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# Diploma in Pharmacy 1st Year
# Human Anatomy and Physiology
# Important Questions
# Chapter 3 : Tissues of Human Body


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# Chapter 3
# Tissues of Human Body
# IMPORTANT Questions

## Q1. Explain the Tissue of Human Body.

**Ans.** **Tissue of Human Body**

- Tissues are a group of cells having similar structure & funciton.
- The study of tissue is known as Histology.
- The body is composed of four major tissue , Which differ from each other in shape, size, type of matrix present in extracellular space
- Each tissue perform different function to maintain homeostasis & its survival

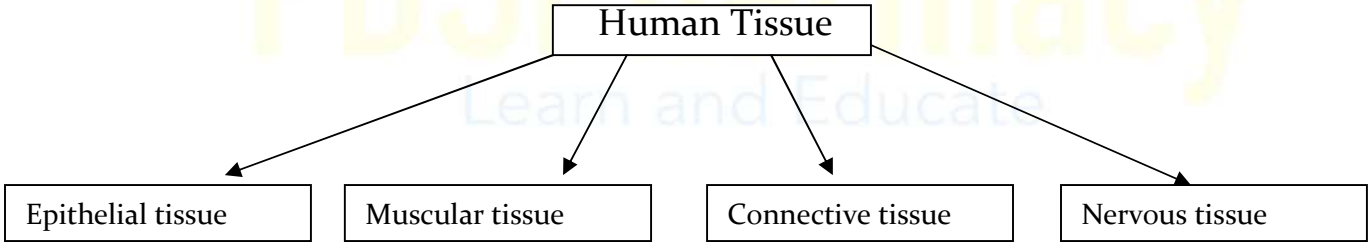
### four type of tissue

- **Epithelial tissue** :- It perform the function of covering & protection.
- **Muscular tissue** :- It is responsible for the movement of body.
- **Connective tissue** :- It provides structural framework to the body.
- **Nervous tissue** :- It controls different function of the body.

❖ They together perform all the function required to support the body's system

## Classification

Tissue can be divided on the basis of their cell type, amount & type of matrix in extracellular space, function they perform, and their location in body




### Function

**Secreation of chemical :-** Substance specialised & specific substance like enzyme, harmones, & lubricating fluid are secreted from the glandular tissue in the body.

**Reduction of friction :-** Human ciculatory system is lined with smooth & tightly interlocked tissue which help in the friction between the walls of blood vessels & blood flow

**Production of body heat :-** Tissue produces body heat & maintain a fluid balance in association with the muscles of whole body

**Q2. Write note on**

i. **Epithelial Tissue**
ii. **Muscular Tissue**
iii. **Connective Tissue**
iv. **Nervous Tissue**

## Ans. EPITHELIAL Tissues

- The epithelium or epithelia tissue covers the external body surface & lines the internal organs, Tubules, Vessels, and major body cavities.
- Cell in epithelium tissueare closely packed and arranged in one or more layer with narrow space between two cells.
- This space are filled with matrix or intercellular material.
- Which have Interstitial fluid, cells, ions, nutrients.
- The epithelical tissue have the ability to renew themselves throughout life as they contain the stem cells.
- The ability of epithelial tissue to replicate &divede holds immense significare as epithicialcell under go substantial wear & tear
- **Example :-** The epithetical cells that line the stomach, gut or the skin can be replaced, the existing ones are destoryed

## Structure

- Epithelial cells makeup the surface layer of the skin, mucous membrane & serous membrane

## Epithelial Tissues divided into

1. Simple epithelium
2. Stratified epithelium
3. Startified cuboidal epithelium
4. Stratified columnar epithelium
5. Transitional epithelium
6. Glandular epithelium

## Function

**Protection :-** They protect the body from mechanical injury, excessive loss of water harmful chemicals, and from invalding bacteria.

**Sensation :-** Stimulus is received by specialised epithelial cells, which have sensory neuronding and are present on eyes, ears, nose , tongue and skin.

**Secretion :-** Epithelial tissue of glands are specialised to secreat specific chemical substances eg enzyme, hormones etc.

**Absorption :-** Cells of epithelial tissue of small intestine are specialised to absorb nutrients from the digested food.

**Excretion :-** Epithelial tissue of kidney are specialised to exacte waste product from the body,sweat glands excrete sweat via epithelial tissue.

# Muscular Tissue

- Muscular Tissue are present in all parts of body These tissue assist the skeletal system in movement and locomotion of the body
- Contraction and relaxation are characteristics of this tissue. The pumping of blood by the heart, peristaltic movement of stomach, movement of food in gasto intestinal system, etc. are brought by the contraction of muscle
- The muscular Tissue is formed by the aggregation of muscle cells.

On the basis of muscle cells or fibres there are three types of muscles Tissue

- **Skeletal muscle :-** These muscle are attached to the bones and assist in there movement.
- **Visceral or smooth muscle :-** These are present in the inner lining of the body organs.
- **Cardiac muscle :-** These muscle are present in the heart.

## 1. Skeletal muscle

- Muscle fibres of skeletal muscles are cylindrical shaped multinucleated cell having a group of muscle fibris.
- **Example :-** Muscle of limbs and their body walls. There are joined to bones by collagen fibre bundles called tendons.
- Skeletal muscle are voluntary in nature and supplied by the cerebrospinal nerve.
- Skeletal muscle are controlled by somatic nervous system

## 2. Smooth muscle

Smooth muscle fibres are thin and spindle shaped and consist of actin (thin) and myosin (thick) filaments sliding over each other in order to bring about cell's construction

- They are unstriated muscle fibres having a single nuclei.
- The muscle are involuntary in nature and are controlled by the autonomical nervous system.
- The cells of smooth muscle are splender shaped and are arranged in sheets.
- Sarcomera is absent in the smooth muscle cells.

## 3. Cardiac muscules

- Cardiac muscle are cross striated involuntary muscle found in myocardium of heart.
- Cardiac muscle are much like smooth muscle in terms of their function.
- Structurally are like skeletal muscle.
- These muscles help in generating contraction which are automatic and rhythmic in nature.
- Several cardiac muscle cells join end to end in a linear fashion to form a cardiac muscle
- Cells 100 um in length . 15 um in diameter

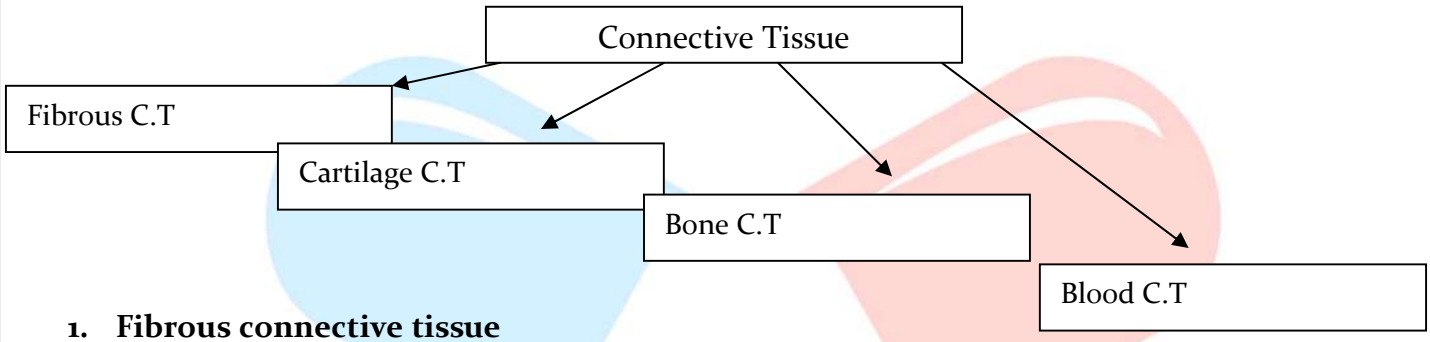
## Function

- Osseous Tissue Movement . Osseous muscle tissue allows movements of joints.
- Body heat production. These tissue help in the production of a large amount of heat as well as maintenance of fluid balance of the whole body
- Body posture maintenance. Posture maintenance formation of walls of body cavity and organs support with in the cavities are all carried out with the help of muscular Tissue
- Protection. Muscles form a protective layer around different organs, Tissue as well as blood vessels
- Expression. Expression of felling, throughts,etc are processed by the brain and perceived by the muscles
- Example. It is displayed in the form of expression in face

# Connective tissue

- Connective tissue, group of tissue in the body that maintain the form of the body and its organs and provide cohesion and internal support
- Connective tissue is the most diverse and wider tissue in the human body
- Connective tissue have extensive amount of extracellular matrix embebbed with cells, fluid and different kinds of fibres
- These substances are known as ground substance

**Connective tissue can be classified as**




## 1. Fibrous connective tissue

This is the most diversified type of connective tissue and is also known as fibro-connective tissue or connective tissue. Futher divided into

- **Loose fibrous connective tissue Areolar**
  - It was earlier referred to as Areolar tissue
  - It is named as loose tissue due to its property of strechability
  - Which connects several adjacent body structure by acting as elastic glue thus allows movements
  - Loose fibrous connective tissue also has white blood cells or leukocytes

## 2. Cartilage tissues

- Cartilage tissue have only one type of cells which also known as chondrocyte.
- Chondrocyte produce the fibres and the tough,rubbery ground substance of cartilage.

**Types of cartilage tissue**

- Hyaline cartilage tissue
- Fibro cartilage tissue
- Elastic cartilage tissue

## 3. Bone tissue

- Bone is a hard connective tissue and is also known as osseous Tissue.
- Matrix of bone mainly consists of collegen fibres and mineral salt crystals.
- Hardness of bone due to the presence of there mineral crystals.
- Bone tissue are oragan of the skeletal system.
- Which provide support and protective to the body.
- It also serves as a site of attachment for muscles.

**Types of bone tissue**

- **Compact bone tissue :-** This bone tissue forms the hard shell of bone and is also known as cotical bone forms the hard external layer of all bones and surrounded the medullary cavity or bone marrow
- **Cancellous ( spongy ) tissue :-** On the inner side many bones have a lattice of thin beams of cancellous bone tissue.This thin beams or tubicular, form a frame work that supports soft tissue

## 4. Blood tissue

- Blood is a liquid connective tissue which is very different form all the other connective tissue
- Blood is mainly composed of
  - **Plasma :-** It is a liquid portion and form around 55% of blood
  - **Blood cells :-** It forms a solid portion of the blood and account for the remaining 45% of blood
    - RBC or erythrocytes
    - WBC or leukocytes
    - Platelets or thrombocytes

## Function

- Various functions of the connective tissue include.
- They connect different tissue of the body.
- They support various tissue, organs,and structure of the body.
- They bind together various organs of the body.
- Blood helps in defending the body against foreign substance.
- It transport substance and respiratory gases from one body part to the other body part.

# Nervous tissue

- The nervous system is specialised in rapid regulations, integration,and coordination of activities of various body parts
- All the body cells have the property of excitability, irritability and conductivity but the cells of nervous tissue are much more advanced than any other type of tissue
- These tissues are responsible for rapid communication and coordination between various parts of body
- The nervous or nerve cells are functional and structural unit of nervous tissue
- These cells are specialised to receive stimulus to conduct impulses and to bring response against any stimulus
- The nervous tissue together forms organs of nervous system i.ebrain,spinal cord and nerves

## Function

- The stimuli are sensed in both internal as well as external environment by the bcells of nervous tissue.
- They help in the transmission of impulse from the CNS to muscles.
- They help in impulse transmission to the involuntary glands and muscles.