

Date.....

(CHAPTER -5)

Life Process

* Life Process → All the ~~life~~ process like respiration, digestion which together keep the living organism alive and keep the body healthy are called life process.

Life Process

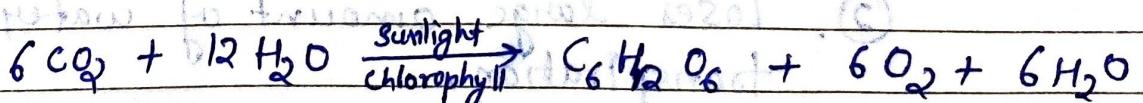
Digestion Respiration Circulation Excretion

* Nutrition → The process of taking nutrients from the food is called Nutrition.

(i). Autotrophic Nutrition → Kind of Nutrition in which inorganic materials like CO_2 , water etc are used to prepare food by the process of photosynthesis.

(Ex) Green plants.

Photosynthesis → Autotrophs takes in CO_2 and water and converts them into Carbohydrate in the presence of chlorophyll and sunlight is called photosynthesis.



Note: Desert plants absorb CO_2 at night, store, use it during the day.

Date.....

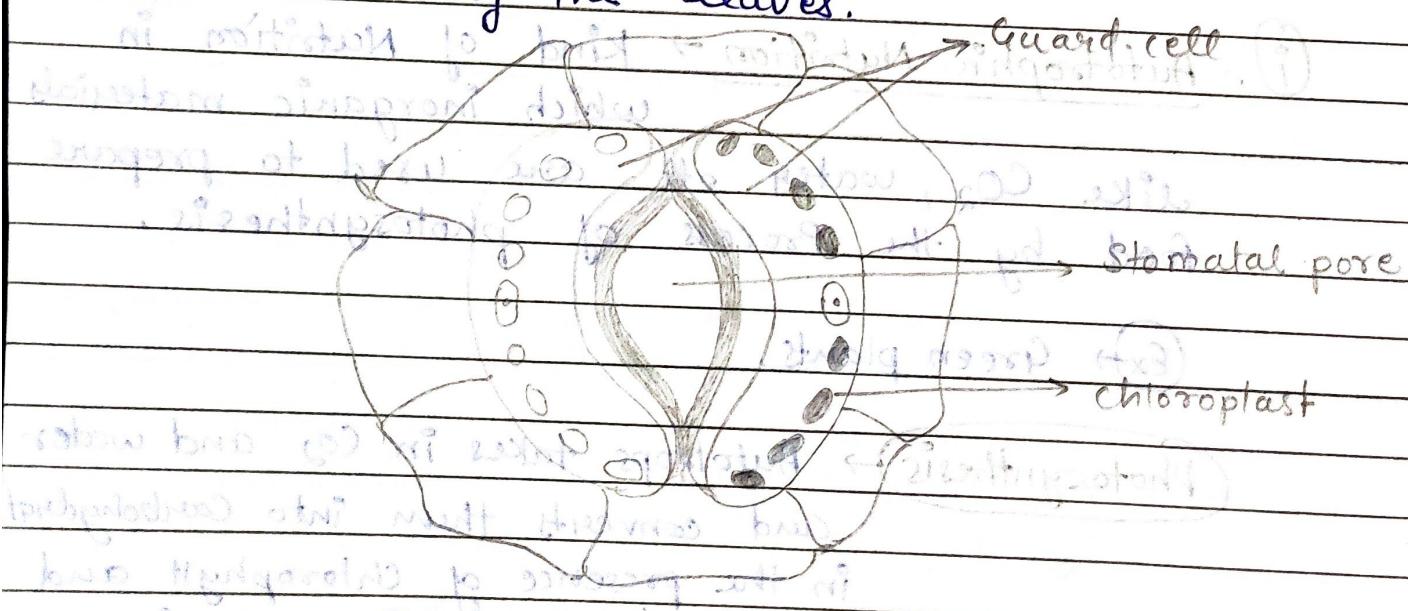
→ Site for Photosynthesis → leaf

→ Events of Photosynthesis

- i. Absorption light energy by chlorophyll.
- ii. Water is taken up by roots.
- iii. CO_2 enters through stomata.
- iv. conversion of light energy into chemical energy and splitting of water molecules into oxygen and hydrogen.

- v. Reduction of CO_2 to carbohydrates.

Stomata → Tiny pores present on the surface of the leaves.



Function → 1. Exchange of gases (O_2/CO_2)

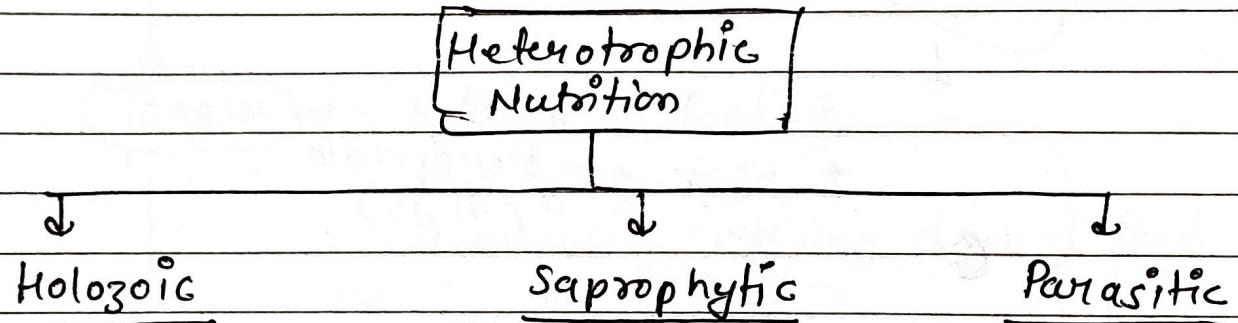
2. Loses large amount of water during transpiration.

Date.....

ii). Heterotrophic Nutrition →

Kind of Nutrition in which organisms do not have the ability to make their own food. They depends on autotrophs for their food.

(Ex) Animals, fungi.



→ Animal take in solid food and breakdown inside their body.

(Ex) Amoeba

→ Organisms feed on dead decaying matter.

(Ex) fungi

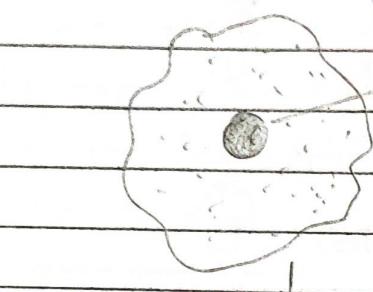
→ Parasitic live inside or outside of other organism and take food from there.

(Ex) Tick, leach,

Date.....

* How do organism obtain food. →

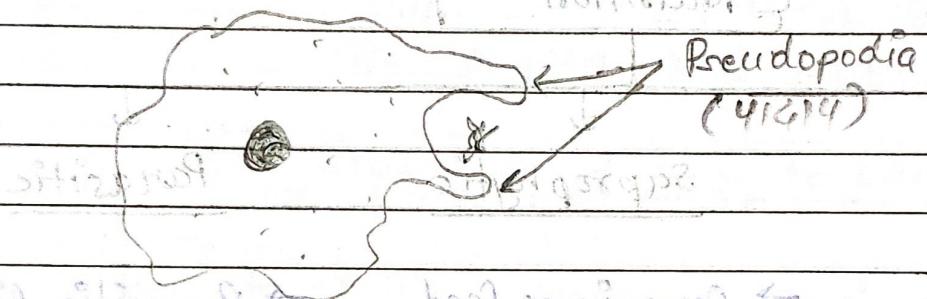
① Amoeba → Unicellular organism



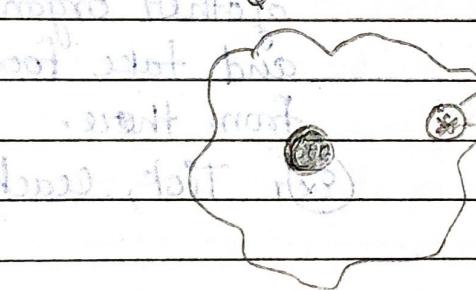
Nucleus.

→ Food particle.

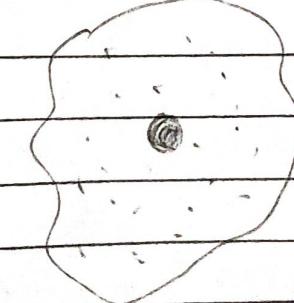
→ Ingestion



Pseudopodia
(पूर्वोदय)



Food vacuole (पोषण वाक्युल)



Date.....

② Human being →

① Mouth → Intake of food

Teeth → Chewing/grinding of food.

Tongue → Rolling of food +
tasting of food +
Swallowing/Pushing down of food.

Salivary gland → Secrete (saliva + Mucus)

→ Saliva contains amylase.

Starch $\xrightarrow[\text{(amylase)}]{\text{saliva}}$ sugar.

② Oesophagus
(Food Pipe) → Taking food from mouth to Stomach
by peristaltic movement.

③ Stomach → gastric glands secrete gastric juice

Gastric juice

(HCl)

(Pepsin)

(Mucus)

→ Makes Medium
acidic → Enzyme that
breaks down
Proteins into peptides.
→ Protects inner
lining of stomach
from acid.

Date.....

④ Small Intestine

→ 22 feet

Complete digestion of carbs, protein, fats

⑤ Intestinal enzyme converts,

Carbohydrate

Fat

Protein

Glucose

fatty acids +
glycerol

amino
acids

⑥ Villi → Helps in absorption of digested food into the blood.

⑦ Receives Secretion from,

Liver → Bile

(Large fat) (Emulsification) (small fat)
globules droplets.

Pancreas → Pancreatic Juice

Trypsin

Lipase

Proteins → Peptones.

Fats → fatty acid
glycerol

⑧ Large Intestine

Absorbs excess water

Remaining waste removed
through anus.

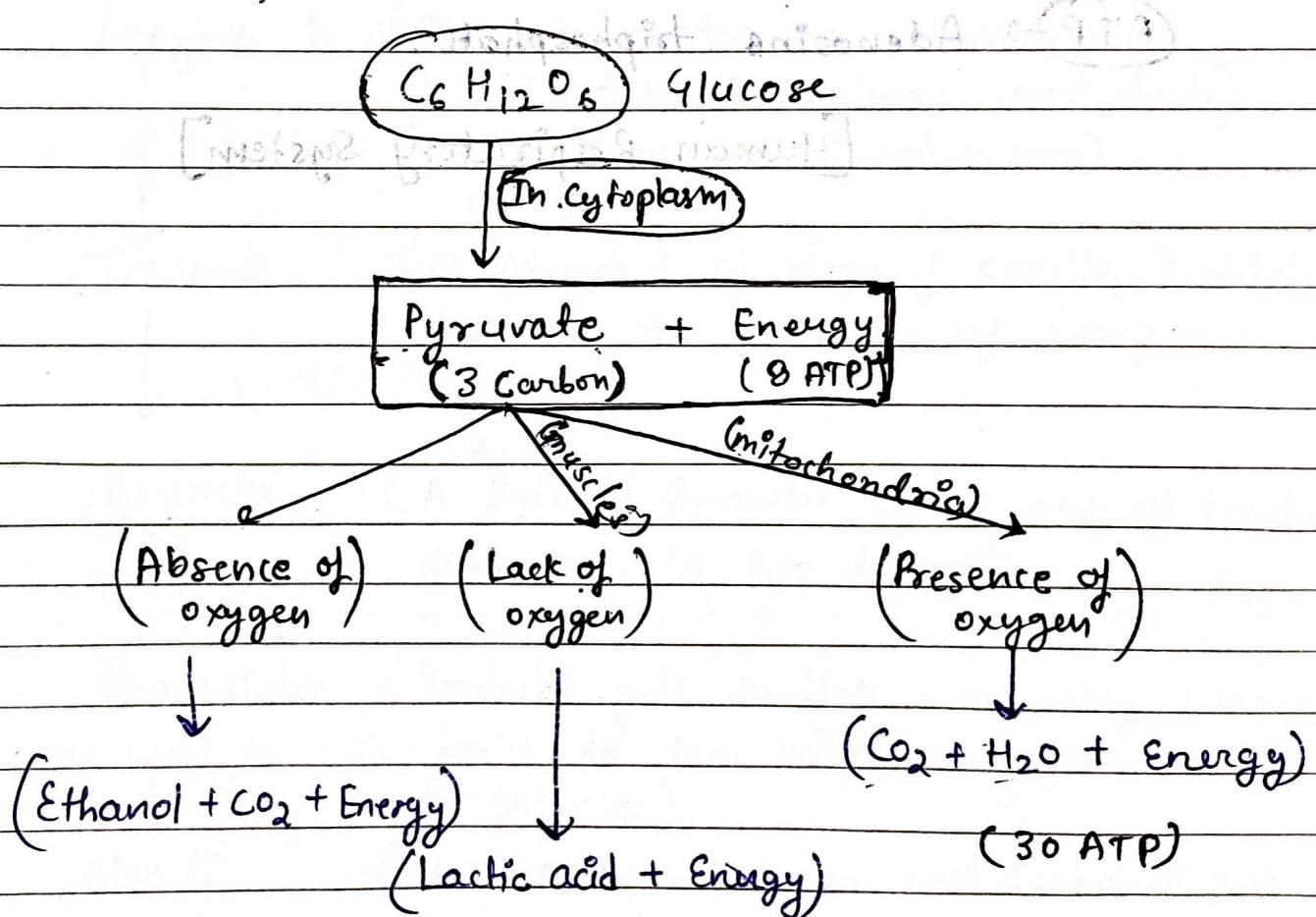
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XX Respiration →

Respiration is the process of releasing energy from food.

Breathing → Exchange of gases like O_2 and CO_2 with the environment is called breathing.

Cellular Respiration → Breakdown of simple food in order to release energy inside the cell. This is called cellular respiration.



Date.....

Aerobic

- Take place in the presence of oxygen.
- Occurs in mitochondria
- End product is CO_2 and H_2O .
- More amount of Energy is released.

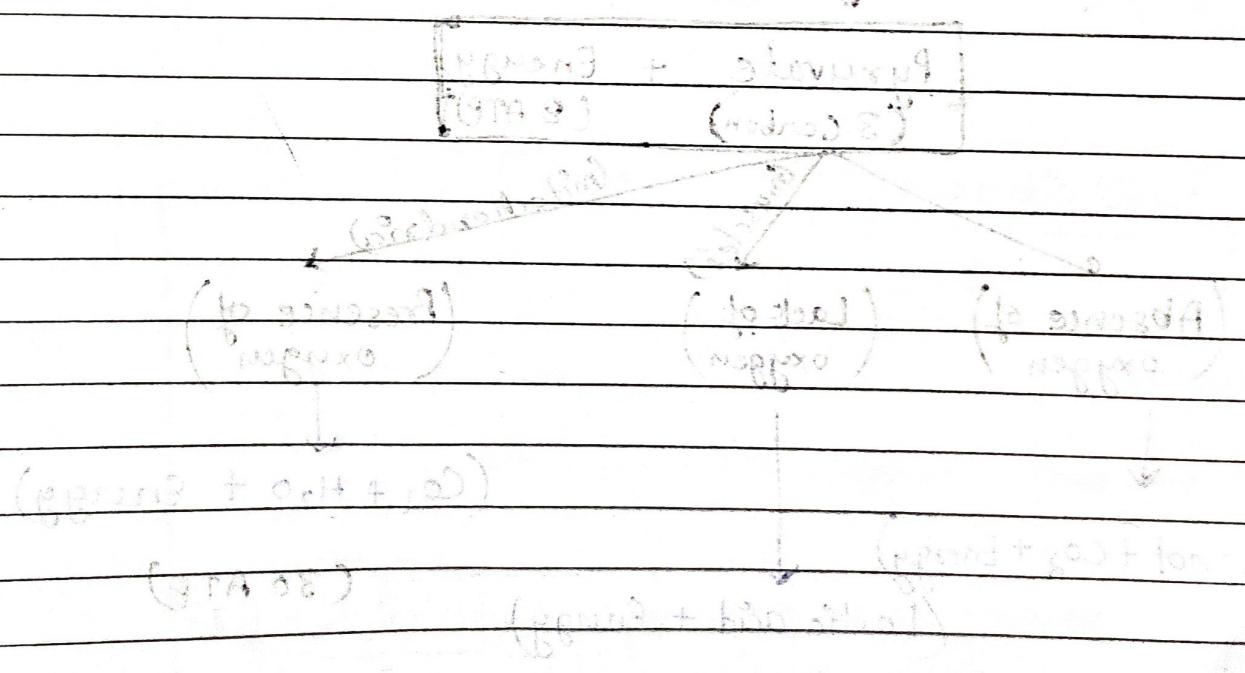
Anaerobic

- Take place in the absence of oxygen.
- Occurs in cytoplasm.
- End product is lactic acid.
- Less amount of energy released.

(ATP)

Adenosine triphosphate.

[Human Respiratory System]



Date

Nasal (Air is taken into the body)

Nasal Cavity (It is lined with hair and mucus membrane it warms, moistens and filters air before it reaches the lungs.)

Pharynx (It is a tube like structure) (This is the common passage for air and food).

(Epiglottis is an elastic cartilage, a switch b/w larynx and oesophagus)

Larynx (It contains the vocal cords and manipulate the volume and pitch)

(It is also called voice box)

Trachea (It is composed of rings of cartilage which prevents the collapse of trachea).

Bronchi (A pair of Bronchi comes out of trachea goes each in two lungs).

Bronchioles (Bronchi gets smaller when they reaches closer to the lungs and are called bronchioles).

Alveoli (They allows oxygen and carbon dioxide to move b/w the lungs and blood stream).

Date.....

(Breathing - Mechanism):-

Inhalation

Exhalation.

- | | |
|---|--|
| → Chest cavity (Thoracic) expands.
→ Ribs lift up
→ Diaphragm becomes flat. | → Chest cavity (Thoracic) Contract.
→ Ribs moves Downwards.
→ Diaphragm becomes dome shaped. |
|---|--|

Exchange of gases b/w alveoli and blood →

① O_2 (Alveolus) → Enters in blood

(diffusion b/w alveoli and blood)

(bind with blood as O_2 Binds with haemoglobin in RBC)

which diffuses b/w blood & tissue $\rightarrow O_2$ released in tissue

(carbon dioxide removed)

Glucose Breakdown



which goes to lungs \rightarrow CO_2 Production (Tissues)

② CO_2 (Tissues) → Carried out in blood

by haemoglobin (Hb) which is reduced

Hb carries CO_2 back to lungs \rightarrow Carried through Blood vessels

(alveoli produced due to respiration now air is Alveoli Sac)

Inside body has equal air and oxygen at

Sent out through nostril.

Date.....

Terrestrial animals → (Land) → Atmospheric oxygen.

Aquatic animals → (water) → Dissolved oxygen in water.

[Respiration in plants]

- Stomata in leaves
- Lenticels in stems
- General surface of the roots.

bun boalha (brown bivalve shell)
diagonal (oblique band) (wavy grain)
(vertical band)
horizontal
parallel
radial
vertical

fibres

parallel

radial

vertical

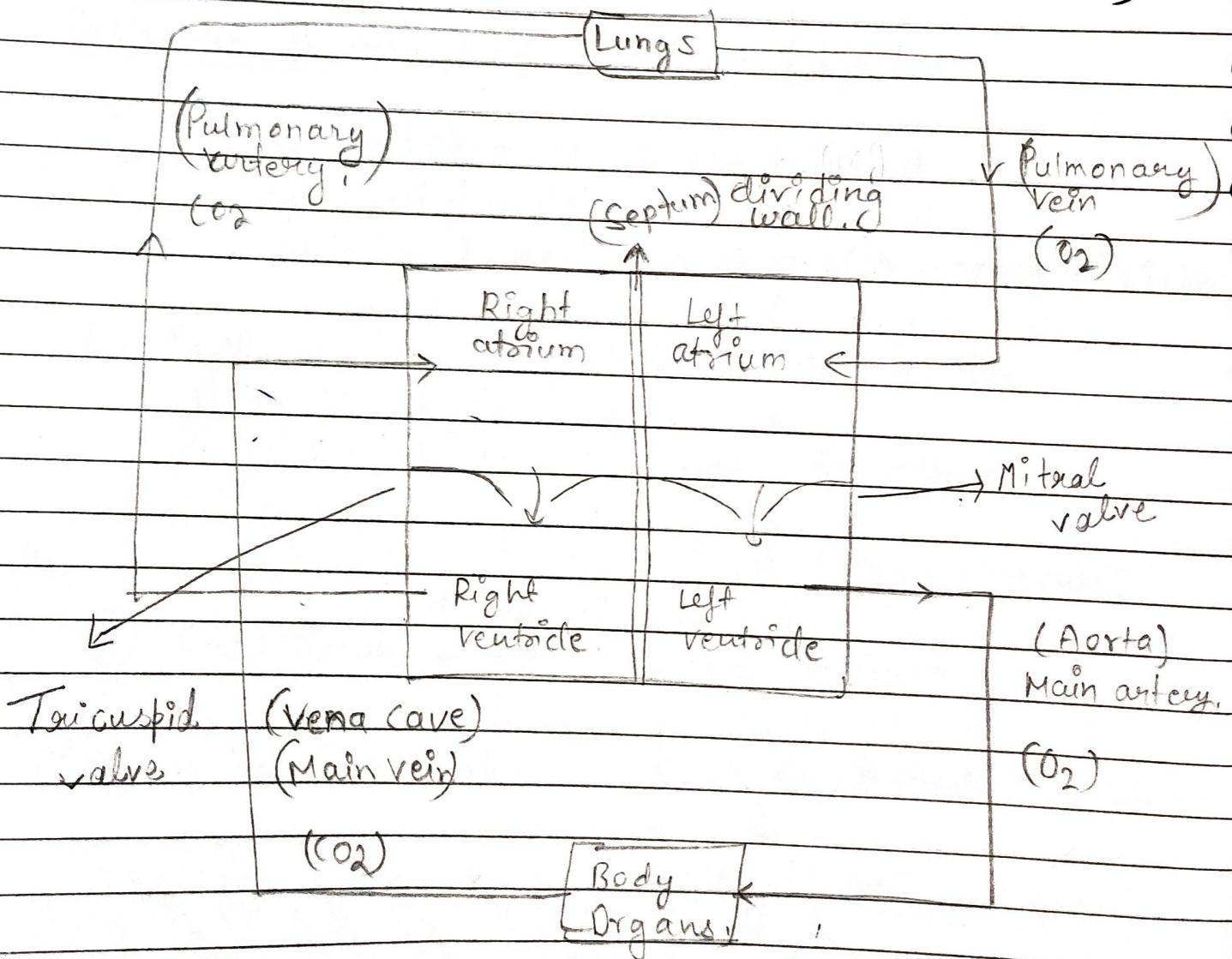
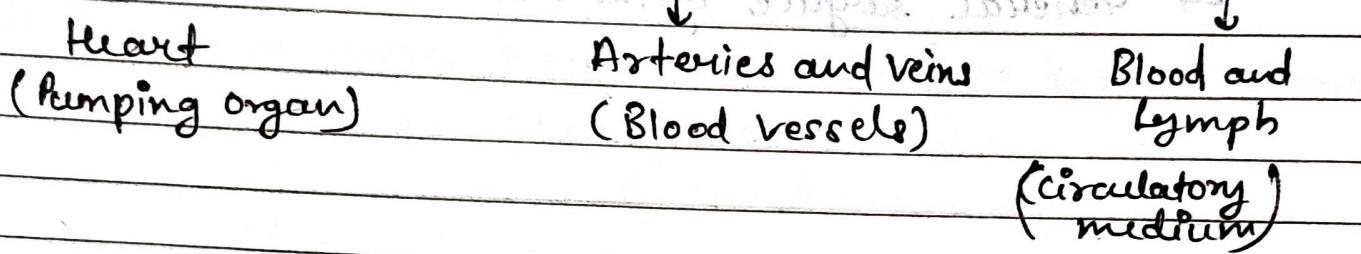
parallel

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Transportation

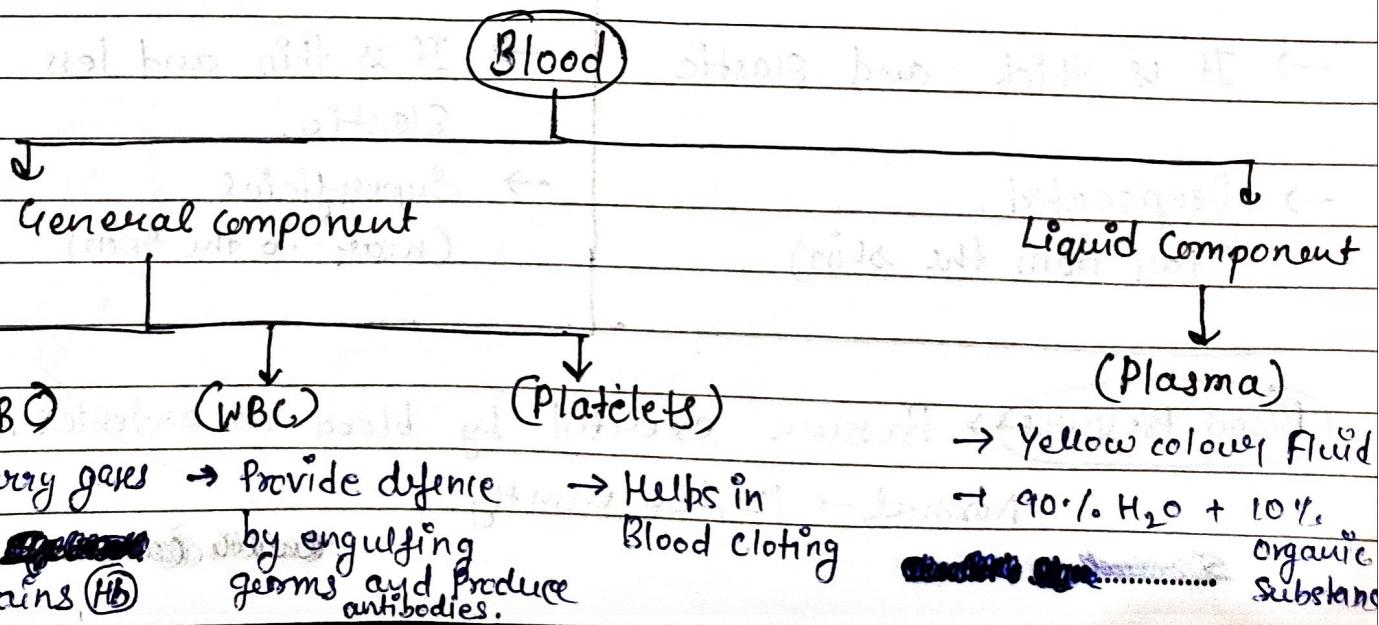
→ Human beings need oxygen, food, hormones, which must reach every cell. This is done by circulatory system.

Circulatory System



Date.....

- The lungs supply oxygen rich blood to the left Atrium of the heart.
- The left Atrium releases when it is collecting blood and contracts when blood is transferred to the left ventricle.
- The left ventricle expands when it receive blood.
- The blood is pumped out to the body when the muscles of left ventricle contract.
- Deoxygenated blood comes from the body to the right Atrium.
- The right Atrium releases blood into right ventricle.
- Right ventricle pumps the deoxygenated blood to the lungs.
- ④ Double Circulation → Blood travels twice through the heart in one complete cycle of the body.



Date.....

Lymph → It is a clear or slightly pale fluid that comes out from blood and fills the spaces b/w body cells.

→ It has less protein than blood.

→ Lymph moves from tissues towards heart, helping to carry away germs and waste.

→ It carries digested fat from the intestine and returns extra fluid from the spaces in tissues back to the blood.

Blood vessels →

Arteries

→ Carry oxygenated blood from heart to the body part except pulmonary artery.

→ It is also called distributing vessel.

→ It is thick and elastic

→ Deepseated
(far from the skin)

→ Carry deoxygenated blood from body parts to the heart except pulmonary veins.

→ It is also called collecting vessel.

→ It is thin and less elastic.

→ Superficial
(near to the skin)

Blood Pressure → Pressure exerted by blood on arteries.

Normal → 120 / 80 mm Hg.

Date.....

Transportation in Plant →

Xylem Phloem

- | | |
|---|---|
| → Carries water and minerals from roots to other part of the plant. | → Carries product (food) from leaves to other part of the plants. |
| → No energy is used | → Energy is used. |

Transpiration → It is the process of loss of water as vapour from ~~aerial~~ aerial part of body of plant.

→ It cools the plant.

Translocation → Transport of food from leaves to the other part of the body is called translocation.

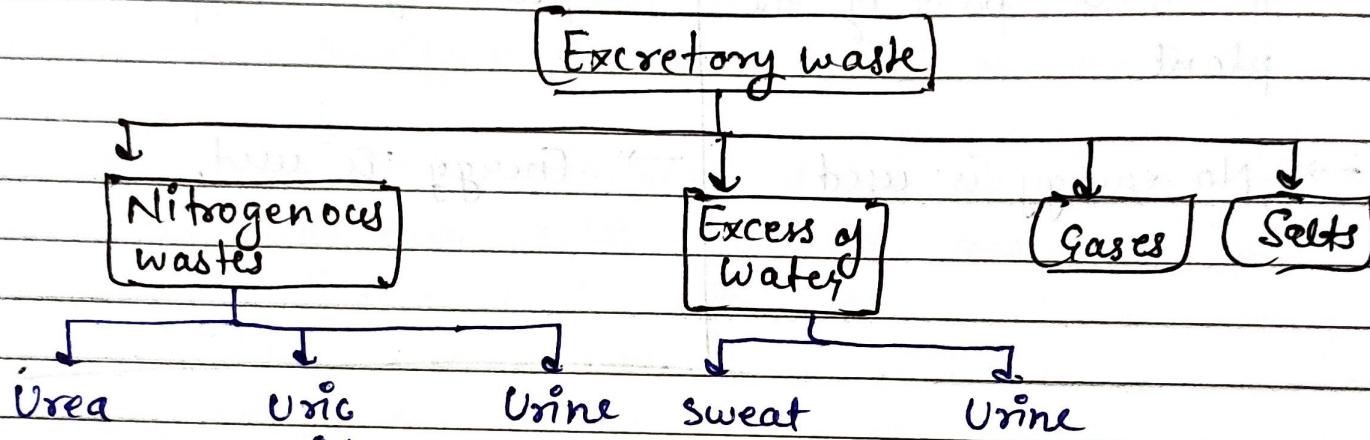
Leaves → digest along the stem
uptake products → take nutrients
solids → translocate to other parts

Spiral

Teacher's Sign

Date.....

Excretion → The metabolic activities in the body generates many kinds of waste including nitrogenous waste which are harmful for the body. and need to be removed, from body.

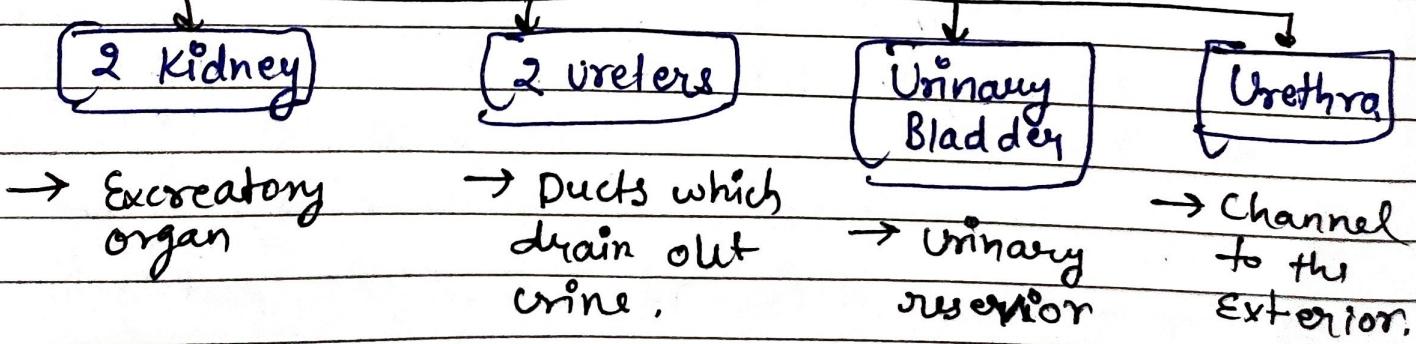


Unicellular organisms: → waste is removed by simple diffusion.

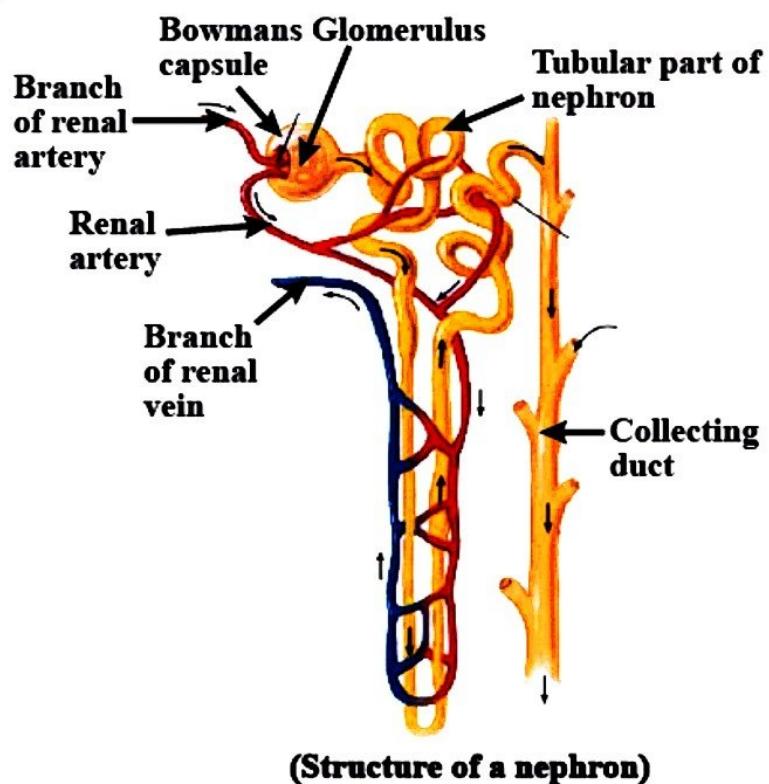
Multicellular organisms: → They use specialised

* [Human Excretory system]

Organs



Date.....



- Each kidney have many filters called nephrons.
- Nephrons are made up of small blood tufts (glomerules) inside a cup shaped part called Bowman's capsule.
- Blood (renal artery) brings waste (like urea) to the kidney from body.
- Blood gets filtered in the glomerules. This filtrate enters into the tubular part.
- This filtrate passes down and good things (glucose, amino acid) and most water goes back to the blood.

Spiral

Teacher's Sign

Date.....

- The rest fluid is urine now which gets collected into collecting ducts of nephrons.
- Each ureters drains the urine from collecting ducts to the urinary bladder.
- 180 l of fluid is ~~formed~~ filtered but only 2 liters comes out as urine.

Function of Nephron →

- Excretion of nitrogenous waste.
- To maintain the waste and toxic balance.

Artificial kidney (Hemodialysis) →

→ The process of purifying blood by an artificial kidney. It is meant for kidney failure patient.

* Excretion in plants → (photosynthesis) loss

① O_2 → released during photosynthesis.

② CO_2 → released during respiration.

③ Excess water → lost by transpiration.

④ Plant also secrete some waste substance into the soil around them.