

Chapter 10: Animal Tissue

EXERCISE [PAGE 126]

Exercise | Q 1. (A) | Page 126

Choose the correct option.

The study of structure and arrangement of tissue is called as _____.

1. anatomy
2. **histology**
3. microbiology
4. morphology

SOLUTION

The study of structure and arrangement of tissue is called as **histology**.

Exercise | Q 1. (B) | Page 126

Choose the correct option.

_____ is a gland which is both exocrine and endocrine.

1. Sebaceous
2. Mammary
3. **Pancreas**
4. Pituitary

SOLUTION

Pancreas is a gland which is both exocrine and endocrine.

Exercise | Q 1. (C) | Page 126

Choose the correct option.

_____ cell junction is mediated by integrin.

1. Gap
2. **Hemidesmosomes**
3. Desmosomes
4. Adherens

SOLUTION

Hemidesmosomes cell junction is mediated by integrin.

Exercise | Q 1. (D) | Page 126

Choose the correct option.

The protein found in cartilage is _____.

1. ossein
2. haemoglobin
3. **chondrin**
4. renin

SOLUTION

The protein found in cartilage is **chondrin**.

Exercise | Q 1. (E) | Page 126

Choose the correct option.

Find the odd one out.

1. Thyroid gland
2. Pituitary gland
3. Adrenal gland
4. **Salivary gland**

SOLUTION

Thyroid gland, Pituitary gland, Adrenal gland, Salivary gland- **Salivary gland**.

Exercise | Q 2. (A) (a) | Page 126

Identify and name the type of tissue in the following:

Inner lining of the intestine

SOLUTION

Inner lining of the intestine - **Epithelial tissue (Columnar epithelium)**

Exercise | Q 2. (A) (b) | Page 126

Answer the following question:

Identify and name the type of tissue in the following:

Heart wall

SOLUTION

Heart wall - **Cardiac muscles (Muscular tissue)**

Exercise | Q 2. (A) (c) | Page 126

Answer the following question.

Identify and name the type of tissue in the following:

Skin

SOLUTION

Skin - **Epithelial tissue (Stratified epithelium)**

Exercise | Q 2. (A) (d) | Page 126

Answer the following question.

Identify and name the type of tissue in the following:

Nerve cord

SOLUTION

Nerve cord - **Nervous tissue**

Exercise | Q 2. (A) (e) | Page 126

Answer the following question.

Identify and name the type of tissue in the following:
Inner lining of the buccal cavity

SOLUTION

Inner lining of the buccal cavity - **Epithelial tissue (Ciliated epithelium)**

Exercise | Q 2. (B) | Page 126

Answer the following question.

Why do animals in cold regions have a layer of fat below their skin?

SOLUTION

1. In adipose tissues, fats are stored in the form of droplets.
2. The adipose tissue acts as a good insulator and helps retain heat in the body. This helps in survival of animals in the colder regions.
Hence, animals in cold regions have a layer of fat below their skin.

Exercise | Q 2. (C) | Page 126

Answer the following question.

What enables the ear pinna to be folded and twisted while the nose tip can't be twisted?

SOLUTION

1. The ear pinna (outer ear) is made up of a thin plate of elastic cartilage and is connected to the surrounding parts by ligaments and muscles. This elastic cartilage gives support and maintains the shape of pinna.
2. The nose tip is made up of elastic cartilage. However, several bones and cartilage make up the bony cartilaginous framework of the nose.
Hence, even though the tip of the nose is made up of elastic cartilage, it cannot be twisted like the ear pinna due to the presence of a bony-cartilaginous framework.

Exercise | Q 2. (D) | Page 126

Answer the following question.

Sharad touched a hot plate by mistake and took away his hand quickly. Can you recognize the tissue and its type responsible for it?

SOLUTION

1. Nervous and muscular tissues are responsible for this action
2. Nervous tissue recognizes the stimuli whereas muscular tissue allows responding to the stimuli.

Exercise | Q 2. (E) | Page 126

Answer the following question.

Priya got injured in an accident and hurt her long bone and later on she was also diagnosed with anaemia. What could be the probable reason?

SOLUTION

1. The centre of long bones (diaphysis) contains bone marrow, which is a site of production of blood cells (red blood cells).
2. Any severe injury to the bone marrow can affect rate of haematopoiesis (formation of blood cells).
3. A low count of erythrocytes (red blood cells) is characterised as anaemia. Hence, an injury to Priya's long bone might have resulted in anaemia.

Exercise | Q 2. (F) | Page 126

Answer the following question.

Supriya stepped out into the bright street from a cinema theatre. In response, her eye pupil shrunk. Identify the muscle responsible for the same.

SOLUTION

Smooth muscles (Involuntary muscles) are responsible for shrinking of eye pupil.

Exercise | Q 3. (A) | Page 126

Answer the following question.

What is cell junction?

SOLUTION

The epithelial cells are connected to each other laterally as well as to the basement membrane by junctional complexes called cell junctions.

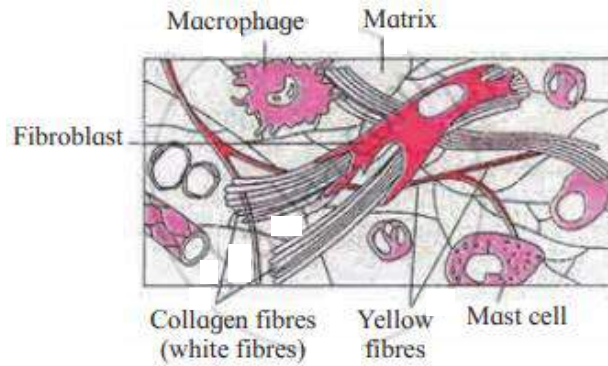
Exercise | Q 3. (B) | Page 126

Answer the following question.

With help of a neat labelled diagram, describe the structure of areolar connective tissue.

SOLUTION

Areolar tissue is a loose connective tissue found under the skin, between muscles, bones, around organs, blood vessels, and peritoneum. It is composed of fibers and cells.



- The matrix of areolar tissues contains two types of fibres i.e. white fibres and yellow fibres.
1. **White fibres:** They are made up of collagen and give tensile strength to the tissue.
 2. **Yellow fibres:** They are made up of elastin and are elastic in nature.
- The four different types of cells present in this tissue are as follows:
1. **Fibroblast:** Large flat cells having branching processes. They produce fibres as well as polysaccharides that form the ground substance or matrix of the tissue.
 2. **Mast cells:** Oval cells that secrete heparin and histamine.
 3. **Macrophages:** Amoeboid, phagocytic cells.
 4. **Adipocytes (Fat cells):** These cells store fat and have eccentric nucleus.

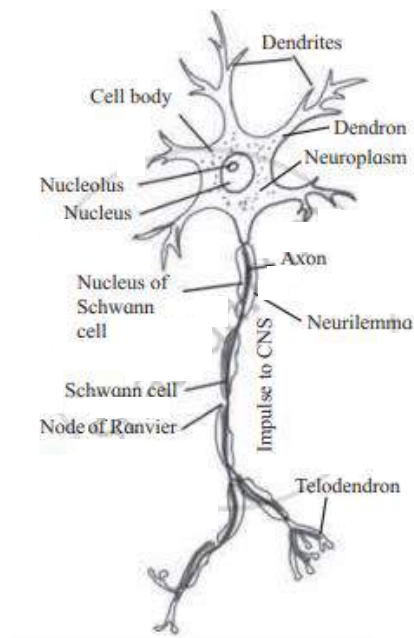
Exercise | Q 3. (C) | Page 126

Answer the following question.

Describe the structure of multipolar neuron.

SOLUTION

A neuron is the structural and functional unit of the nervous tissue. A neuron is made up of cyton or cell body and cytoplasmic extensions or processes.



It is star-shaped and gives out more than two processes.

There is only one axon and the remaining are dendrons. Axon initiates from a funnel-shaped area called axon-hillock.

1. **Cyton:** The cyton or cell body contains granular cytoplasm called neuroplasm and a centrally placed nucleus. The neuroplasm contains mitochondria, Golgi apparatus, RER, and Nissl's granules.
2. **Cytoplasmic extensions or processes:**
 - **Dendron:** They are short, unbranched processes. The fine branches of a dendron are called dendrites. Dendrites carry an impulse towards the cyton.
 - **Axon:** It is a single, elongated and cylindrical process. The axon is bound by the axolemma. The protoplasm or axoplasm contains large number of mitochondria and neurofibrils. The axon is enclosed in a fatty sheath called the myelin sheath and the outer covering of the myelin sheath is the neurilemma. Both the myelin sheath and the neurilemma are parts of the Schwann cell. The myelin sheath is absent at intervals along the axon at the Node of Ranvier. The fine branching structure at the end of the axon (terminal arborization) is called a telodendron.

Exercise | Q 3. (D) | Page 126

Distinguish between smooth muscles and skeletal muscles.

SOLUTION

No.	Smooth Muscles	Skeletal Muscles
1.	These muscles are found in the walls of visceral organs and blood vessels.	These muscles are found attached to the bone.
2.	Each muscle cell is spindle-shaped or fusiform and unbranched.	They are cylindrical in shape and branched.
3.	They have a single, centrally located nucleus.	They contain several nuclei that are shifted to the periphery due to the presence of large number of myofibrils.
4.	Striations are absent in smooth muscles.	Striations are present in skeletal muscles
5.	They undergo slow and sustained involuntary contractions.	They show quick and strong voluntary contractions.
6.	They contain lesser myosin are more actin as compared to skeletal muscles.	They contain more myosin and lesser actin as compared to smooth muscles.

Exercise | Q 4 | Page 126

Complete the following table.

	Cell/Tissue/Muscles	Functions
1.	Cardiac muscles	_____
2.	_____	Connect skeletal muscles to bones.
3.	Chondroblast cells	_____
4.	_____	Secrete heparin and histamine

SOLUTION

	Cell/Tissue/Muscles	Functions
1.	Cardiac muscles	Cardiac muscles bring about contraction and relaxation of the heart
2.	Tendons	Connect skeletal muscles to bones.

3.	Chondroblast cells	Produce and maintain cartilage matrix
4.	Mast cells	Secrete heparin and histamine

Exercise | Q 5 | Page 126

Match the following:

'A' Group	'B' Group
1. Muscle	a. Perichondrium
2. Bone	b. Sarcolemma
3. Nerve cell	c. Periosteum
4. Cartilage	d. Neurilemma

SOLUTION

'A' Group	'B' Group
1. Muscle	b. Sarcolemma
2. Bone	c. Periosteum
3. Nerve cell	d. Neurilemma
4. Cartilage	a. Perichondrium