

Life Processes - Class 10 Biology Notes

1. Introduction to Life Processes

Life processes are basic functions performed by living organisms to maintain life, such as Nutrition, Respiration, Transportation, and Excretion.

2. Nutrition

Nutrition is the process by which organisms obtain and utilize food for energy and growth.

Types:

- Autotrophic – Organisms make their own food (e.g. plants) by Photosynthesis.

Equation: $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$

- Heterotrophic – Organisms depend on others for food.

Types of Heterotrophic Nutrition:

- Holozoic (e.g., humans), Saprophytic (e.g., fungi), Parasitic (e.g., lice).

3. Human Digestive System

Parts: Mouth → Oesophagus → Stomach → Small Intestine → Large Intestine → Anus.

Digestive Juices: Amylase (starch), Pepsin (protein), Lipase (fats).

End Products: Glucose, Amino acids, Fatty acids, Glycerol.

4. Respiration

Respiration is the process of releasing energy from food.

- Aerobic (with oxygen): Produces $\text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$.
- Anaerobic (without oxygen): Produces Lactic acid or Alcohol.

Occurs in mitochondria (powerhouse of cell).

5. Transportation in Humans

Blood = Plasma + RBC + WBC + Platelets.

Heart: Four chambers – Right Atrium, Right Ventricle, Left Atrium, Left Ventricle.

Double Circulation: Blood passes twice through the heart in one cycle.

Vessels: Arteries (away from heart), Veins (toward heart), Capillaries (exchange).

6. Transportation in Plants

- Xylem – Transports water and minerals from roots to leaves.
- Phloem – Transports food from leaves to other parts.
- Transpiration helps in upward movement of water.

7. Excretion in Humans

Excretion – Removal of metabolic wastes from the body.

Organs: Kidneys, Ureters, Urinary Bladder, Urethra.

Nephron – Functional unit of kidney.
Steps: Filtration, Reabsorption, Secretion.

8. Excretion in Plants

Plants remove waste through transpiration, shedding old leaves, and releasing resins and gums.

9. Important Diagrams (Labelled)

- Human Digestive System
- Human Respiratory System
- Human Excretory System
- Structure of Nephron
- Transportation in Plants

10. Quick Summary Points

- Photosynthesis occurs in chloroplasts.
- Mitochondria are the site of respiration.
- Xylem = water transport, Phloem = food transport.
- Heart pumps blood in a double circulation pattern.
- Kidneys purify blood and form urine.