c) Collenchyma
(d) Sclerenchyma
Solution:
(d) Sclerenchyma
It consists of dead cells.

7. **Which of the following connects a muscle to a bone?**
(a) Cartilage
(b) Ligament
(c) Tendon
(d) Interstitial fluid
Solution:
(c) Tendon
It is a fibrous connective tissue that connects a muscle to a bone.

8. **Cardiac muscle is:**
(a) Involuntary
(b) Smooth
(c) Striated
(d) Involuntary and striated
Solution:
(d) Involuntary and striated
Cardiac muscles are found in the walls of the heart only.

B. Very Short Answer Type

1. **Name the kind of tissue found**
(a) At the tip of plant roots.
(b) At the lower surface of leaf.
(c) In the inner lining of intestine
(d) At the joint between two long bones
(e) In the walls of the veins of leaves
(f) As gritty masses in the skin of pears.
Solution:
Listed below is the kind of tissue found:
(a) The apical meristem is present at the tip of plant roots.

(b) At the lower surface of the leaf, the epidermis is found
(c) The intestinal epithelium is present in the inner lining of the intestine
(d) The tissue present at the joint between two long bones is Ligament
(e) The vascular cambium is present in the walls of the veins of leaves
(f) The tissue found as gritty masses in the skin of pears is sclerids.

2. Where is the least specialized tissue located in plants?

Solution:

Parenchyma is the least specialized tissue located in plants. They produce and store nutrients and starch, and are located in roots, fruits, stem of the plant.

3. Give one word for each of the following:

(a) A group of similar cells performing a specific function.
(b) Cells least specialized in the plants.
(c) Cells responsible for increase in diameter of the stem and root of dicot plants.

Solution:

(a) Tissue
(b) Parenchyma
(c) Cambium

4. Name one place each in living organisms where the following tissues are located:

(a) Meristematic tissue
(b) Cartilage
(c) Squamous epithelium
(d) Sclerenchyma
(e) Ciliated epithelium
(f) Ligament

Solution:

(a) Tip of roots
(b) Tip of the nose
(c) Found lining the nasal and mouth cavities, blood vessels
(d) Veins and stems of leaves
(e) Lining of wind pipe
(f) The ACL attaches the thighbone to the shinbone

5. Name the kinds of cells found in the following places:

(a) Surface of the human skin
(b) Salivary gland
(c) Brain
(d) Inner lining of the wind pipe

Solution:

(a) Surface of the human skin – epithelial
(b) Salivary gland – cuboidal epithelium
(c) Brain - Neuron
(d) Inner lining of the wind pipe – ciliated columnar epithelium

C. Short Answer Type

1. Name any one body part where ciliated epithelium is found in humans? What is its function?

Solution:

It is found in the lining of the trachea. At the free ends, it has thread-like projections that emerge out known as cilia. The cilium lashes and moves the materials constantly that enter the organ.

2. What is the difference between the nervous tissue and the nervous system?

Solution:

Listed below are the differences between the nervous tissue and the nervous system:

Attributes	Nervous tissue	Nervous system
Constituency	Composed of many nerve cells	Consists of group of nerve tissue that manages a number of nervous tissues.
Function	Mediates messages to a specific body part at a particular point of time	Manages tissues that passes messages to the entire body

3. List the tissues found in the human heart?

Solution:

The tissues found in the human heart are:

- Epithelial tissue
- Connective tissue
- Nervous tissue
- Muscular tissue

4. Can you consider a cluster of eggs as a tissue? Why?

Solution:

No, we cannot consider. Tissues are a group of cells performing a particular function. A cluster of eggs cannot perform a specific task together rather they perform it individually, hence they cannot be considered as a tissue.

5. Name the three kinds of muscles found in the human body. In each case, name one region in the body where they are found.

Solution:

The three types of muscles present in the human body are:

- Skeletal muscle – They are found in biceps
- Smooth muscle – Intestines and stomach
- Cardiac muscle – Heart

D. Long Answer Type

1. What is the difference between

a. **Cell and tissue?**
b. **Organ and organism?**
c. **Organ and organelle?**
d. **Organ and organ system?**

Solution:

Following are the differences:

a.

Cell	Tissue
Structural and functional units of living entities. They are the building blocks of life	Cluster of cells performing a specific function
Example – Nerve cell	Example – Connective tissue

b.

Organ	Organism
Multiple tissues make up for an organ. They perform functions within the body.	Several organ systems (constituted by organs) make up for an organism.
Example - Heart	Example – animals/humans

c.

Organ	Organelle
Multiple tissues make up for an organ. They perform functions within the body.	It is a portion/section of a cell that has a certain function.
Example - Heart	Example – Ribosome, Lysosomes

d.

Organ	Organ system
Multiple tissues make up for an organ. They perform functions within the body.	Several organs together performing a specific life process form an organ system.
Example - Heart	Example – Circulatory system

2. **Differentiate between cells of:**
   (a) Parenchyma and collenchyma
   (b) Meristematic tissue and permanent tissue
   (c) Sclerenchyma and parenchyma
   (d) Cells of involuntary and voluntary tissue
   (e) Fibers of voluntary muscle and cardiac muscle

Solution:

Following are the differences:

(a)

Properties	Parenchyma	Collenchyma
Intercellular space	May or may not be present	Absent
Cell wall	Large, thin cell walls having one	Elongated cell walls, Thick cell

	large vacuole	walls

(b)

Properties	Meristematic tissue	Permanent tissue
Cell division	Can divide	Cannot divide
Intercellular space	Absent	Large intercellular spaces

(c)

Properties	Sclerenchyma	Parenchyma
Nature of cells	Dead cells	Living cells
Cell walls	Thick	Thin

(d)

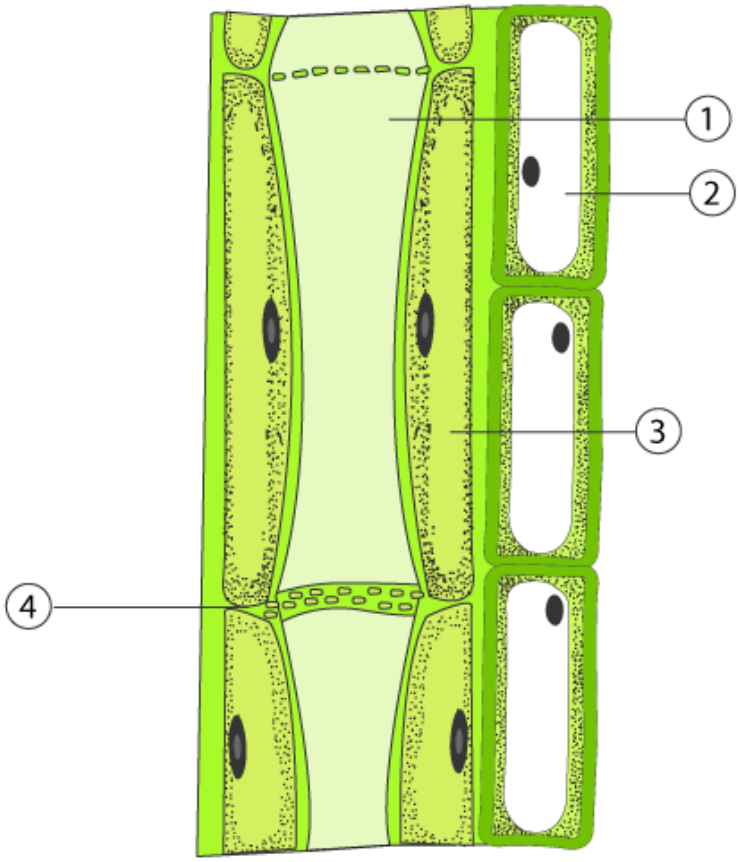
Properties	Cells of Involuntary muscle	Cells of Voluntary muscle
Shape	Spindle shaped and small	Cylindrical and long
Nucleated	Uninucleated	Multinucleated
Striations	absent	Present
Example	Blood vessel lining	Neck

(e)

Properties	Fibers Of Voluntary muscle	Fibers Of Cardiac muscle
Shape	Cylindrical and long	Branched and short
Nucleated	Multinucleated	Uninucleated
Nature	Under one's control	Not under one's control
Example	Legs, Arms, neck	Heart

E. Structured/Application Questions

1. Study the diagram given below and then answer the questions that follow:



(a) Identify the tissue and give a reason to support your answer.
(b) Name the parts labeled 1,2,3 and 4.
(c) Where is this tissue likely to be found in the plant?
(d) State the function of the parts labeled 1,2,3 and 4.

Solution:

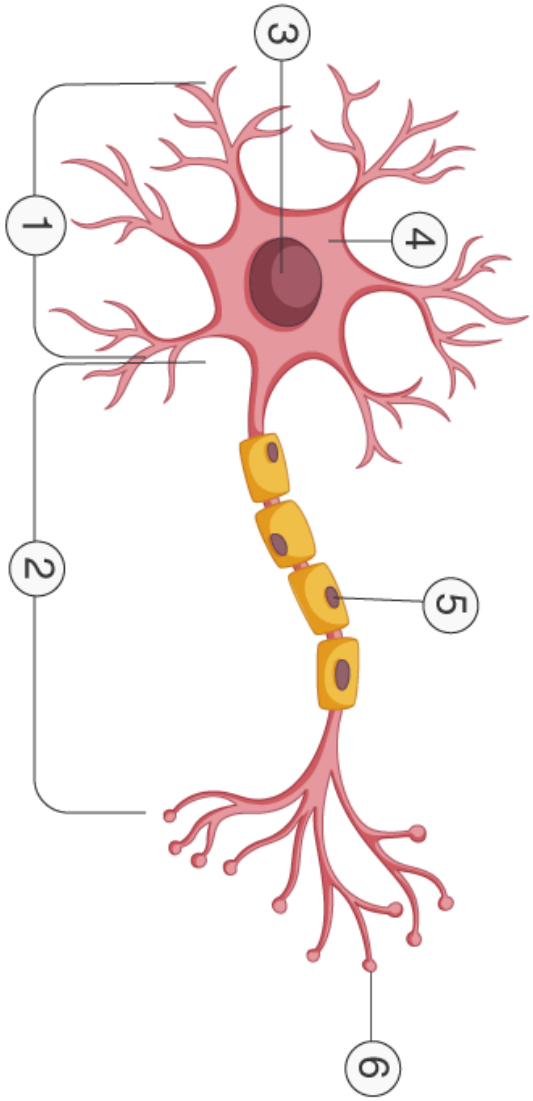
(a) The diagram given is a section of a phloem tissue of a plant as the cells exhibit cellular contents.
(b) The following parts are labeled:

- 1 – Sieve cell
- 2 – Phloem parenchyma cell
- 3 – companion cell
- 4 – sieve plate

(c) In plants, phloem is likely to be found in the stem and leaves as it is the tissue that conducts food, the manufactured food in the leaves needs to be transported to other plant parts.
(d) Listed below are the functions of the labeled parts:
1: Sieve cell – assists in transporting food from leaves to storage structures and other plant parts.
2: Phloem parenchyma cell – Stores fat, starch and other organic food material
3: companion cell – Facilitates the functioning of the cells of sieve tube

4: sieve plate – Dissolved organic solutes and water permeates through these structures as it contains perforations

2. Study the diagram given below and the answer the questions that follow:



(a) Identify the cell.
(b) Name the parts labeled 1,2,3,4,5, and 6.
(c) Where is this cell likely to be found in the human body and what is its function?

Solution:

(a) The cell is the neuron or the nerve cell
(b) The labeled parts are:

- 1 – Dendrite
- 2 – Axon
- 3 – Nucleus
- 4 – Perikaryon/Cyton
- 5 – Neurolemma
- 6 – Axon endings

(c) In human body, the nerve cell is observed in the nervous system.
Function:

- Transmission of messages from one to another body part
- It is linked with the response and perception of animals.