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## Home Assignment - 1

Following questions are to be worked out

Q1. Write the importance of tissues in a living organism.

Q2. Explain the cellular organisation in a multicellular organism. How is it helpful to the organisms?

Q3. How do you ~~think~~ rank the following with respect to cell, tissue, organ & system?
a) Amoeba b) Euglena c) Skin d) Lungs e) Neuron f) Cardiac muscles

## Home assignment - 2

Q1. Match the column I with column II

| Column I | Column II |
|---|---|
| A. Parenchyma | Thinwalled, packing cells (1) |
| B. Photosynthesis | Carbon fixation (2) |
| C. Aerenchyma | Localised thickenings (3) |
| D. Collenchyma tissue | Buoyancy (4) |

E. Permanent tissue | Sclerenchyma (5).

Q2. Differentiate between sclerenchyma and parenchyma tissues. Draw well labelled diagrams.

Ans →

| Parenchyma | Sclerenchyma |
|---|---|
| • It is composed of large, thinwalled cells, usually with intercellular spaces. ~~Thos~~ | • It is composed of long, narrow and thick walled cells. |
| • These are living cells. | • These are dead cells. |
| • It is found in the soft parts of the plant. | • It is found in the stems and veins of the leaves mostly as fibres. |

Q3. Give reasons for the following:

(a) Meristematic cells have a prominent nucleus and dense ~~protoplasm~~ cytoplasm but they lack vacuole.

(b) We get a crunchy and granular feeling, when we chew pear fruit.

(b) Intercellular spaces are absent in sclerenchyma tissues.

(c) Branches of a tree move and bend freely in high wind velocity.

(d) It is difficult to pull out the husk of a coconut tree

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## Answers

1. The importance of tissue in living organism are as follows:-

* It protects the organs from injury or shocks.

* It also connects many body parts such as ligaments connects bones to another bone.

* It also provide nutrition to our body such as blood also transports nutrients to many parts of the body.

* It fights against many infectious pathogens (organisms that cause diseases).

2. In a multicellular organism different cells are specialised to carry out different functions. Cell is the structural and functional unit of life. A group of cells which are similar in structure and perform specific function form a tissue. Tissue organise to form organs and organs further form organ system. So, we can say that both the

plants and animals have organised structure. ~~So, we can say that both the pl~~ So,

cells → tissue → organs → organ system → organism

2. Multicellular organisms carryout their life process through division of labour. They have specialized cells that do specific jobs. They are complex organisms that consists of more than one cell. So, cellular organisation is important in multicellular organism.

3. Amoeba - cell / unicellular
Euglena - cell / unicellular
skin - tissue
lungs - organ
Neuron - cell
cardiac muscle - tissue

## Home assignment-2

3. (a) Meristemic cells are continously dividing cells. So, they have a prominent nucleus and dense cytoplasm but since these cells don't store food material or waste material they lack vacuoles.

(c) We get a ~~rough~~ crunchy and granular feeling when we chew a pear fruit because of the presence of sclerenchyma tissue. They are hard with highly thickened cell wall and are dead cell. The pear fruit has sclereids which provides support and hardens the tissue.

(b) Sclerenchyma tissues have a cementing substance called as lignin around their cell membrane which makes them stiff and hard. So, they lack intercellular spaces.

(d) Collenchyma cells are elongated cells with unevenly thickened cell walls ~~more~~ at the edges. Intercellular spaces are little between the cells. These cells provide a flexible mechanical support to plant parts. Collenchyma cells are present in branches of a tree which provides support and elasticity so, that the branches of a tree can move and bend freely in high wind velocity.

(e) It is difficult to pull out the husk of a coconut tree due to the presence of sclerenchyma tissue. The cells of sclerenchyma tissues are closely packed without intercellular spaces which provide strength to the plant parts.

| Parenchyma | Sclerenchyma |
| --- | --- |
| • Parenchyma cells are spherical, thin walled cells with large intercellular spaces. | • Sclerenchyma cells are long, narrow, thick walled cells with no intercellular spaces. |
| • It consists of living cells at maturity. ~~consi~~ | • It consists of dead cells at maturity. |
| • It is found throughout the plant in every soft part. | • It is found in mature parts of the plant like wood, bark etc. |
| • The Parenchyma cells are responsible for photosynthesis, respiration, storage of food, ~~co~~ buoyancy in aquatic plants | • It provides a regid mechanical and structural support to the plants. |

## Home assignment

Q1. Which is not a function of epidermis?

Ans (a) protection from adverse condition (b) gaseous exchange

(c) conduction of water (d) Transpiration

Ans → (a) conduction of water.

Q2. Why epidermis is important for plants?

Ans → epidermis is important for plants due to the following reasons:-

* protection against mechanical injury and infection

* regulates transpiration, increase water absorption and secret metabolic compounds.

* The epidermis present in roots absorbs water and mineral nutrients

Q3. How epidermis in deserted and aquatic plants are helpful? Explain with suitable example.

Ans → In many deserted plants like cactus yucca the epidermis has a waxy coating which acts as waterproof covering. This restrict the lost of water by transpiration similary in aquatic plants the waxy coating prevent the water lost.

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1. Intestine digest the food materials, What type of epithelial cells are responsible for that?

Ans→ (A) Stratified squamous epithelium (B) Columnar epithelium

(C) Spindle fibres (D) Cuboidal epithelium

2. What is the function of squamous epithelial tissue?

Ans→ The functions of squamous epithelium are:-

- Secrete lubricating substance
- Allows deffusion and filtration
- It helps in material transport and protection.

3. What are the functions of cuboidal epithelial tissue?

Ans→ The functions of cuboidal epithelial tissue are:-

- It allows absorption, secretion and excretion.

4. What are the functions of simple columnar epithelial tissue?

Ans: It helps in transfer of materials or pushes the substances forward by the help of cilia.

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# Home assignment

1. Name the main type of muscular tissues. Give the location of each kind in animal body.

Ans → The main types of muscular tissues are:-

- Steriated muscles (skeletal, striped or voluntary)
- The Steriated muscles are found in the skeleton of human body.
- Unsteriated muscles (involuntary, smooth, unstripped,)

The unsteriated muscles are found in the G.I. tract, uterus, eye and in the blood vessels.

- Cardiac muscles (Heart muscles, Involuntary muscles, branched muscles)

The cardiac muscles are only present in the Heart.

2. What are involuntary muscles and where they are found?

Ans→ The muscles which don't move on our will are called involuntary muscles. They are found lining the walls of internal organs like stomach, intestine, urinary bladder and blood capillaries.

3. Briefly describe striated and smooth muscles with their function.

Ans→ Striated muscles→ The striated muscles found attached to bones are under the control of the will of an individual. Such muscles constitute about 40% of the body weight. Common places to find such muscles are arms, legs, face, neck etc.

Smooth muscles→ The unstriated or the smooth muscles are not under the control of one's will. Such muscles are composed of slender, tapering cells. This muscles are found in G.I. tract, uterus, eye, blood vessels.

4. List the difference between the different types of muscular tissue in a tabular form based on their appearance, structure, nucleus and function.

# Difference between striated, unstriated and cardiac muscles

| | The striated muscles | The smooth muscles | The cardiac muscles |
|---|---|---|---|
| Structure, appearance, nucleus | The striated muscles are the skeletal muscles and it is long and thin, multi-nucleated, fibres are crossed with the regular pattern of fine red and white lines giving a distinctive appearance | The smooth muscle fibre are spindle shaped that is wide in the middle and tappered at the last ends. They have a single nucleus and shows no cross stripe under microscopic magnification. The cells are single centrally located nucleus. | The cardiac muscles cells are striated and comparatively short. They are also branched and single nucleated. |
| Functions- | Movement, posture | Peristalsis, blood pressure, pupil size, erect hairs | To pump blood continously |
| Muscle types- | They are voluntary muscles. | They are involuntary muscles. | They are involuntary muscles. |

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1. What are the different ~~types~~ parts of neurons? Mention the functions of each.

Ans → The nervous tissue is made up of ellongated cells called neurons. The different parts of the neurons are dendrites, axon and a cell body or soma.

Dendrites → They are tree like projections or extensions at the begining of a neuron. They recieve chemical signals from different neurons of the body. They then convert these chemical signals into electrical signals and pass them to neuron cell body.

Cell body → The main function of the cell body and nucleus of the neuron is to maintain the functionality of the cell. It produces protien that are required by the different ~~for~~ parts of the neuron to work properly.

Axon → An axon is a long structure that connects the cell body to the terminals and it also connects with other neurons, ie

les and organs of the body through nerve terminals. It helps in the rapid transmission of the signals.

2. Define synapse.

Ans → In the nervous ~~tissue~~ system, a synapse is a junction that permits a neuron (or nerve cell) to pass an electrical or chemical signal to another neuron or to the target effector cell. Here neurotransmitters are present which are chemical cells that helps to convert electrical signals to chemical messengers.

3. How nervous tissue works? Elaborate.

Ans → The nervous tissue consists of specialised cells called neurons. These neurons can receive and transmit signals. It helps us in perceiving and responding to any changes in external and as well as internal environment. The human organ system is composed of central nervous system i.e. brain and spinal chord and peripheral nervous system with sensory and motor nerve fibres. The CNS is the main site of control and information processing. On stimulation of a neuron the nerve

impulse is generated and transmitted. The transmission of nerve impulses from one neuron to another neuron occurs through synapse. Sensory neurons transfer information from different organs and tissues to CNS and motor neurons transmit regulatory impulses from CNS ~~or~~ to the target organ or tissue.