

# GRAVITY CLASSES

*"Come Gravity Feel Success"*

11<sup>th</sup> & 12<sup>th</sup> BOARD  
(NEET & JEE)

5<sup>th</sup> - 10<sup>th</sup> (All Subject)

NOTES  
**BIOLOGY**

Directors

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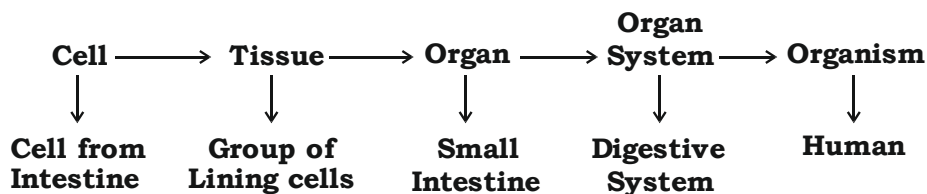
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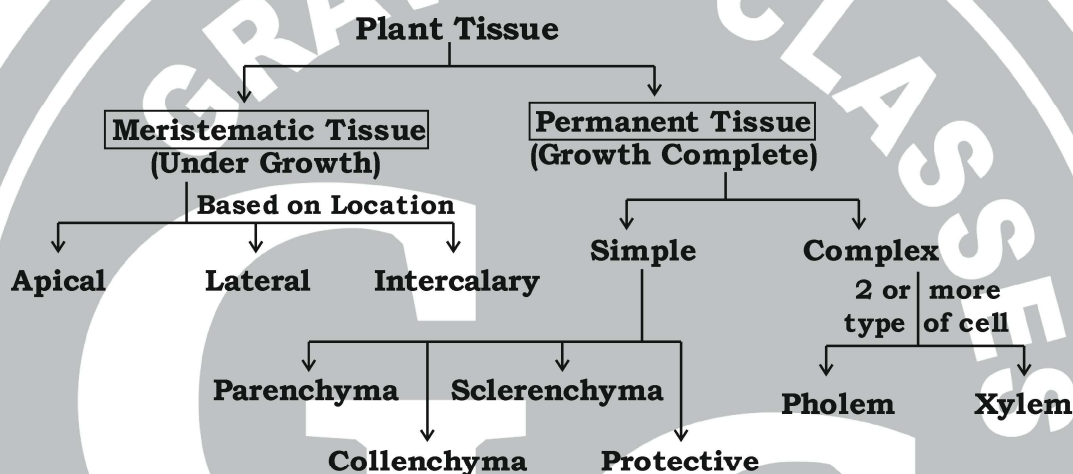
## TISSUES



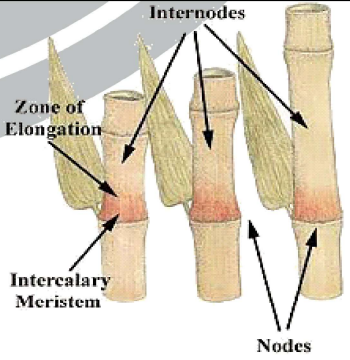
# **Tissue** is a group of cells having similar origin, structure and function.

\* Study of tissues is called **Histology**.

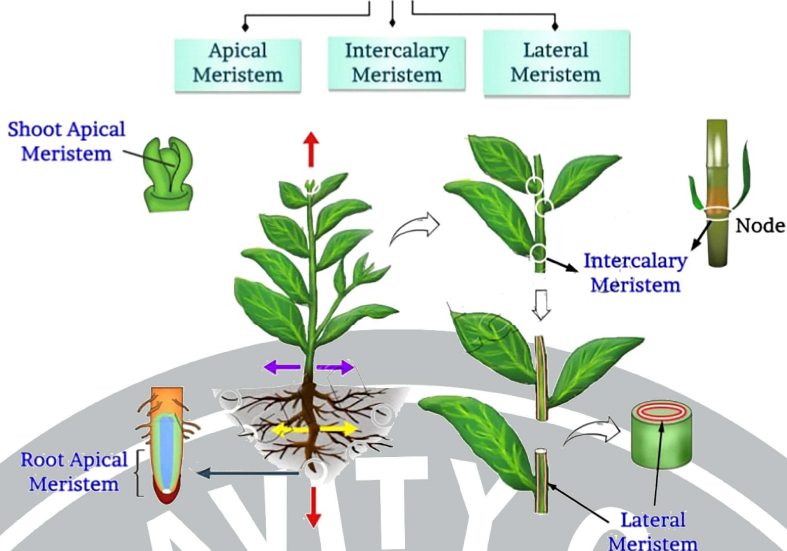
Types of Tissue	
Plant Tissue	Animal Tissue → (Human)



\* **Meristematic Tissue:-** This tissue have ability to divide themselves thereby providing growth to plants.

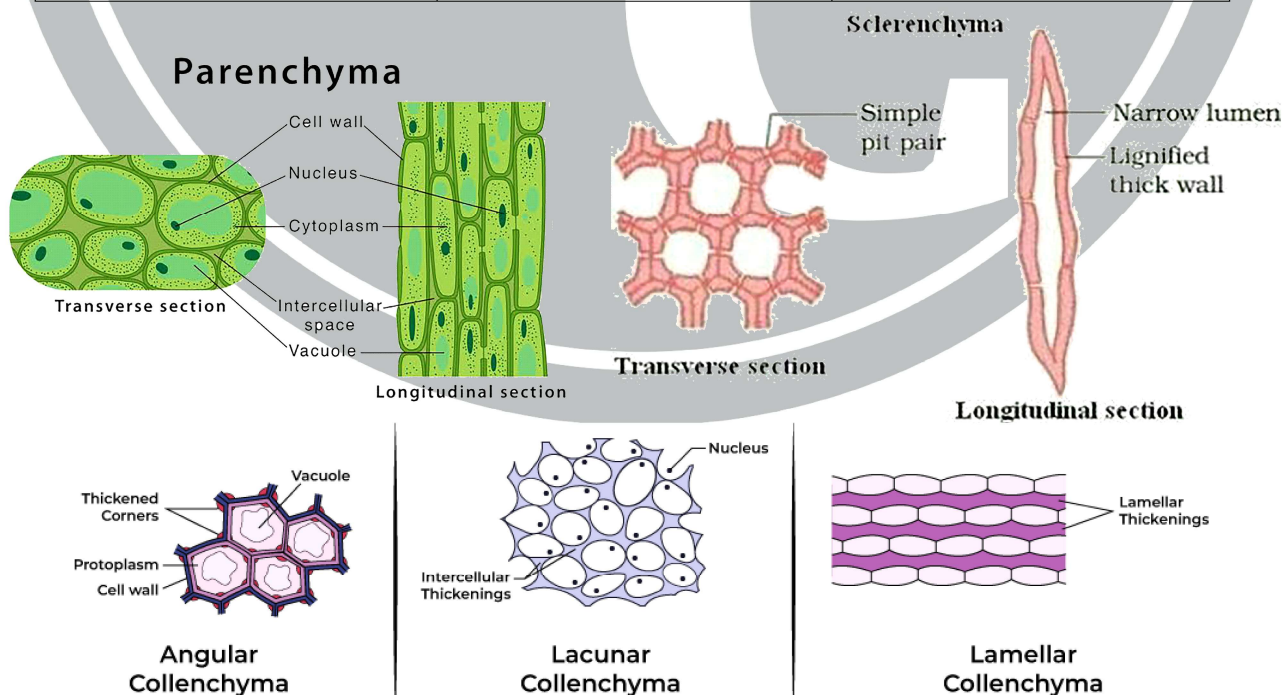
Meristematic Tissue		
(i) Apical (Apex Top)	(ii) Lateral	(iii) Intercalary
Present at the top of the plants stem & root	It helps to increase the thickness of stem and root in the plant	Present at the base of the leaves or internodes on twigs
It helps the plant to grow in length/height	i.e. Girth (width) ( $\leftrightarrow$ )	

## Meristematic Tissue



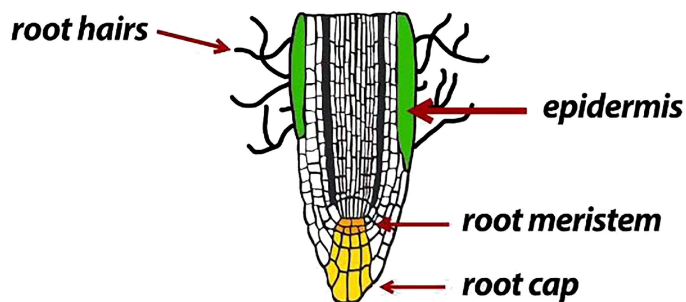
## Simple Permanent Tissue

Parenchyma	Collenchyma	Sclerenchyma
<ul style="list-style-type: none"> <li>→ Chlorenchyma (Chlorophyll Present)</li> <li>→ Aerenchyma (Air → Aquatic Plant)</li> </ul>		
<b>→ Function</b> Mechanical Support and food storage.	<b>→ Mechanical Support and flexibility.</b>	<b>→ It provides hardness</b>
<b>→ Cells are loosely packed and large intercellular space.</b>	<b>→ Cells wall thickened at the corners and little intercellular space.</b>	<b>→ Cells are long, narrow, walls thickened due to lignin and no intercellular space</b>
		<b>→ Dead Cells</b> <b>→ Ex.- Coconut husk</b>



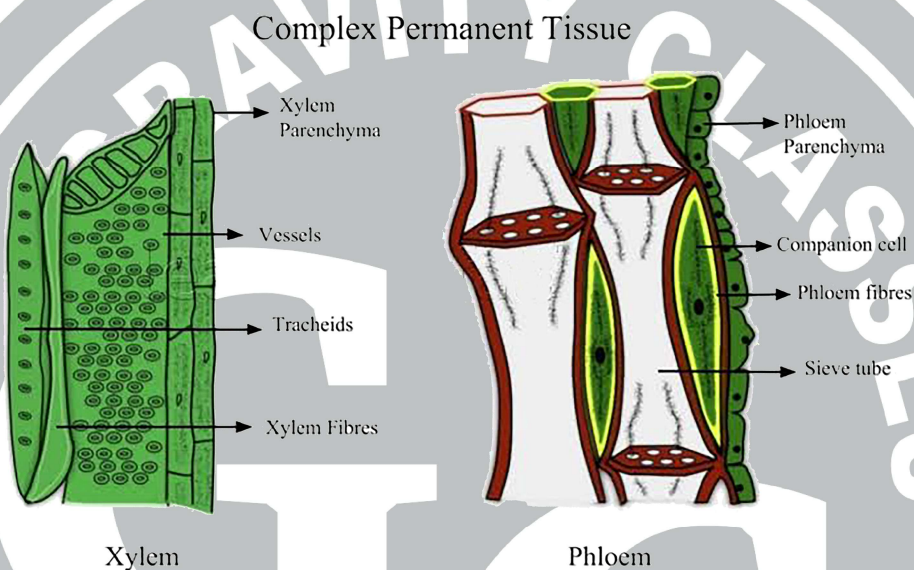


## # Protective:-



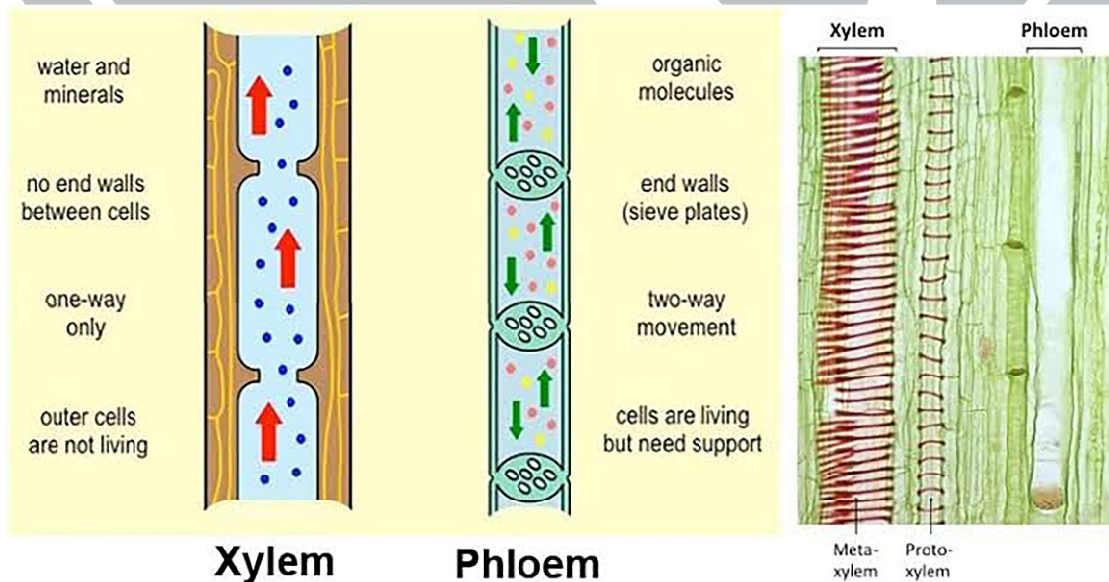
- **Epidermis:-** Thin layer of laminated cell is covered.
- It protects the plant for damage from bacteria, insects, water etc.
- To avoid the most absorbtion of water in terms of **waxy layer** called **cutin**.

## The structure of the system and the root.



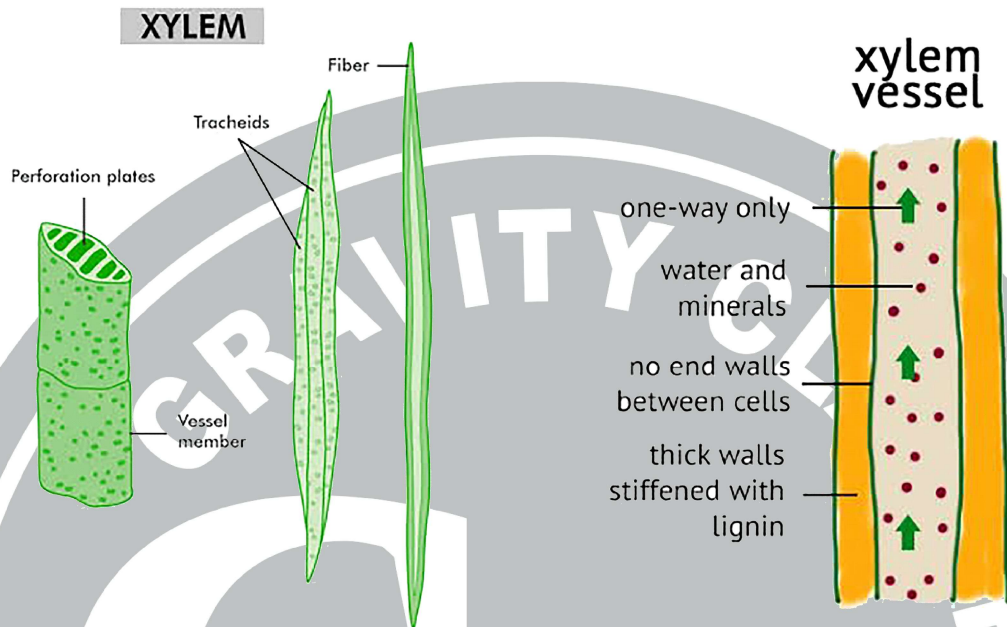
Xylem	Phloem
Transport water and mineral.	Transport food.
Unidirectional transport only upward ↑.	Bidirectional transport up and down both side ↑ ↓.

## # Complex Permanent Tissue:-

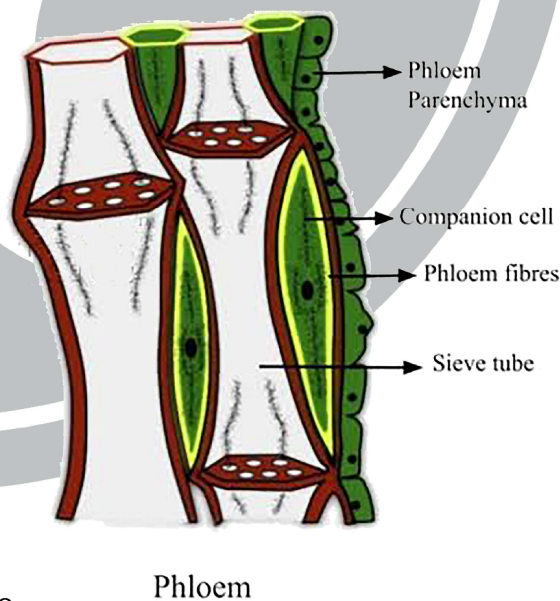




1. **Xylem:-** Xylem is made up of **dead cells** having a thick cell lining. It consists of four types are:-
- Xylem Parenchyma
  - Trachea
  - Vessel
  - X.Fibre



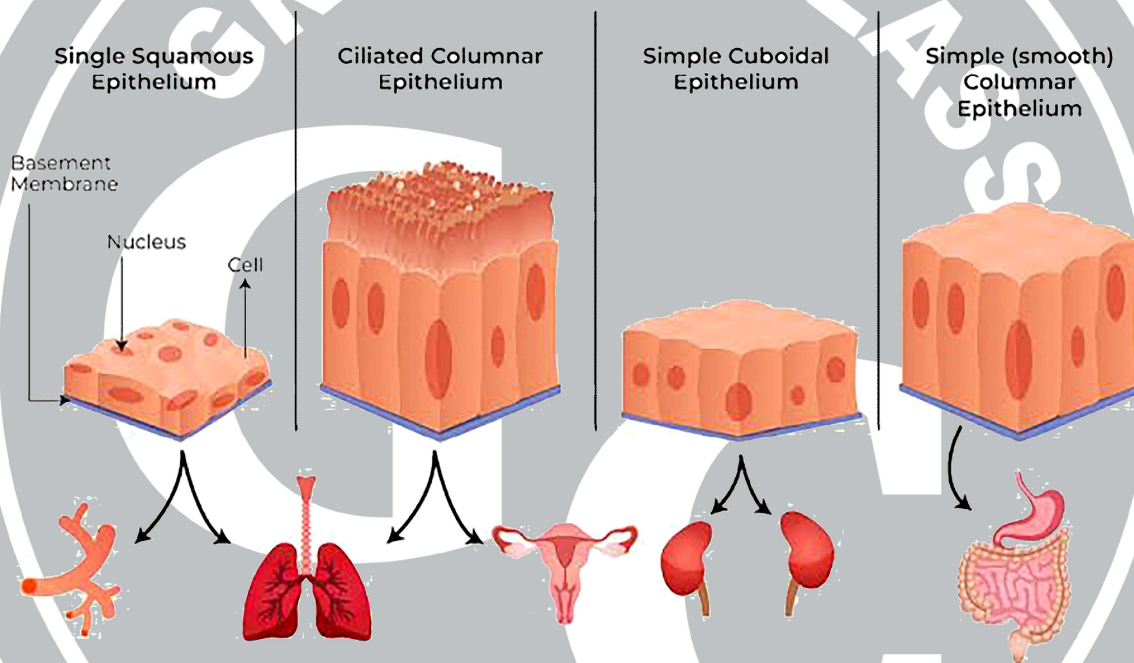
- **Tracheids and Vessels:-** They have broad tubular structure, so that it can allow **transportation** of **water** in the plants **vertically**.
  - **Xylem Parenchyma:-** It **stores food** and helps in **transportation** of **water** horizontally ( $\leftrightarrow$ ) in the plant.
  - **Xylem Fibres:-** They **supportive** in function.
2. **Phloem:-** It is made up of **living cells** and it allows the movement of food from leaves to other parts of the plant. It has the following elements.
- **Sieve Tubes:-** They are **slender**, tube like structure composed of elongated **thin-walled** cells, placed **end to end**. The main function of sieve tubes is to transport **sugars** and **nutrients** up and down the plant.
  - **Companion Cells:-** They facilitate the functions of the sieve tubes.
  - **Phloem Fibers:-** Provide flexibility to the phloem.
  - **Phloem Parenchyma:-** Stores starch and protein.



Animal Tissues			
Epithelial	Muscular (Contract and Relax)	Connective (Join)	Electrical Impulse[Nervous (nerve cells)]
→ Squamous	Straited (Skeletal)	<b>Fluid:-</b> Blood, Lymph	
→ Cuboidal	Smooth (Involuntary Muscles)	<b>Skeletal/Special:-</b> Bone, Cartilage	
→ Columnar			
→ Ciliated	Cardiac (Heart Muscles)	<b>Proper:-</b> Aerolar, Adipose (Loose), Ligament, Tendor (Dense)	
→ Glandular			

## # Epithelial Tissues (Outer Lining):-

### Epithelial Cell

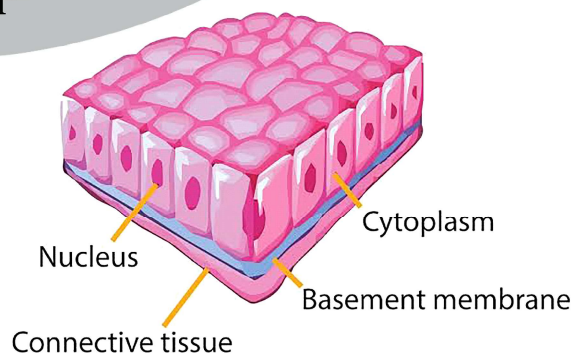


#### 1. Squamous Epithelium:-

- Thin, **flat, irregular** shaped calls.
- Also called, **tessellated** and **pavement** epithelium.
- **Location:-** **Linings** of **mouth**, oesophagus, blood vessels, tongue and **skin** coverings.
- **Function:-** Protection from mechhanical injury, invasion of germs etc.

#### 2. Cuboidal Epithelium:-

- Cube like cells, little bit thicker.
- **Location:-** **Kidney** tubules, **Thyroid** vesicles, salivary, sweat glands, forms germinal layer in **gonads**.  
[Reproductive parts (**testis/ovary**)]

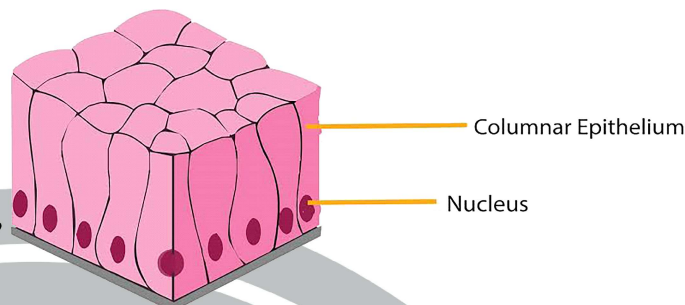




- **Function:- Absorption** (minerals/ions),  
**secretion** [(salivary gland)Saliva],  
(release substance like protein,  
steroid, chemical substance etc) and mechanical support.

### 3. Columnar Epithelium:-

- **Pillar** like cells.
- **Location:-** Living of **stomach**,  
**intestine** (small) and colon  
(large) forming mucus membrane,  
in oviduct (**fallopian tube**),  
gall bladder etc.

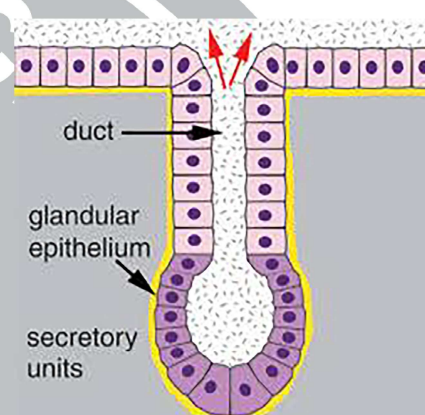


- **Function:- Absorption, Secretion** and facilitates movement in some.

### 4. Glandular:- Present in glands secretion.

#### → **Function:- Secretion**

- Thyroid → Thyroxin Hormone.
- Salivary Glands Saliva.
- Sweat Glands → Sweat.



### 5. Ciliated:- Bears minute **hair like structure**.

Oviduct, bronchi etc.

- **Function:-** Movement

#### ● **Muscular Tissues:-**

##### 1. **Straited/Skeletal Muscles:-**

- Alternate **dark and light** bands.
- **Voluntary** muscles (under our control).
- Unbranched.
- Get tired and need rest.
- **Function:-** Locomotion.

##### 2. **Non-Straited/Smooth:-**

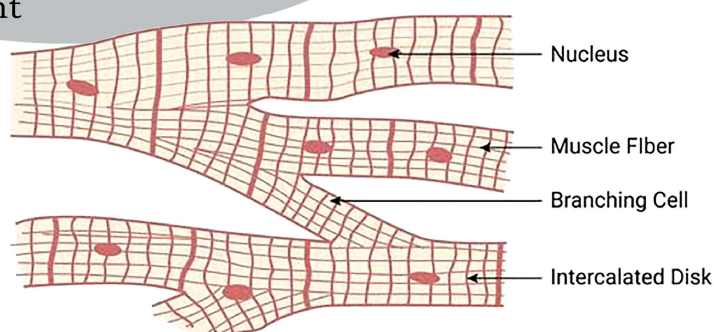
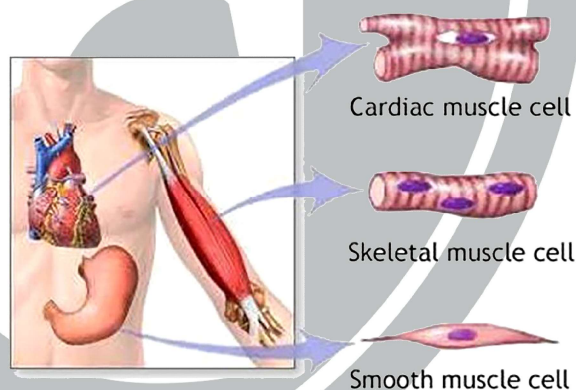
- **Spindle** (ends tapering) shaped.
- Unbranched.
- **No dark and light** bands.
- **Involuntary** movement.

- **Location:-** Walls of hollow **visceral organs** all ducts and wall of alimentary canal.

- **Function:-** Peristaltic movement  
opening and closing of tubes.

##### 3. **Cardiac Muscle:-**

- Bundles and branched.
- **Light dark and Light bands.**
- **Location:-** Heart.
- **Functions:-** Heart **contraction**





and relaxation, **no fatigue**.

→ **Involuntary** muscle.

\* **Loose connective Tissue:-**

● **Areolar Tissue:-**

→ Present between skin and muscle, fills spaces etc.

→ **Functions:-** Repair, Combat  
Toxins (Foreign particles avoid),  
space filling.

→ Supporting and packaging.

● **Adipose:-**

→ Beneath Skin.

→ Fat cells.

● **Function:-** Reservoir of fats ↑  
(Carbohydrate ↓).

→ Shape of limbs.

→ Keeps visceral organs in place.

\* **Dense connective Tissue:-**

● **Tendons:-** It is the **white fibrous** tissue which connect  
**muscle to bone** and it helps  
in **movement** of bones.

→ White fibrous tissue.

→ **Limited flexibility.**

→ **Great Strength.**

→ Made up of parallel bundles of **collagen**  
(structural protien) and **tendinocytes** between them.

→ **Tendinocytes:-** A kind of fibrocytes that shows  
very long thin immotile process that diverge in different direction between  
different collagen fibres.

→ **Function:-** Movement of bone.

→ **Ligament:-**

→ Elastic.

→ Connects **bone to bone**.

→ Some **elastic** and many **collagen** fibres are  
bound together by **areolar** connective tissues.

→ **Function:-** Movements of joints.

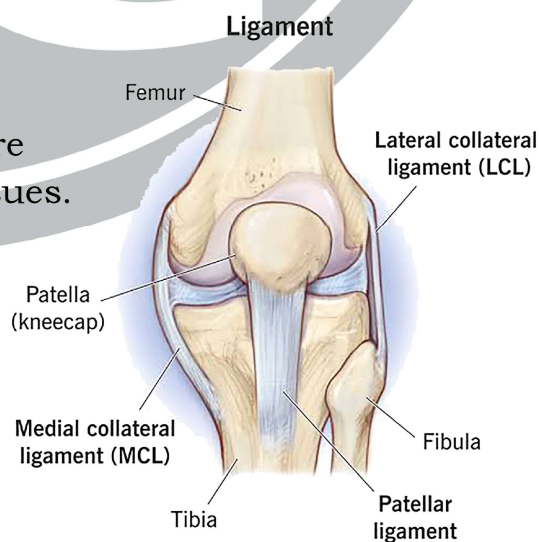
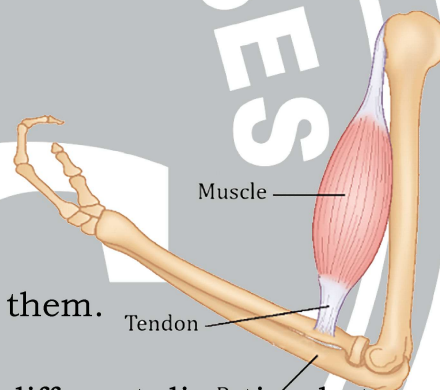
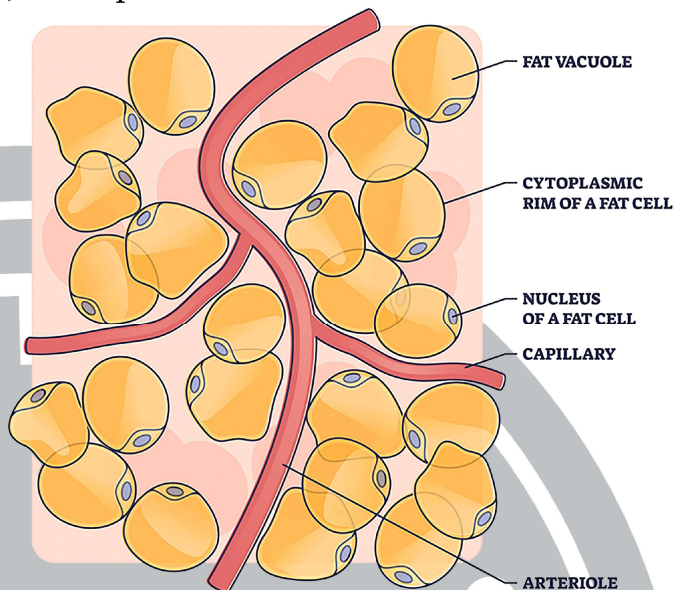
● **Special Connective Tissues:-**

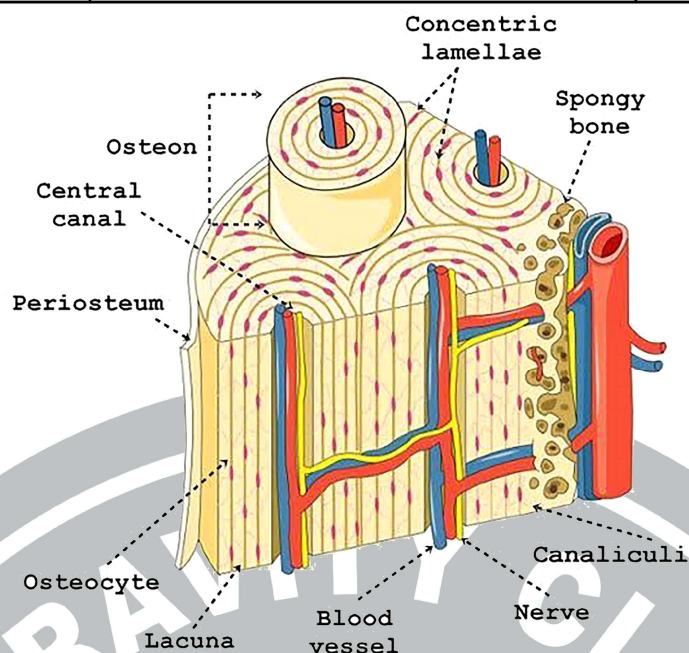
**Bone:-**

→ Very strong, non flexible.

→ Porous, higly vascular, **mineralized**.

→ Matrix of bone is formed of **concentric**  
**rings** called **LAMELLA**.





- Bone cells are present in between Lamella in **fluid filled cavity** called **LACUNAE**, which in turn forms a network called **CANALICULI**.
- Later helps the bone to **receive food, oxygen** and **remove waste**.
- **Function:-** (i) Shape (ii) Protection  
(iii) Anchorage (Support) (iv) Storage.

● **CARTILAGE:-** It is a **special type** of tissue which is **less harder** than **bone** and **flexible**.

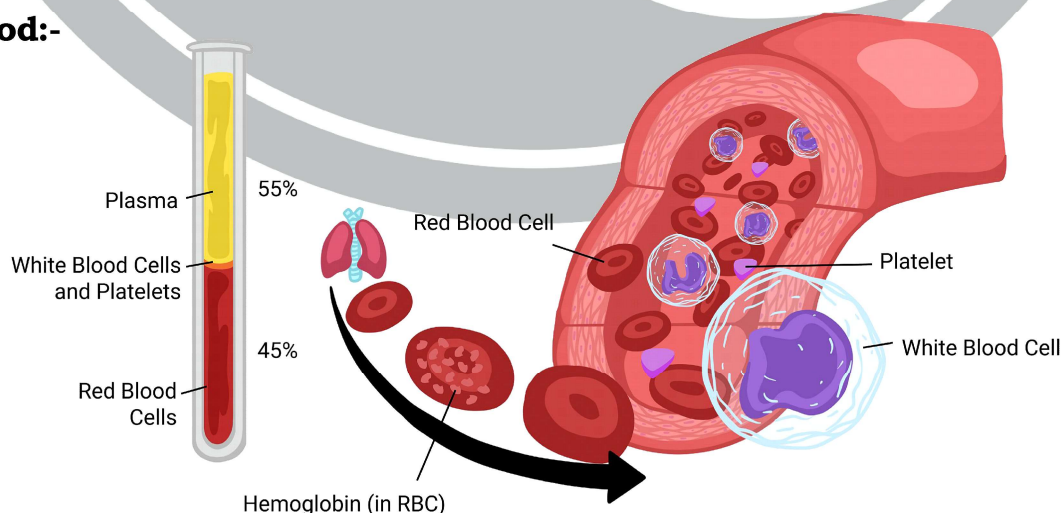
- Less vascular.
- Matrix is produced by **collagen** fibres and living cells called **chondrocytes**.
- Flexible to some extent.
- It can be of different types:- **Hyaline** (transparent) [Ribs, Nose, Larynx, Trachea], **fibrous** (fiber) [Intervertebral disc and pubic symphysis] and **Elastic**.

→ **Functions:-**

- (i) Support and flexibility.
- (ii) Make joint surfaces smooth.

\* **Fluid Connective Tissue:-**

● **Blood:-**





**Tissue**

- (i) Plasma.
- (ii) RBC (Erythrocytes) [Erythro→Red, Cytes→Cell].
- (iii) WBC (Leukocytes) [Leuco→White].
- (iv) Platelets (Thrombocytes).

● **Plasma:-**

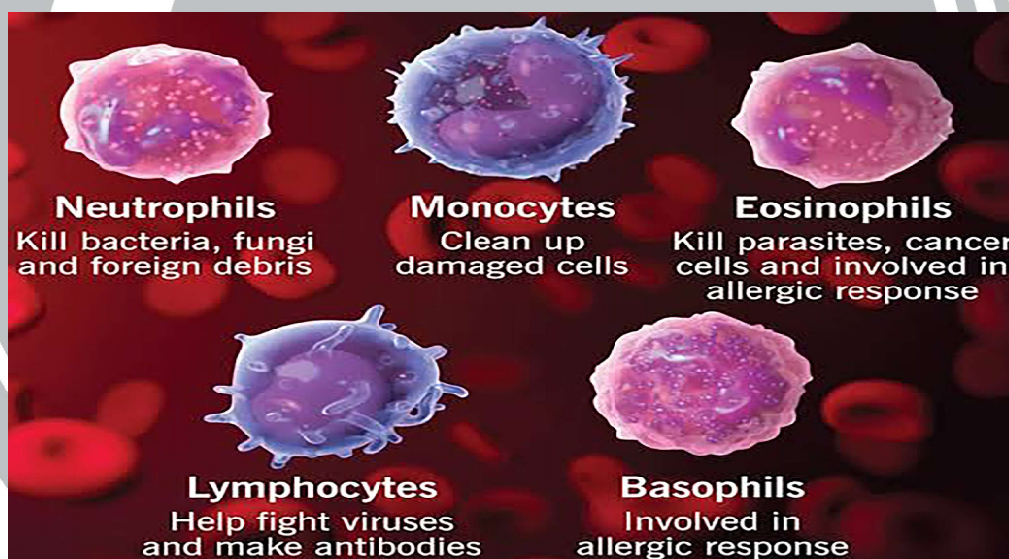
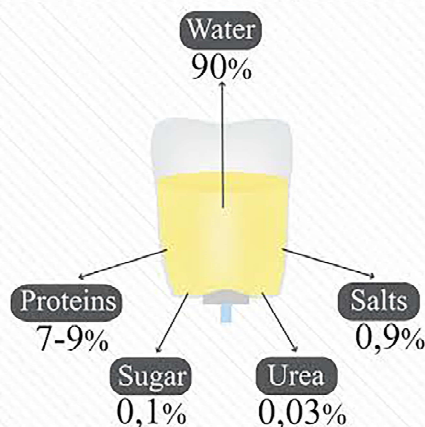
- Straw colored liquid.
- 90-95% water, proteins, minerals, vitamins, enzymes, hormones etc.
- 55% of the total volume.

● **RBC (Red Blood Cells):-**

- Rich in Iron.
- Bears a pigment called **haemoglobin** (carries  $O_2/CO_2$  towards lungs).
- Bioconcave in shape.
- Lack organelles in mature form.

**Note:-** When RBC get matured cell organelles vanished. **RBC lives** only for **120 days** and worn-out cells entered into **Spleen**. **Spleen** is also called **Graveyard of RBC**.

- **Functions:-** Gaseous Exchanges.

● **WBC (White Blood Cell):-****Plasma composition**

- 5 types some have **granules** in cytoplasm are called **granulocytes** other **nogranules** and are called **agranulocytes**.

→ **Granulocytes**

- **Eosinophils (2-5%):-** Parasitic infections allergy.

- Attack on **parasitic worms**.

- It is 2-5% of the blood.

- **Basophils (30-40%):-** Allergy

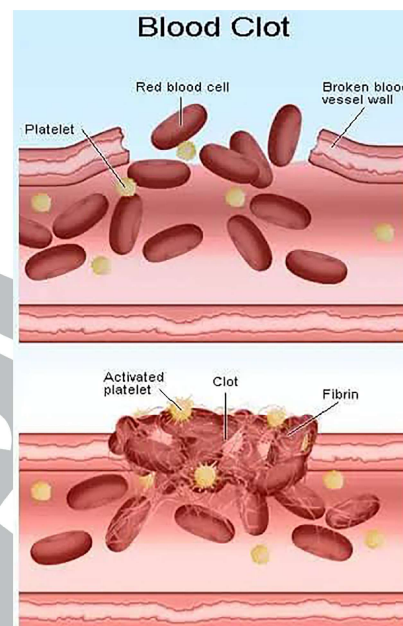
- If there is foreign material body released chemical so we get allergy of that.

- **Neutrophils (70%):-** Phagocyte.

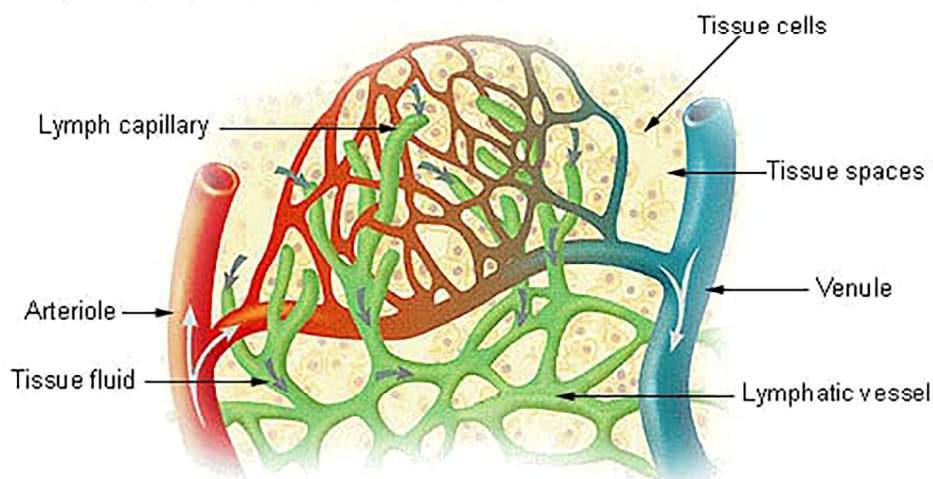


## Tissue

- Phagocyte (**Cell eating**).
- **Agranulocytes:-**
- **Lymphocyte:- Immunity.**
- Our body made such a protein is known as **Antibodies** with this our body become immune and when the bacteria or virus attack our body can easily tackle.
- **Monocyte: Phagocyte.**
- It is also a phagocyte i.e. cell eating.
- **Platelets:-**
- It is **not a proper** cell. They are the **cell fragment** of **giant's bone marrow** cell called **megakaryocytes** which is present in blood.
- Helps in **blood clotting**.
- **Lymph:-**



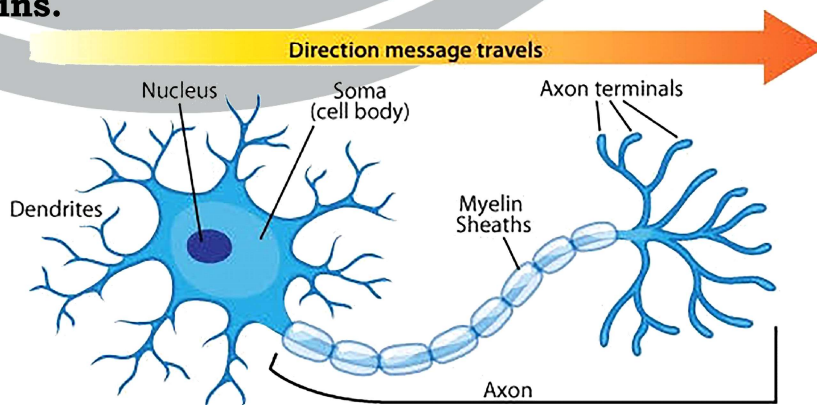
## Lymph Capillaries in the Tissue Spaces



- Colourless fluid filtered out of blood capillaries.
- And again join to vein to through waste.
- WBC abundant.
- **No RBC and blood proteins.**

## Functions:-

- Brings wastes from tissues to blood.
- Protection.
- **Neuron:-**
- Forms a network in our body.
- Transmit Signal.





# GRAVITY CLASSES

*"Come Gravity Feel Success"*

**11th - 12th**  
**NEET, IIT/JEE**

**5 - 10th**  
**ICSE & CBSE BOARD**



**MD REHAN RAZA**  
LITERA VALLEY SCHOOL

**94%**

**X<sup>th</sup> (CBSE)**  
**2025**  
**RESULT**

**2<sup>ND</sup>**  
**RANK**  
**IN SCHOOL**

**HIBA AHMAD**  
MOUNT ASSISI SCHOOL

**94%**



**ASAD HAQUE**  
DELHI PUBLIC SCHOOL

**87%**



**ALVINA TANVEER**  
BISHOP SCOTT GIRLS SCHOOL

**88%**

**1<sup>st</sup>**  
**RANK**  
**IN SCHOOL**

**MD SHALIN IRSHAD**  
BLUE PEARL HIGH SCHOOL

**87%**



**97%**



SHADMAN ALI

**93%**



KASHAF EJAZ

**91.4%**



ALIYA AFREEN

**TOPPERS**  
**2024**

**ER. AMIR SIR / ER. ASAD SIR** **7004166363, 7717752909**