

ICSE CLASS 10

BIOLOGY

QUICK REVISION HANDBOOK

FREE EDITION



Key Definitions



Important Concepts



Memory Tricks



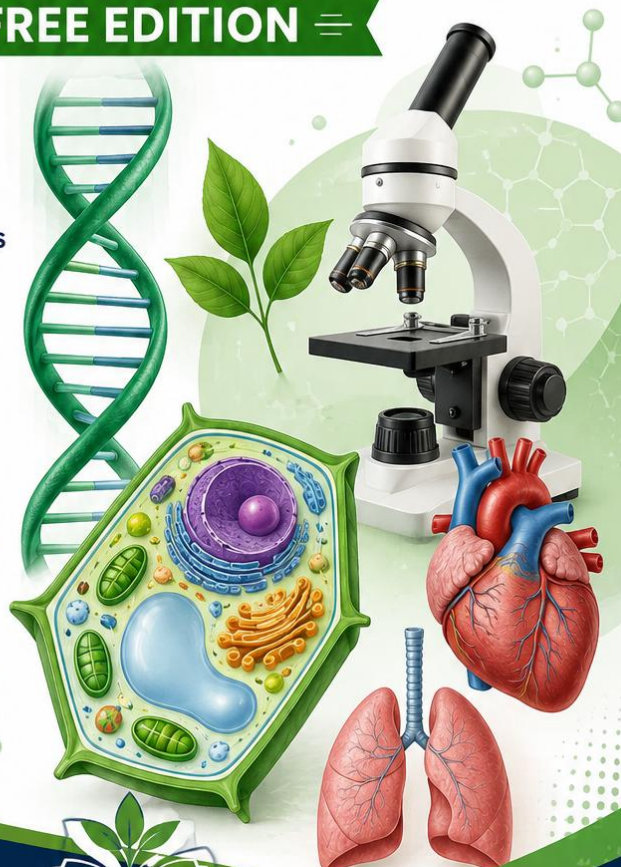
Exam Tips



Diagram Checklist



Quick Revision Questions



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- ✓ Key Definitions
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- ✓ Memory Tricks
- ✓ Exam Tips
- ✓ Quick Revision
- ✓ Practice Questions

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ICSE Class 10 Biology – Quick Revision Handbook (FREE Edition)

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Every effort has been made to ensure the accuracy of the information in this handbook. However, students are advised to refer to their prescribed ICSE textbooks and the latest syllabus for complete information.

Disclaimer

This handbook is based on the ICSE Class 10 Biology syllabus. Students should always refer to the latest official syllabus and prescribed textbooks.

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Helping Students Learn with Confidence

Welcome!

Dear Student,

Welcome to the **ICSE Class 10 Biology – Quick Revision Handbook (FREE Edition)**.

This handbook has been carefully prepared to help you revise the most important Biology concepts in a simple and organized way.

Inside this guide, you will find:

- ✓ Key Definitions
- ✓ Important Concepts
- ✓ Summary Tables
- ✓ Memory Tricks
- ✓ Exam Tips
- ✓ Quick Revision Questions
- ✓ Diagram Practice Checklist

How to Use This Handbook

1. Read one chapter at a time.
2. Learn the key definitions.
3. Study the summary tables.
4. Practise the diagrams.
5. Answer the quick revision questions.
6. Revise regularly before your examinations.

We hope this handbook helps you prepare with confidence and achieve excellent results.

Best wishes for your ICSE examinations!

Team Karthu Academy

Cell: The Fundamental Unit of Life

Key Definition

A cell is the basic structural and functional unit of life.

Important Concepts

What is a Cell?

A cell is the smallest unit capable of carrying out all the activities necessary for life. It forms the building block of all living organisms.

Cell Theory

- All living organisms are made up of one or more cells.
- The cell is the basic structural and functional unit of life.
- All new cells arise from pre-existing cells.

Biological Organisation

Level	Example
Cell	Muscle Cell
Tissue	Muscle Tissue

Level	Example
Organ	Heart
Organ System	Circulatory System
Organism	Human Being

Exam Tip

Remember the correct sequence:

Cell → Tissue → Organ → Organ System → Organism

Quick Check

1. Define a cell.
2. State any two points of the Cell Theory.

Plant Cell vs Animal Cell

Key Definition

Plant and animal cells are both eukaryotic cells, but they differ in structure and function.

Comparison Table

Plant Cell	Animal Cell
Cell wall present	Cell wall absent
Chloroplast present	Chloroplast absent
Large central vacuole	Small vacuoles
Usually rectangular	Usually round or irregular
Stores starch	Stores glycogen

Remember This

Only Plant Cells

- Cell Wall
- Chloroplast
- Large Vacuole

Present in Both

- ✓ Cell Membrane

- ✓ Cytoplasm
- ✓ Nucleus
- ✓ Mitochondria

Exam Tip

Practise drawing and labelling both cells neatly

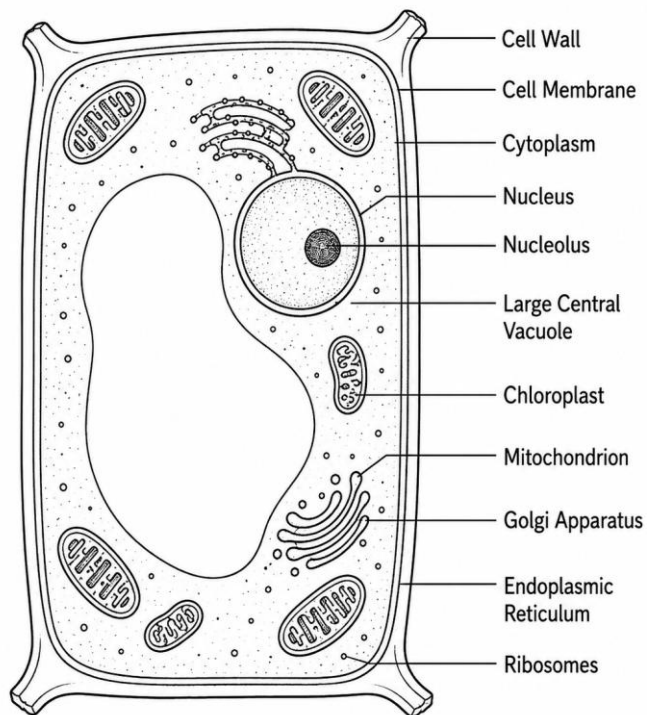
Quick Check

- 1. Name two structures found only in plant cells.**
- 2. Which organelle controls all cell activities?**

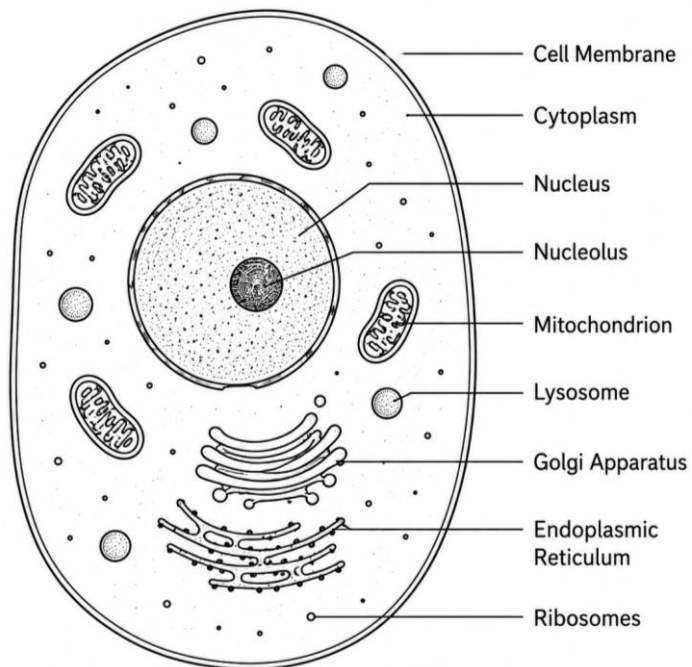
Diagram Practice

- ☐ Plant Cell
- ☐ Animal Cell

PLANT CELL



ANIMAL CELL



Cell Organelles

Key Definition

Cell organelles are specialised structures inside the cell that perform specific functions.

Summary Table

Organelle	Main Function
Nucleus	Controls cell activities
Mitochondria	Produces energy (ATP)
Ribosomes	Protein synthesis
Golgi Apparatus	Packages proteins
Endoplasmic Reticulum	Transport within the cell
Lysosomes	Digests worn-out cell parts
Vacuole	Storage
Chloroplast	Photosynthesis

Remember This

Nucleus → Brain of the Cell

Mitochondria → Powerhouse

Chloroplast → Food Factory

Lysosome → Recycling Centre

Exam Tip

Focus on the **function** of each organelle rather than trying to memorise long descriptions.

Quick Check

1. Which organelle is called the powerhouse of the cell?
2. Which organelle carries out photosynthesis?

Diagram Practice

☐ Cell Organelles

Plant Tissues

Key Definition

A tissue is a group of similar cells that work together to perform a specific function.

Types of Plant Tissues

1. Meristematic Tissue

- Cells divide continuously.
- Responsible for plant growth.
- Found in root and shoot tips.

2. Permanent Tissue

- Cells have stopped dividing.
- Perform specialized functions.

Summary Table

Tissue	Main Function
Parenchyma	Storage of food and water
Collenchyma	Flexibility and support
Sclerenchyma	Strength and rigidity
Xylem	Transports water and minerals
Phloem	Transports prepared food

Remember This

💧 **Xylem → Water**

🍃 **Phloem → Food**

Exam Tip

Questions - Differentiate between **Xylem and Phloem**. Learn their functions and direction of transport.

Quick Check

1. Which tissue transports water?
2. Which tissue provides flexibility to young stems?

Diagram Practice

- ☐ Xylem
- ☐ Phloem
- ☐ Apical Meristem

Human Blood

Key Definition

Blood is a fluid connective tissue that transports substances throughout the body and protects against disease.

Components of Blood

Component	Function
Plasma	Transports nutrients, hormones and waste
RBC	Carries oxygen using haemoglobin
WBC	Protects the body from infection
Platelets	Help in blood clotting

Remember This

RBC → Oxygen

WBC → Defence

Platelets → Clotting

Plasma → Transport

Exam Tip

Know the function of **each blood component**. These are frequently tested in ICSE Biology.

Quick Check

1. Which blood component carries oxygen?
2. What is the function of platelets?

Diagram Practice

☐ Blood smear (if prescribed)

The Human Heart & Blood Circulation

Key Definition

The heart is a muscular organ that pumps blood throughout the body.

Four Chambers

Chamber	Function
Right Atrium	Receives deoxygenated blood
Right Ventricle	Pumps blood to the lungs
Left Atrium	Receives oxygenated blood
Left Ventricle	Pumps blood to the body

Blood Flow

Body → Right Atrium → Right Ventricle → Lungs → Left Atrium
→ Left Ventricle → Body

Remember This

Right Side → Deoxygenated Blood

Left Side → Oxygenated Blood

Exam Tip

Remember the **exceptions**:

- Pulmonary artery carries **deoxygenated** blood.
- Pulmonary vein carries **oxygenated** blood.

Quick Check

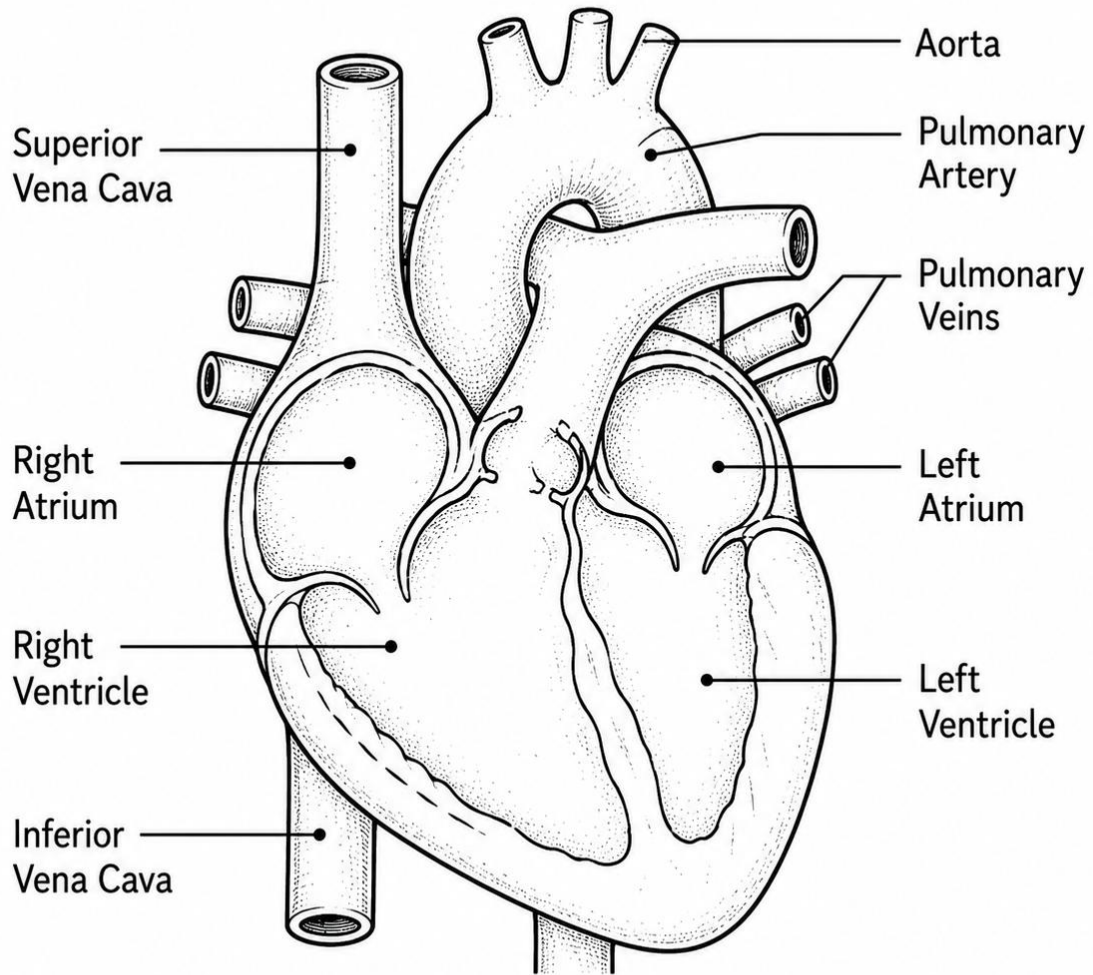
1. Which chamber pumps blood to the body?
2. Which blood vessel carries oxygenated blood from the lungs?

Diagram Practice

- ☐ Human Heart
- ☐ Double Circulation

HUMAN HEART

(Front View)



- The heart has 4 chambers – 2 atria and 2 ventricles.
- The right side of the heart contains deoxygenated blood.
- The left side of the heart contains oxygenated blood.

Human Respiratory System

Key Definition

Respiration is the process of releasing energy from food inside living cells.

Breathing is the process of inhaling oxygen and exhaling carbon dioxide.

Main Organs

Organ	Function
Nose	Filters, warms and moistens air
Trachea	Carries air to the lungs
Bronchi	Carry air into each lung
Lungs	Main organs of respiration
Alveoli	Site of gaseous exchange
Diaphragm	Helps in breathing

Remember This

Air Pathway

Nose → Trachea → Bronchi → Lungs → Alveoli

Quick Facts

- Gas exchange occurs in the **alveoli**.
- Oxygen enters the blood through the alveoli.
- Carbon dioxide leaves the blood through the alveoli.

Exam Tip

Do not confuse **breathing** with **respiration**.

Breathing = Physical process

Respiration = Release of energy

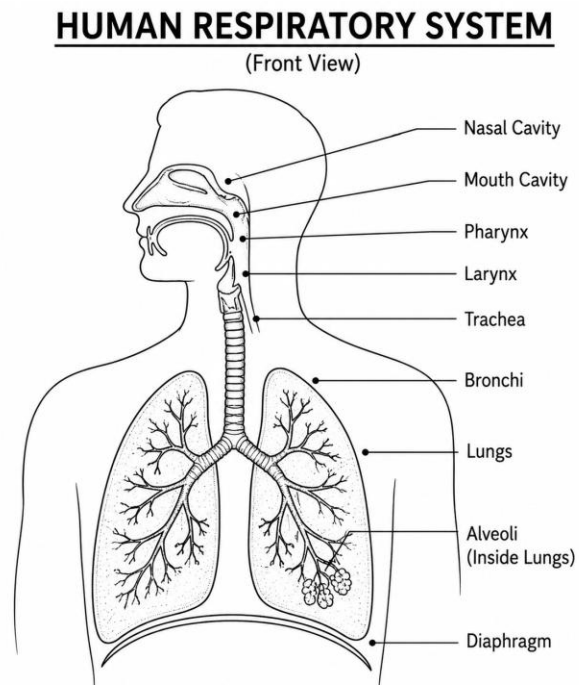
Quick Check

1. Where does gaseous exchange occur?
2. What is the function of the diaphragm?

Diagram Practice

☐ Human Respiratory System

☐ Alveolus



Human Digestive System

Key Definition

Digestion is the process of converting complex food into simple, absorbable substances.

Food Pathway

Mouth → Oesophagus → Stomach → Small Intestine → Large Intestine → Rectum → Anus

Major Organs

Organ	Function
Mouth	Begins digestion
Stomach	Digests proteins
Small Intestine	Digestion and absorption
Large Intestine	Absorbs water
Liver	Produces bile
Pancreas	Produces digestive enzymes

Remember This

Five Stages

- Ingestion
- Digestion
- Absorption
- Assimilation
- Egestion

Quick Facts

- Digestion begins in the **mouth**.
- Most absorption occurs in the **small intestine**.
- Bile helps in the digestion of fats.

Exam Tip

Learn the **food pathway** in the correct order.

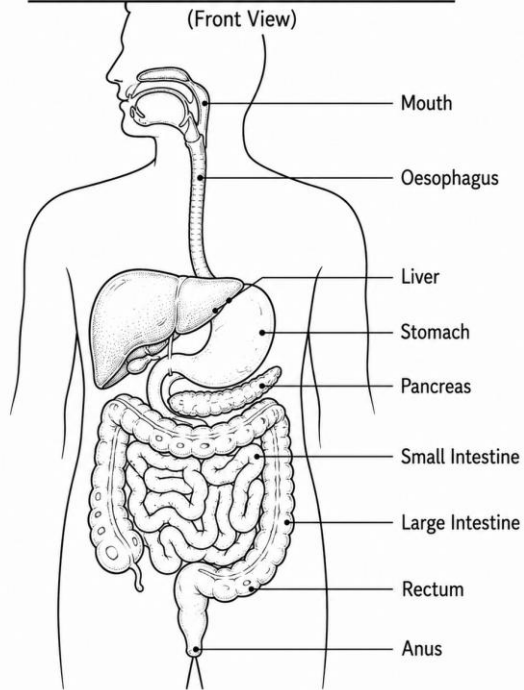
Quick Check

1. Which organ produces bile?
2. Where does most nutrient absorption occur?

Diagram Practice

☐ Human Digestive System

HUMAN DIGESTIVE SYSTEM



Human Excretory System

Key Definition

Excretion is the removal of metabolic waste products from the body.

Main Organs

Organ	Function
Kidneys	Filter blood and produce urine
Ureters	Carry urine to the bladder
Urinary Bladder	Stores urine
Urethra	Removes urine from the body

Remember This

Urine Pathway

Kidney → Ureter → Urinary Bladder → Urethra

Quick Facts

- Humans have **two kidneys**.
- The **nephron** is the functional unit of the kidney.
- Urea is the main nitrogenous waste.

Exam Tip

Remember the **three stages of urine formation**:

1. Filtration
2. Selective Reabsorption
3. Tubular Secretion

Quick Check

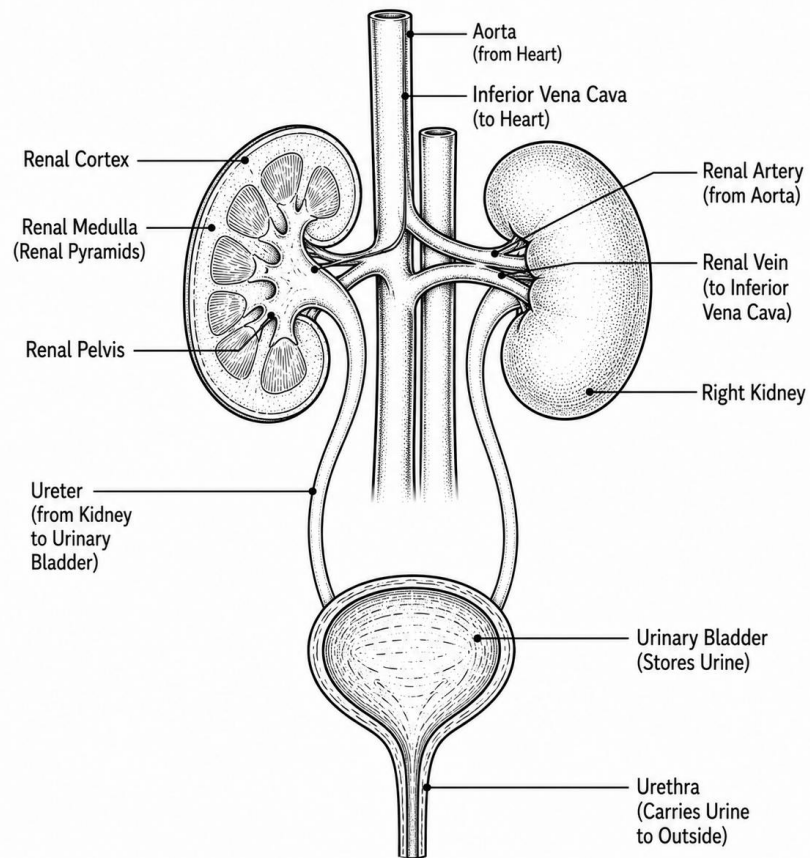
1. What is the functional unit of the kidney?
2. Where is urine stored?

Diagram Practice

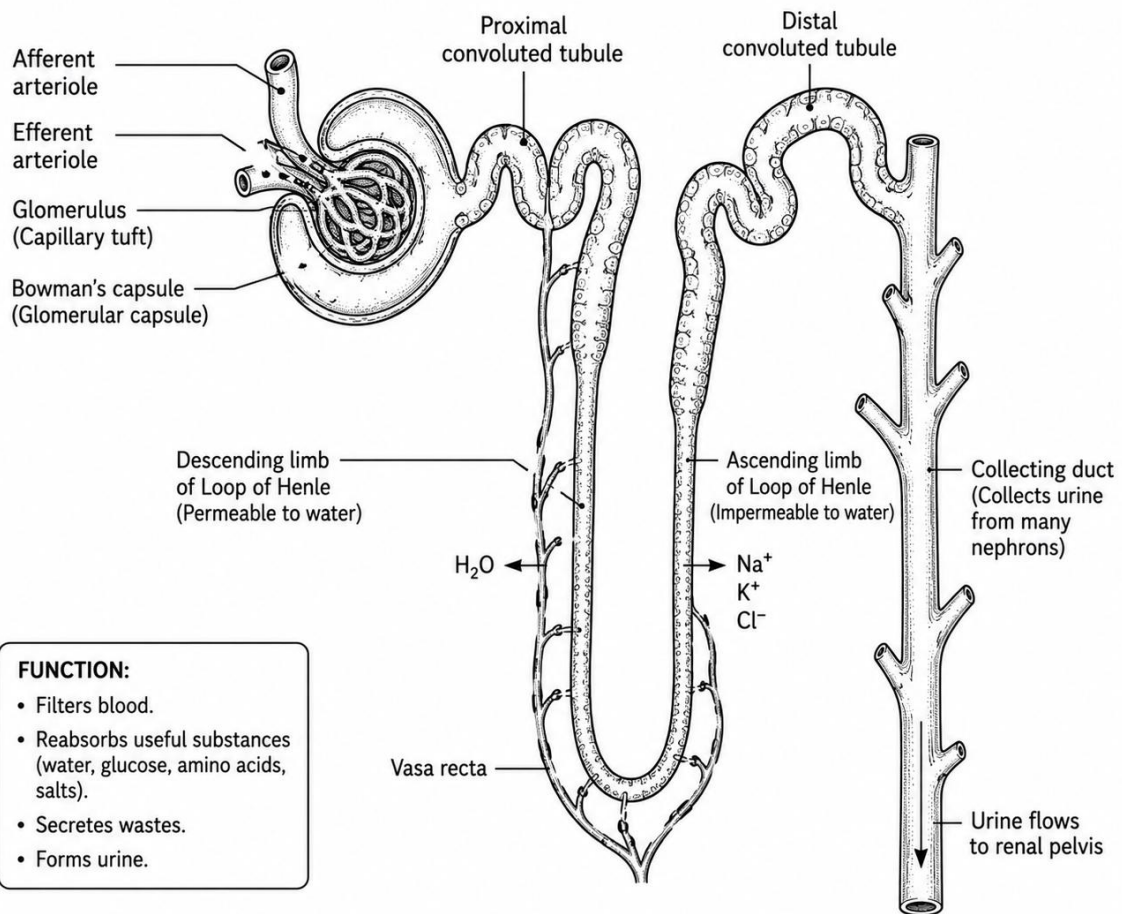
- ☐ Human Excretory System
- ☐ Nephron

HUMAN KIDNEY

(Front View)



NEPHRON



Human Nervous System

Key Definition

The nervous system controls and coordinates all the activities of the body.

It receives information from the surroundings, processes it, and sends signals to different parts of the body

Main Parts of the Nervous System

Part	Function
Brain	Control centre of the body
Spinal Cord	Carries nerve impulses and controls reflex actions
Nerves	Carry messages to and from different body parts

Parts of the Brain

Part	Main Function
Cerebrum	Thinking, memory, learning and voluntary actions
Cerebellum	Balance and coordination
Medulla Oblongata	Controls heartbeat and breathing

Remember This

Cerebrum → Thinking

Cerebellum → Balance

Medulla → Breathing & Heartbeat

Exam Tip

Reflex actions are usually coordinated by the **spinal cord**.
Learn at least **two examples**, such as:

- Withdrawing your hand from a hot object
- Blinking when dust enters the eye

Quick Check

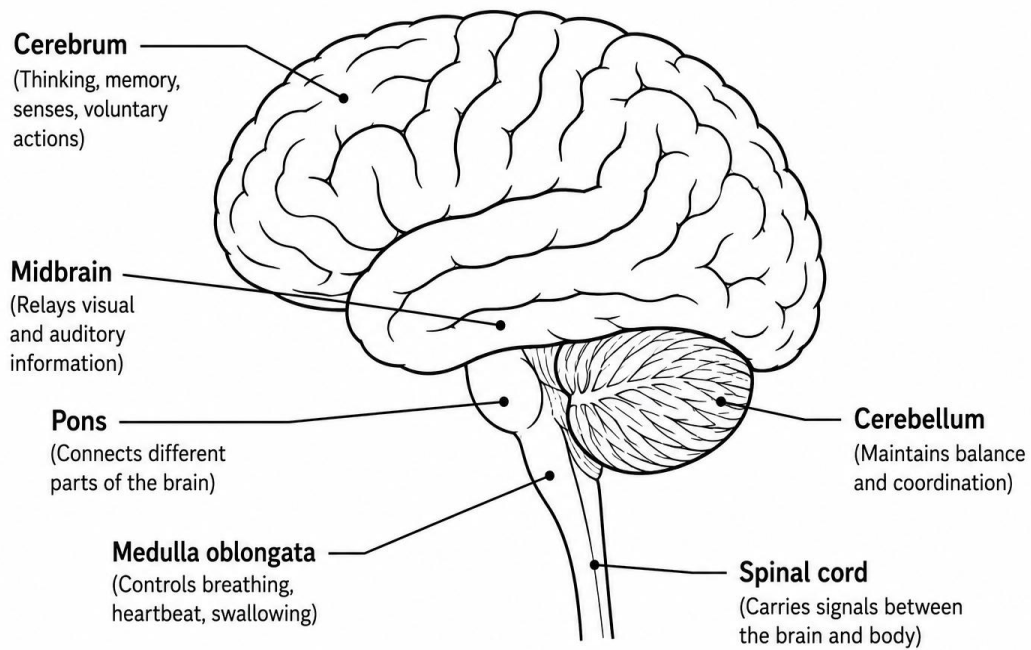
1. Which part of the brain controls balance?
2. Which part controls involuntary activities like breathing?

Diagram Practice

☐ Human Brain

☐ Reflex Arc (if included in your syllabus)

HUMAN BRAIN



Important Biology Definitions

Quick Revision

Term	Definition
Cell	Basic structural and functional unit of life
Tissue	Group of similar cells performing a specific function
Organ	Group of tissues working together
Organ System	Group of organs performing a major function
Respiration	Release of energy from food inside living cells
Digestion	Breakdown of complex food into simple substances
Absorption	Movement of digested nutrients into the bloodstream
Excretion	Removal of metabolic waste products
Circulation	Continuous movement of blood in the body
Reflex Action	Quick, automatic response to a stimulus
Nephron	Functional unit of the kidney
Haemoglobin	Oxygen-carrying pigment in red blood cells

Remember These Sequences

Biological Organisation

Cell → Tissue → Organ → Organ System → Organism

Food Pathway

Mouth → Oesophagus → Stomach → Small Intestine → Large Intestine → Rectum → Anus

Urine Pathway

Kidney → Ureter → Urinary Bladder → Urethra

Blood Flow (Simplified)

Body → Heart → Lungs → Heart → Body

Exam Tip

Practise writing definitions in one clear sentence using the terminology from your prescribed ICSE textbook.

Final Revision & Exam-Day Checklist

Last-Minute Revision Checklist

Before your exam, make sure you can:

- ☐ Define important biological terms.
- ☐ Explain the functions of major organs.
- ☐ Differentiate between plant and animal cells.
- ☐ Identify the functions of important cell organelles.
- ☐ Recall important biological sequences.
- ☐ Draw and label the prescribed diagrams neatly.
- ☐ Answer short-definition questions confidently.

Important Diagrams to Practise

- ☐ Plant Cell
- ☐ Animal Cell
- ☐ Human Heart
- ☐ Human Brain

- ☐ Human Digestive System
- ☐ Human Respiratory System
- ☐ Human Excretory System
- ☐ Nephron (if prescribed)

Final Practice Questions

1. What is the functional unit of the kidney?
2. Name the four chambers of the heart.
3. Which blood vessel carries oxygenated blood from the lungs to the heart?
4. What is the function of xylem?
5. Where does gaseous exchange take place?
6. Which part of the brain controls balance?

Exam-Day Tips

- Read every question carefully before answering.
- Write definitions clearly and concisely.
- Draw neat, labelled diagrams using a pencil.
- Manage your time wisely.
- Leave a few minutes at the end to review your answers.

Best Wishes!

Success in Biology comes from **understanding concepts, regular revision, and consistent practice.**

Thank you for using the **ICSE Class 10 Biology – Quick Revision Handbook (FREE Edition).**

We wish you every success in your ICSE examinations!

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