# LIFE PROCESSES

**Life processes :-** The Basic and essential functions/process performed by living Organisms to maintain and sustain their life.

**Nutrition :-** The process of obtaining and utilisation of food.

**Respiration :-** The process of breaking down of food to obtain energy.

**Transportation :-** The process of transfer of substances from one part of the body to other parts.

**Excretion :-** The process of removal of waste materials produced in waste materials produced in the cells of the body.

## NUTRITION

### AUTOTROPHIC NUTRITION

The Organism makes its own food from simple inorganic materials.

e.g - Green plants, autotrophic bacteria


### HETROTROPHIC NUTRITION

organism can not make (or synthesize) its own food from simple inorganic materials.

eg - Human, cats, fungi, leech, etc

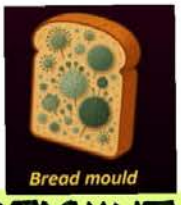

## HETROTROPHIC NUTRITION

### Holozoic

- Organism consume and internally digest organic food substances
- e.g Human beings, dog, cat, amoeba, paramecium


### Saprophytic

- organisms feed on dead and decaying organic matter.
- e.g fungi (bread moulds), yeast, mushroom)




### Parasitic

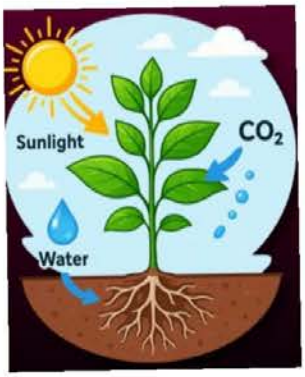
- organisms obtain nutrition by living on (External parasite) or in (internal parasite) the body of the another living organism (host), often causing harm to the host.
- e.g: lice, leech, tapeworm, cascuta (amar-bel)
- cuscuta is a parasitic plant. it does not contain chlorophyll.


## PHOTOSYNTHESIS

The process by which green plants make their own food from carbondioxide and water by using sunlight energy in the presence of chlorophyll is called photosynthesis.

## conditions necessary for photosynthesis

(a) Sunlight (b) chlorophyll (c) Carbondioxide (d) water

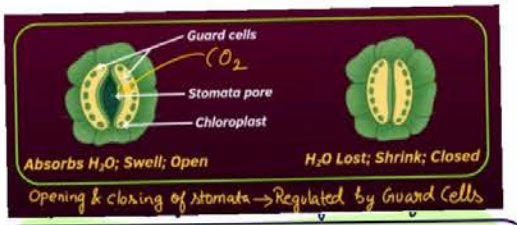



$$6CO_2 + 12H_2O \xrightarrow[\text{Sunlight}]{\text{chlorophyll}} \underset{\text{Glucose}}{C_6H_{12}O_6} + 6H_2O + 6O_2$$

Absorption of light energy by chlorophyll
↓
conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen
↓
Reduction of Carbon dioxide to Carbohydrates

**3 STEPS of PHOTOSYNTHESIS**

- site of photosynthesis: chloroplasts
- chlorophyll is present in the green-coloured organelles called "chloroplasts" inside the plant cells. The leaves are green because they contain chloroplasts.
- chlorophyll is present in which (a) organelle – chloroplast (b) organ - leaf
- $CO_2$ enters through stomata.
- stomata: Tiny pores present on the surface of the leaves.
- water: Taken up by the roots from soil.
- Nitrogen is taken in form of nitrates and nitrites.
- Nitrogen, phosphorous, magnesium and iron are also taken.
- In plants, food (glucose) is stored in the form of starch.
- In animals, it is stored in the form of glycogen.




**Photosynthesis in Desert Plants**

Day Time - Stomata remains closed tp conserve Water
Night Time - Stomata Opens - Absorbs $CO_2$.
$CO_2$ taken at night used to prepare Glucose in daytime

## Activity 5.1 & 5.2

### Variegated Leaf

1. **Boiling water**
2. **Boiling alcohol**
   ***Removes colour of leaf***
3. **Iodine Solution**
   ***blue black colour with starch only on green sites***

**Conclusion - Starch is present at green sites only proving chlorophyll is essential for photosynthesis**

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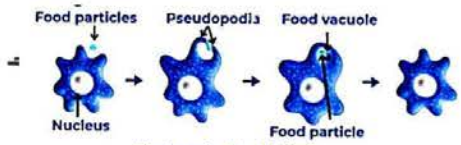
1. **Glass jars sealed and kept in Sun**
2. **KOH in jar to absorb any Carbon dioxide present**
3. **Iodine Test for Starch**

**Observation - No Blue black colour seen**

**Conclusion - Carbon Dioxide is essential for Photosynthesis**

## Nutrition in Amoeba (Unicellular Organisms)

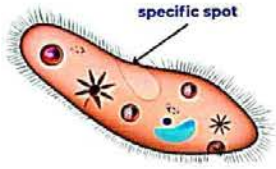
- Amoeba takes in food using temporary finger-like projections of the cell surface called Pseudopodia, which also helps in movement of organism.
- Food vacuoles are formed: enzymes are secreted which breaks down complex substances → simpler soluble substances.
- Absorption of digested food in cytoplasm by diffusion.
- Undigested food moves to cell surface and thrown out.



Holozoic Nutrition

## Nutrition in Paramecium (Unicellular organism)

- The cell has a definite shape (like slipper)
- Food is moved to a specific spot (Vacuoles) by the movement of cilia (hair like structure), which also helps in movement of organism.



Holozoic Nutrition

# NUTRITION IN HUMAN BEINGS

## (Alimentary Canal → Long tube from Mouth to Anus)

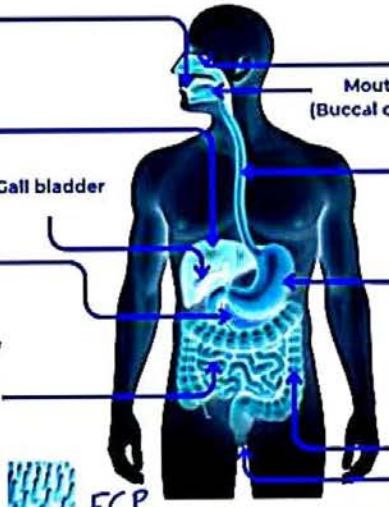
**Teeth :** crushing / cut food in small pieces

**Liver :** secretes bile juice which is stored in gall bladder.
- makes acidic food coming from stomach alkaline
- emulsification of fats → breaks down fats into smaller globules [more surface area for enzymes to work]

**Pancreas :** secretes pancreatic juice
- Trypsin → digests proteins
- Lipase → breaking down of emulsified fats

**Small Intestine :** coiled, longest part of alimentary canal. Site of complete digestion & absorbption of food. Receives secretion from liver & pancreas

**Villi :** lots of finger-like projections, present on inner lining of small intestine. Increases surface area for absorbtion
- supplied with blood vessels
- Hence, digested food is absorbed and taken to all the cells of body.




FCP

Proteins → Amino acids
Carbohydrates → glucose
Fats → fatty acid + glycerol

**Salivary Glands :** secrete Saliva.
- Saliva contains enzyme → Salivary Amylase which breaks down starch (complex carbohydrates) to simple sugar. Tongue mixes food with saliva and helps in swallowing.

**Oesophagus :** food pipe
- Peristaltic movement → contraction & expansion of wall of food pipe, pushes food into stomach. Regulates movement of Food to stomach

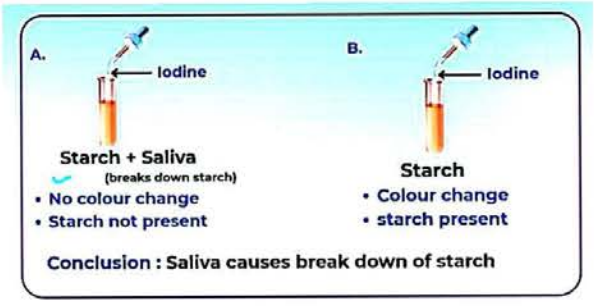
**Gastric glands :** Gastric Juice
Hydrochloric acid → creates acidic medium for enzyme pepsin. kills bacteria & germs
- Pepsin → protein digesting enzyme
- Mucus → protects inner lining of stomach from acid

**Large intestine (colon) :**
Unabsorbed food → sent to large intestine
- absorbs more water from this material.
- Rest of the materials is removed via anus.

**Anus :** Exit of waste material via anus is regulated by anus sphincter

**Herbivorous** - longer small intestine for digestion of cellulose which is hard to digest and requires more time to break down and get absorbed.

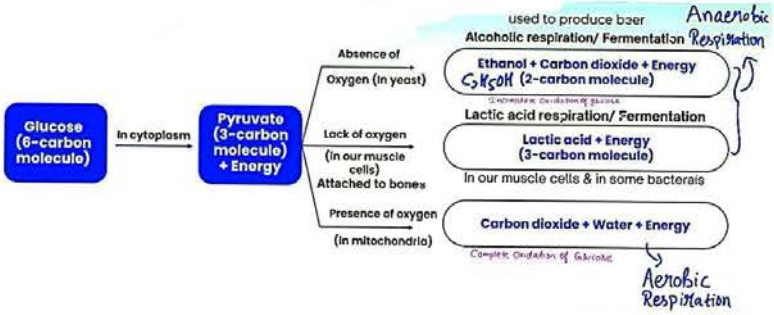
**Carnivorous** - shorter small intestine since meat is easir to digest.



# RESPIRATION

The process of breaking down of food to release energy in form of ATP is called Respiration.

| Breathing | Respiration |
|---|---|
| Physical process | Chemical process |
| Process of inhaling and exhaling the air | Process of breaking down of food to produce energy |
| No energy released instead energy is required. | Energy is released in form of ATP |
| Happens in lungs | Happens in cells |


During intense excercise, muscles rapidly convert glucose to lactic acid for quick energy. This lactic acid buildup causes fatigue and cramp in muscle.

| Aerobic Respiration | Anaerobic Respiration |
|---|---|
| Oxygen is required | Oxygen is not required |
| More energy produced | Less energy produced |
| Complete oxidation and breakdown of glucose | Incomplete oxidation and breakdown of glucose |
| Occurs in cytoplasm and mitochondria | Occurs only in cytoplasm |
| End products : $CO_2 + H_2O$ | End products : $CO_2$ + Ethanol / Lactic acid |

# RESPIRATORY SYSTEM IN HUMAN

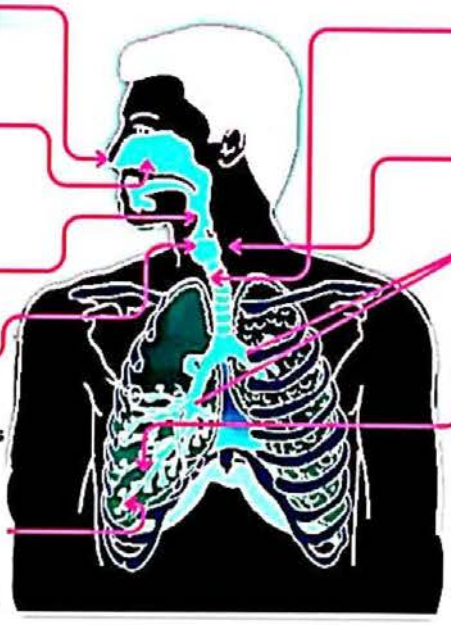
**Nostrils :** Air enters the passage

**Nasal Passage :** Have hairs lining passage for filtration of air
- Passage lined with mucus
- To trap dirt & dust & filtration of air

**Pharynx :** Common passage for food and air

**Larynx (voice-box) :** Produces sound, contains vocal cords
Allows air to pass into the trachea.

**Alveoli :** Alveoli are tiny, balloon-like air sacs located at the end of bronchioles. Thin-walled and moist for easy gas diffusion. Surrounded by a network of blood capillaries. They are the site of gas exchange in the lungs. Each lung contains millions of alveoli, providing a large surface area for efficient diffusion.



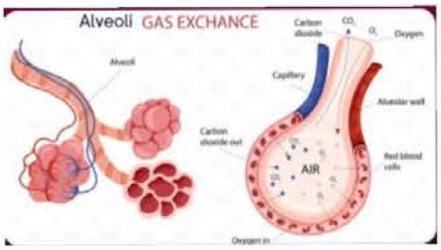
**Rings Of Cartilage:** Prevents air passage from collapsing

(CBSE 2023, 2021, 2019)

**Trachea :** Windpipe

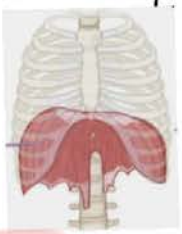
**Bronchi :** Two bronchi connect trachea to each lungs

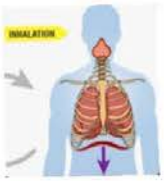
**Bronchioles :** Each bronchi divides in lungs to form large number of smaller tubes called bronchioles. Bronchioles are small air passages that lead directly to the alveoli.




✓ Alveoli are richly supplied with blood vessels for efficient exchange of gases (oxygen and carbon dioxide)
✓ Oxygen from alveoli diffuses into the blood capillaries
✓ Carbon dioxide from blood diffuses into the alveoli.

The diaphragm is a large, dome-shaped muscle that separates the chest from the abdomen.







| Inhalation / Inspiration | Exhalation / Expiration |
|---|---|
| diaphragm contracts | diaphragm relaxes |
| diaphragm moves downward and becomes flat. | diaphragm moves upward and becomes dome-shaped. |
| Chest cavity becomes larger | Chest cavity becomes smaller |
| Air is sucked into the lungs | Air is pushed out from the lungs |

**Residual Volume** - Amount of air always remaining in lungs (to provide sufficient time to absorb $O_2$ and release $CO_2$.
(CBSE 2023, 2021, 2019)

## Respiration in Plants

- Exchange of Gases → occurs through stomata

### Day Time

- **Photosynthesis** - oxygen produced
- **Respiration** - Carbon dioxide is produced → used in Photosynthesis
- **Net Result** - $O_2$ is given out

### Night Time

- No photosynthesis
- Respiration - carbon dioxide is produced
- Net Result - $CO_2$ is given out.

## Breathing in Fish

Fish → take in water through Mouth → force it past the gills → dissolved $O_2$ is taken by blood.

Mouth Open, Gill closed
Vice-Versa →

### Terrestial Organisms

- Breath oxygen in atmosphere.
- Rate of breathing is less.

### Aquatic Organisms

- use dissolved oxygen in water
- Rate of breathing is more as they have to obtain oxygen dissolved in water.

# TRANSPORTATION

The process of transfer of substances like food, oxygen, carbon dioxide, water and waste from one part of the body to other parts.

## Transportation in Humans

- Circulatory system
- Lymphatic System

The Circulatory system consists of the Heart, blood & blood vessels.

## BLOOD

Blood is a red coloured body fluid (connective tissue) that circulates throughout the body carrying essential substances to cells and removing waste products.

### Blood Components


**Plasma** - fluid medium, transports food, carbon dioxide and nitrogenous waste. (pale yellow colours).

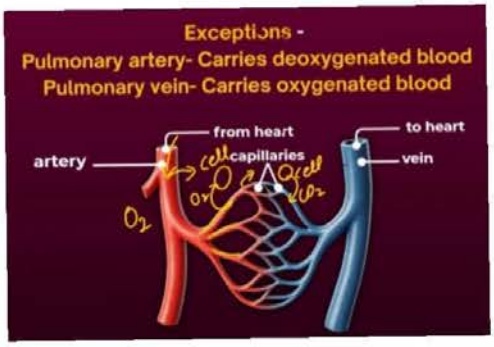
**RBCs** - Contain haemoglobin and transport oxygen Haemoglobin - a protein found in red blood cells binds with Oxygen, transports oxygen and carbondioxide. it also gives red colour to blood.

**WBCs** - Fight infections. produce antibody to kill pathogens. provide immunity.

**Platelets** - stops bleeding by clotting blood.

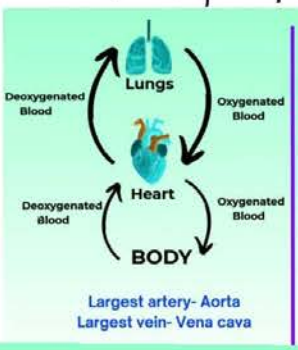
**Blood Vessels** - Network of tubes through which blood is pumped around the body.

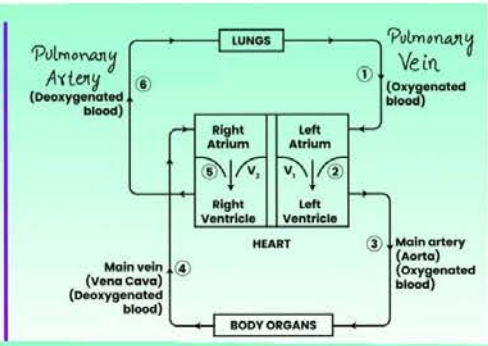
| Feature | Arteries | Veins | Capillaries |
|---|---|---|---|
| Direction of Blood Flow | Carries blood away from the heart | Returns blood to the heart | Connects Arteries & Veins |
| Oxygen | Rich in oxygenated blood | Contains deoxygenated blood | Transports both oxygenated & deoxygenated blood |
| Pressure | High pressure | Low pressure | Moderate pressure |
| Walls | Thick and elastic walls | Thin and less elastic walls | Very thin (one cell thick) |
| Valves | Not present | Present (to prevent backflow) | Absent |

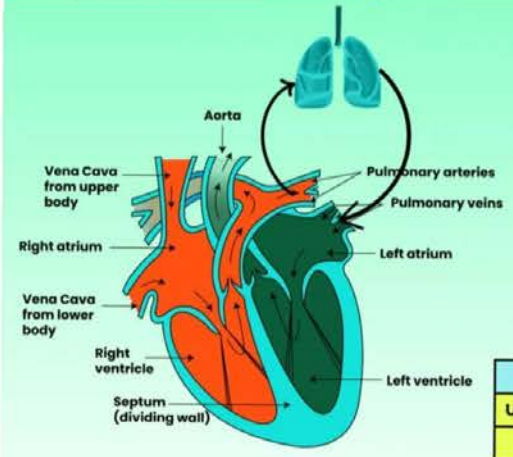



Valves in veins play a crucial role in ensuring blood flows in the correct direction, specifically towards the heart, even against gravity. These one way valves, found primarily in the veins of the legs to prevent the backflow of blood.

**Heast :-** a muscular organ, roughly the size of a fist, that acts as a pump to circulate blood throughout the body.




**Why 4 Chamber in Heart??**

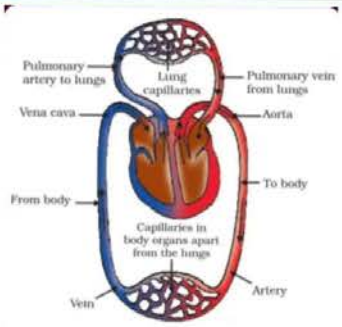
1) Warm-blooded creatures such as humans require a constant, high level of oxygen to maintain body temperature and energy requirements.
A four-chambered heart enables that by preventing oxygen-rich and oxygen-poor blood from mixing.

2) Since oxygenated blood doesn't mix with deoxygenated blood, every cell in the body receives the richest possible supply of oxygen - helping us think, move, digest, and function better

| Atrium | Ventricle |
|---|---|
| Upper chambers of the heart | Lower chambers of the heart |
| Walls are thin | Walls are thick and muscular |
| Receive blood from veins | Pump blood into arteries |
| Low Pressure | High Pressure |

**Double Circulation** - Blood flows twice through the heart before completing a full circuit.

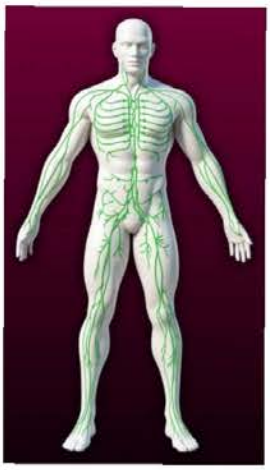
**single Circulation** - Blood passes only once through the heart in a complete cycle.




*Schematic representation of transport and exchange of oxygen and carbon dioxide*

| Animal Group | Heart Chambers | Circulation Type | Body Temperature Regulation |
|---|---|---|---|
| Birds (Aves), Mammals | 4 | Complete double circulation | Warm blooded |
| Amphibians, Reptiles | 3 | Partial double circulation | Cold blooded |
| Fishes (Pisces) | 2 | Single circulation | Cold blooded |

## Lymph or Tissue fluid



✓some components of blood leak through pores in walls of capillaries (plasma, proteins and blood cells — not RBC)

✓colourless fluid

✓ contains less protein than blood

lymph flows into lymphatic capillaries,

✓which join to form larger lymph vessels

✓These vessels finally merge into larger veins.

### functions

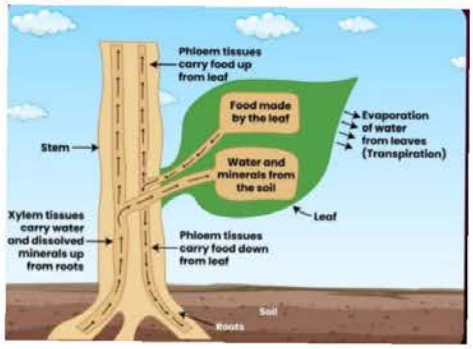
- carries digested and absorbed fat from intestine.
- Drains excess fluid back into the blood.
- lymph contains lymphocytes that help defend the body against infections.

## Transportation in Plants

slow transportation system (1) plants do not move (2) have a large proportion of dead cells in many tissues. Hence they have low energy needs and use slow transport systems. But transportation distance can be very large.

xylem and Phloem are independent conducting tubes.

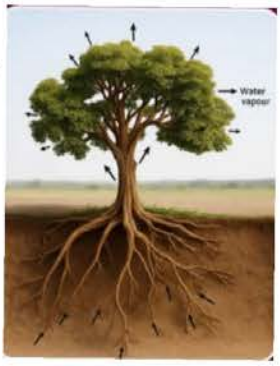
| Feature | Xylem Transport | Phloem Transport |
|---|---|---|
| Transports | Water and minerals | Food, amino acids and other substances |
| Direction of Flow | Unidirectional (upwards from roots to aerial parts) | Bidirectional (both upward and downward) |
| Process Involved | Physical forces( such as root pressure and transpirational pull)* | Active transport (requires energy in the form of ATP) |
| Main Tissues Involved | Xylem vessels, tracheids | Sieve tubes, companion cells |




*Passive Transport

### Transport of water :- → XYLEM

- Root pressure - Roots take up ions from soil which creates difference in the concentration of these ions.
- water from soil moves into the roots.
- there is a constant movement of water into root xylem and water is steadily pushed upwards.



**Transpiration** :- The loss of water in the form of vapour from the aerial parts of the plant is called Transpiration.

**Role of Transpiration** :-

(1) Absorption and upward movement of water and minerals from roots to leaves.
(2) Temperature regulation (cooling due to evaporation)

**Daytime** - major force is transpirational pull + Root pressure
**Night time** - Root pressure

## Transport of food :-

Translocation → PHLOEM

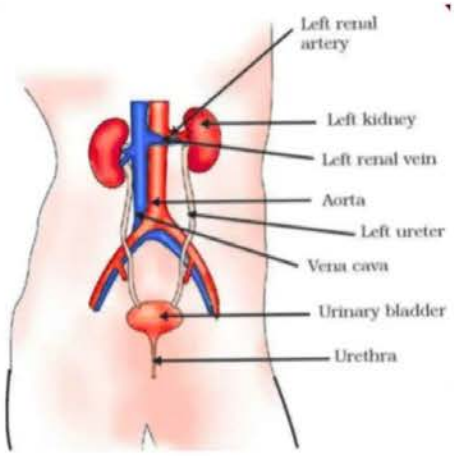
- The transfer of food from leaves to other parts of the plant is called translocation.
- Phloem translocates the food made in the leaves.
- These substances are especially delivered to the storage organs of roots, fruits and seeds and to growing organs.

## EXCRETION :-

### IN HUMAN BEINGS

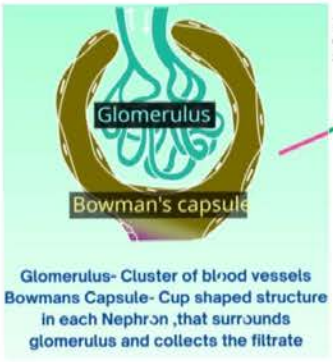
Removal of harmful metabolic wastes (mainly Urea and uric acid) from the body is called excretion.

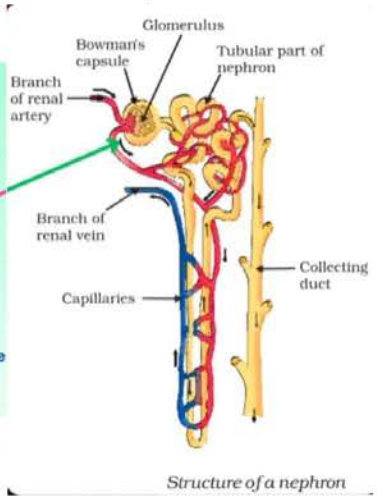
The excretory system of human beings includes -




- **kidneys** - Nitrogenous waste such as urea and uric acid are filtered from blood through kidneys.
- **A pair of ureters** - connects the kidney with the urinary bladder.
- **Urinary bladder** - Urine is stored in urinary bladder untill it is passed out (muscular, under nervous control).
- **Urethra** - Transports urine out of the body.

**NEPHRON** - the structural and functional unit of kidney. Each kidney has millions of nephrons.



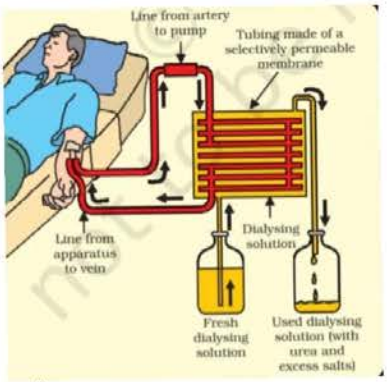



**Glomerular filteration** - Nitrogenous wastes, glucose, water, amino acid, excessive salts from the blood are filtered and initial filtrate enters into Bowman Capsule of the nephron.

**selective Reabsorption** - useful substances like glucose, amino acids, salts and a major amount of water from the fitrate are reabsorbed back by capillaries surrounding the nephron.

**Tubular secretion** - Urea, extra water and salts are secreted into the tubule which open up into the collecting duct and then into the ureter.

## ARTIFICIAL KIDNEY (HEMODIALYSIS)




- In case of kidney failure, an artificial kidney can be used.
- An artificial kidney removes nitrogenous waste products from the blood through dialysis.
- Artificial kidney → No reabsorption involved

- Dialysing fluid - same osmotic pressure as blood (without nitrogenous wastes)
- Used dialysing solution → rich in urea and excess salts.

## Excretion in plants

- oxygen and carbon dioxide → by diffusion through stomata.
- Excess water → removed by transpiration.
- shedding of old leaves.
- Plants also secrete some waste substances into the soil around them.

# 100% Exam Paper yahi se hoga

**1. Which of the following organisms exhibits saprotrophic nutrition?**
a) Mango tree
b) Amoeba
c) Mushroom
d) Paramecium

(CBSE 2021, 2020, 2017)

**2. Which of the following organisms shows parasitic mode of nutrition?**
a) Amoeba
b) Algae
c) Mushroom
d) Cuscuta

(CBSE 2023, 2021, 2019)

**3.What is photosynthesis? Identify the organelle and the organs where it occurs, explain the process using the balanced equation, and state the source of the oxygen released during this process.** (CBSE 2021, 2022, 2023, 2024)

The process by which green plants make their own food from carbon dioxide and water by using sunlight energy in the presence of chlorophyll is called photosynthesis.

a) organelle - Chloroplast b) organ - Leaf

$$6CO_2 + 12H_2O \xrightarrow[\text{Sunlight}]{\text{Chlorophyll}} C_6H_{12}O_6 + 6H_2O + 6O_2$$

The source of Oxygen released is the splitting of Water molecules into Hydrogen and Oxygen

**4. A student sets up an experiment to show that carbon dioxide is necessary for photosynthesis. He places a potted plant in a transparent air-tight bell jar. Inside the jar, he also keeps a watch glass containing potassium hydroxide (KOH).**
**(a) What is the role of KOH in this experiment?**
**(b) Why is the plant kept in sunlight after setting up the apparatus?**
**(c) What result will confirm that $CO_2$ is necessary for photosynthesis?**


(CBSE 2024, 2023,2022, 2020)

**a) KOH absorbs any Carbon dioxide present in jar**
**b) To provide sunlight. So as to make sure that all other conditions for Photosynthesis are satisfied.**
**c) After few hours , if we test leaves with iodine solution , they dont turn ble black , proving no starch is formed and hence no photosynthesis occured**

**5.Name the type of nutrition exhibited by Amoeba. Explain how food is taken in and digested by this organism.** (CBSE 2023)

Amoeba exhibits Holozoic Nutrition.
Amoeba takes in food using temporary finger-like projections of the cell surface called Pseudopodia .
Food vacuoles are formed : enzymes are secreted which brekas down complex substances → simpler soluble substances
The digested food is absorbed in cytoplasm by diffusion. Undigested food moves to cell surface & thrown out.

**6. Differentiate between Amoeba and Paramecium based on:**
**1. Mode of nutrition 2. Locomotion (movement)** (CBSE 2024, 2022, 2020, 2019)

| | Amoeba | Pramecium |
|---|---|---|
| Mode of Nutrition | Holozoic , takes in food using finger like extension Pseudopodia | Holozoic , food is moved to a specific spot using hair like structure Cilia |
| Locomotion | Finger like projection Pseudopodia helps in movement | Hair like structures Cilia helps in movement |

**7. State the role of the following in human digestive system:**
**(a) Hydrochloric acid** Gastric Gland
**(b) Bile** Liver
**(c) Pepsin**

(CBSE 2024, 2022, 2020)

a) Hydrochloric acid → creates acidic medium for enzyme pepsin & Kills bacteria or germs

b) Bile - makes acidic food coming from stomach alkaline & emulsification of fats → breaks down fats into smaller globules

c) Pepsin → protein digesting enzyme

**8. In human beings, when the process of digestion is completed, the (i) proteins, (ii) carbohydrates, and (iii) fats are respectively finally converted into:**
**(a) (i) Amino acids, (ii) glucose and (iii) fatty acids**
**(b) (i) Amino acids, (ii) glucose, (iii) acids and glycerol**
**(c) (i) Glucose, (ii) fatty acids and glycerol, (iii) amino acids**
**(d) (i) Sugars, (ii) amino acids, (iii) fatty acids and glycerol**

FCP

(CBSE 2024, 2022, 2020)

**9. Which enzyme is secreted in the mouth and what does it digest?**
**a) Pepsin – proteins**
**b) Amylase – starch**
**c) Lipase – fats**
**d) Trypsin – proteins**

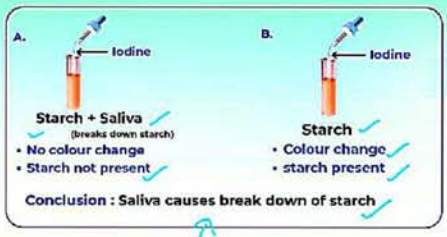
(CBSE 2025, 2023, 2021, 2019)

**10.What are villi? How do they help in absorption of food?** (CBSE 2024,2022,2021,2020)

Villi are lots of finger-like projections , present on inner lining of Small intenstine.
Villi increases surface area for absorbtion
They are supplied with blood vessels (capillaries) , through which absorbed food is supplied to all cells of body.

**11.In human alimentary canal, the specific enzyme/ juice secreted in locations (i), (ii) and (iii) are**
**(a) (i) Amylase (ii) Pepsin (iii) Bile**
**(b) (i) Amylase (ii) Bile (iii) Trypsin**
**(c) (i) Lipase (ii) Amylase (iii) Pepsin**
**(d) (i) Trypsin (ii) Bile (iii) Amylase**

(CBSE 2022)




**12. What is the name of the enzyme found in the fluid of our mouth cavity, and which gland produces it? Explain the action of saliva on food with the help of an activity.**

(CBSE 2024, 2023)

**13. Complete the following pathway showing the breakdown of glucose.**

Glucose (6-carbon molecules) —(In cytoplasm)→ (i) ? (3-carbon molecule + energy) —(Presence of $O_2$ in mitochondria)→ (ii) ? + $H_2O$ + Energy

(CBSE 2024, 2022, 2020)

**14. Name the substances whose build up in the muscles during vigorous physical exercise may cause cramps?**
**(a) Ethanol + Carbon dioxide + Energy**
**(b) Lactic acid + Energy**
**(c) Carbon dioxide + Water + Energy**
**(d) Pyruvate**

(CBSE 2024, 2022,2020)

**15. Which gas is released during anaerobic respiration in yeast?**
**a) Oxygen**
**b) Carbon dioxide**
**c) Hydrogen**
**d) Nitrogen**

(CBSE 2024, 2022, 2019, 2016

**16. Describe the exchange of gases in alveoli and Why are alveoli richly supplied with blood vessels?**

(CBSE 2024, 2022, 2020, 2018)

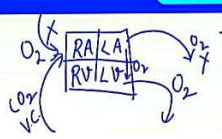
**17. Which of the following statements about respiration in plants is correct?**
**a) Respiration in plants occurs only during the daytime.**
**b) Oxygen is not required for respiration in plant cells.**
**c) Only leaves carry out respiration in plants.**
**d) Both photosynthesis and respiration occur in leaves during the day.**

(CBSE 2025, 2024, 2021, 2019)

18. Which of the following statement(s) is (are) true about the human heart?
(A) Right atrium receives oxygenated blood from lungs through pulmonary artery.
(B) Left atrium transfers oxygenated blood to left ventricle which sends it to various parts of the body.
(C) Right atrium receives deoxygenated blood through vena cava from upper and lower body.
(D) Left atrium transfers oxygenated blood to aorta which sends it to different parts of the body.

(CBSE 2025, 2023, 2022, 2020)

(a) (A)
(b) (A) and (D)
(c) (B) and (C)
(d) (B) and (D)




19. States reasons for the following:
(i)The muscular walls of the ventricles are thicker than those of the atria.
(ii) arteries have thick and elastic walls
(ii) Circulation of blood in aquatic vertebrates differs from that in terrestrial vertebrates

(CBSE 2024, 2022, 2020, 2019)

i) The walls of the ventricles are thicker than the walls of the atria because ventricles have to pump blood with greater Pressure

ii) Arteries carry blood from heart at high pressure so they have thick and elastic walls

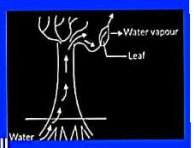
iii) Terrestrial vertebrates are warm blooded & hence require contant and high level of oxygen to maintain Temperature , so they have double circulation system.
Whereas Aquatic Vertebrates are cold blooded and do not require such high level of oxygen , so they have single circulation system.

20. What is lymph, and how does it differ from blood? (CBSE 2024, 2022)

21. The process in which transport of soluble products of photosynthesis takes place in plants is known as:
(a) Transpiration
(b) Evaporation
(c) Conduction
(d) Translocation

(CBSE 2024, 2022, 2020, 2018)

22. Observe the following diagram and identify the process and its significance from the following options:
(a) Evaporation : maintains water contents in leaf cells.
(b) Transpiration: creates a suction force which pulls water inside the plant.
(c) Excretion: helps in excreting out waste water from the plant.
(d) Translocation: helps in transporting materials from one cell to another.




(CBSE 2025, 2023, 2021, 2019)

23. State the function of each of the following in the human excretory system:
(a) Kidney (b) Ureter (c) Urinary bladder

(CBSE 2024, 2022, 2020, 2018)

24. How is urine produced in the human body? Explain the basic process of urine formation.

(CBSE 2024, 2022, 2020, 2018)

GLOMERULAR FILTRATION-Nitrogenous wastes, glucose, water, amino acid, excessive salts from the blood are filtered and initial filtrate enters into Bowman Capsule of the nephron.

SELECTIVE REABSORPTION-Useful substances like glucose, amino acids, salts and a major amount of water from the filtrate are reabsorbed back by capillaries surrounding the nephron

TUBULAR SECRETION -Urea, extra water and salts are secreted into the tubule which open up into the collecting duct & then into the ureter.

25. Write one specific function of each of the following organs in relation to excretion in human beings:
(i) Renal Artery
(ii) Urethra
(iii) Glomerulus
(iv) Tubular part of nephron"

(CBSE 2025 2022, 2020)

i) Renal Artery - Brings oxygenated blood with waste to kidneys for filtration

ii) Urethra - Helps in urine removal from body

iii) Glomerulus - Nitrogenous wastes, glucose, water, amino acid, excessive salts from the blood are filtered with help of it.

iv) Tubular Part of Nephron - helps in selective reabsorption of glucose, amino acids, salts and a major amount of water back to capillaries