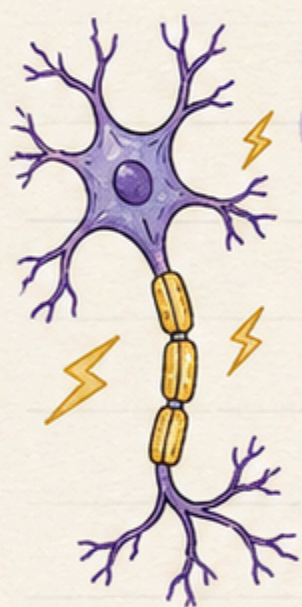




CHAPTER 6 - CONTROL AND COORDINATION

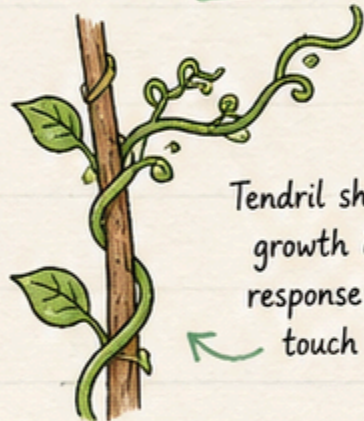
♥ Nervous System • Plant Coordination • Hormones ♥



Nervous System

- Neuron
- Brain
- Spinal cord
- Sensory & Motor nerves

Plant Coordination



Tendrils show growth in response to touch

Hormones



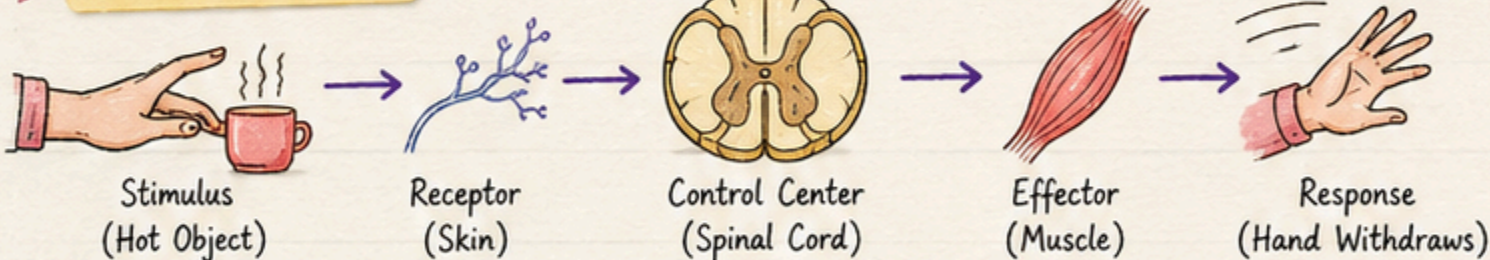
Chemical messengers that regulate body functions

Quick Revision Chapter

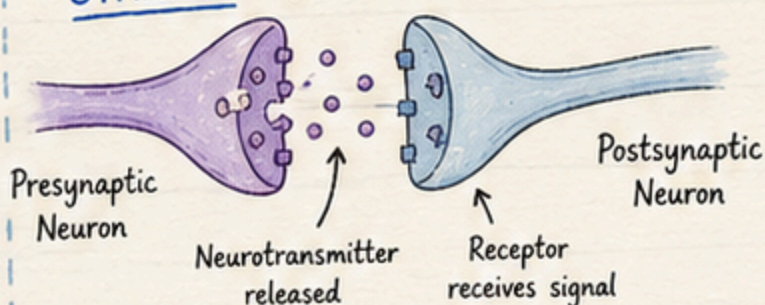
Important for Exams

Mind Map + MCQs Included

REFLEX ARC



SYNAPSE - Junction between two neurons



KEY TAKEAWAY ♥

Control and coordination help organisms respond to changes and maintain balance.

Think → Understand → Remember → Excel

CONTROL & COORDINATION

— OVERVIEW —



- All living organisms show **MOVEMENT** at some stage of their life.
- They **RESPOND** to changes in the environment to survive.
- These activities are controlled and coordinated by special systems.
- Multicellular organisms have specialised **TISSUES, ORGANS** and **SYSTEMS** for control and coordination.
- In animals → **Nervous system** and endocrine system (hormones)
- In plants → Responses are slower but well-coordinated.

Control and coordination help organisms maintain internal balance (homeostasis) and adapt to their surroundings.

IMPORTANT CONCEPT

Control & coordination enable organisms to:

- ✓ Detect changes
- ✓ Process information
- ✓ Respond appropriately
- ✓ Maintain balance for survival

From simple responses in plants to complex actions in animals → all are beautifully coordinated!



NERVOUS SYSTEM

- Composed of neurons.
- Rapid communication by electric impulses.
- Helps in quick responses like reflex actions.
- Brain, spinal cord and nerves form the system.

Example:
Withdrawing hand on touching a hot object.



CONTROL & COORDINATION

PLANT RESPONSE

- Plants lack nervous system and muscles.
- Respond through growth and movement.
- Responses are slower due to chemical signals.
- Controlled by plant hormones.

Example:
Tendrils of pea plant coil around a support.



HORMONES

- Hormones are chemical messengers.
- Produced in endocrine glands.
- Carried by blood to target organs.
- Regulate growth, mood, metabolism, reproduction and more.

Example:
Adrenaline helps in emergencies (flight or fight).



QUICK SUMMARY

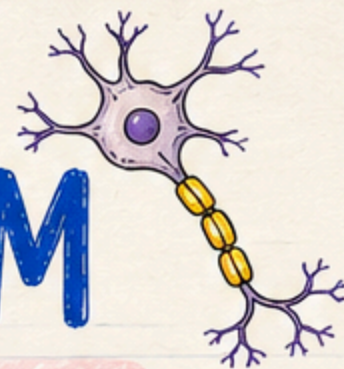
- ★ Living things detect changes and respond.
- ★ This is possible due to control & coordination.
- ★ Animals use nervous system & hormones.
- ★ Plants use hormones for coordination.
- ★ These systems help maintain balance and ensure survival.

REVISION CORNER

- ① Main need → To respond and survive
- ② Main systems in animals → Nervous system and Hormonal system
- ③ Plants cannot run away → They respond through growth and hormones
- ④ Key idea → Detect → Process → Respond



ANIMALS - NERVOUS SYSTEM



Nervous and muscular tissues provide control and coordination in animals. ♥

1 SENSORY RECEPTORS

- Specialised cells that detect changes in the internal or external environment.
- They convert stimuli into electrical impulses and send the information to the nervous system.

- Gustatory receptors - detect taste.
- Olfactory receptors - detect smell.



2 ELECTRICAL IMPULSE FORMATION

- When a receptor is stimulated, it generates an electrical impulse.
- This impulse travels through the neuron as an electrochemical signal.
- Impulses are the language of the nervous system.

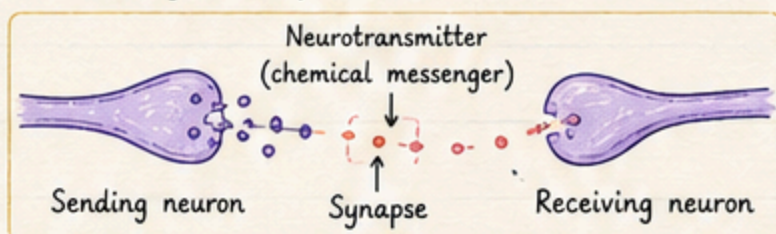
4 PATHWAY OF IMPULSE

Dendrite → Cell body → Axon → Nerve ending

- This is the route followed by an electrical impulse in a neuron.

5 SYNAPSE - COMMUNICATION POINT

- The end of one neuron is separated from the next neuron by a tiny gap called synapse.
- Neurotransmitters are chemical messengers released in the synapse.
- They cross the gap and bind to the next neuron, continuing the impulse.



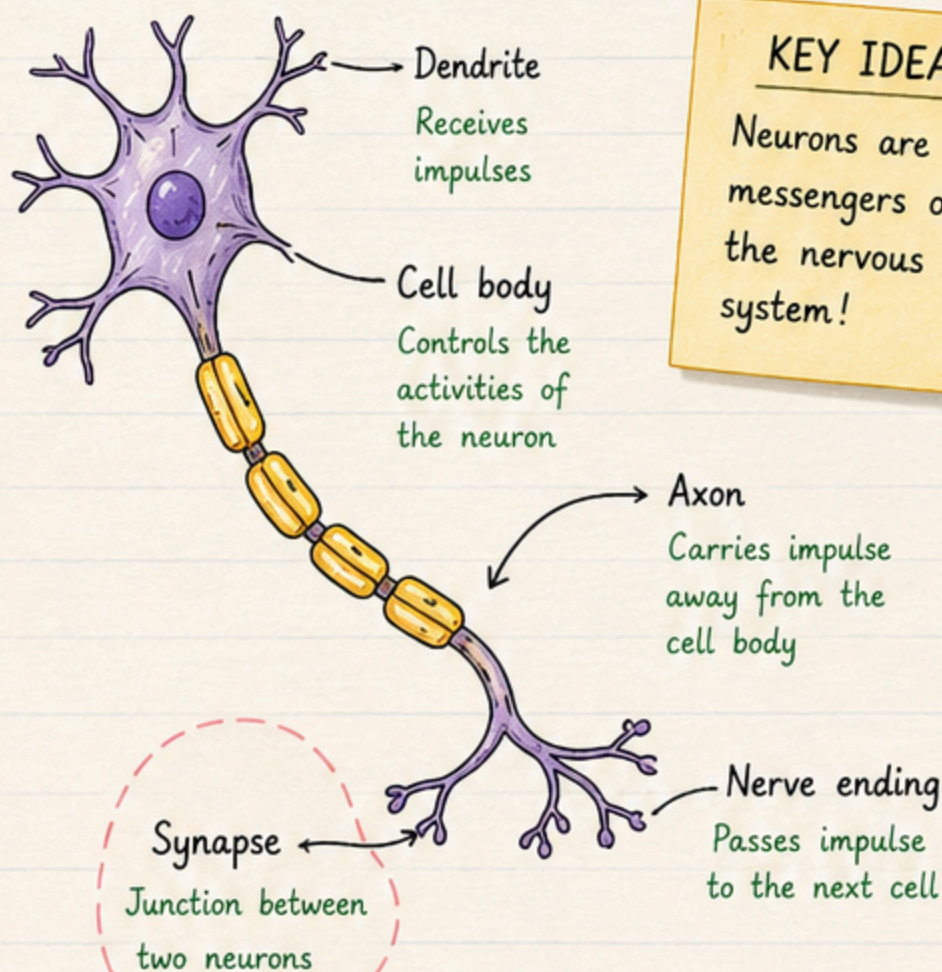
6 NEUROMUSCULAR JUNCTION

- The junction between a motor neuron and a muscle fibre.
- It transfers the impulse from neuron to muscle.
- Leads to muscle contraction and movement.



Motor neuron ending
Muscle fibre

3 THE NEURON - STRUCTURAL UNIT



KEY IDEA ★

Neurons are the messengers of the nervous system! ♥

TYPES OF RECEPTORS ★

RECEPTOR	FUNCTION
Gustatory	Taste
Olfactory	Smell

QUICK REVISION ♥

- ✓ Receptors detect stimuli.
- ✓ Impulses are electrical signals.
- ✓ Impulse pathway: Dendrite → Cell body → Axon → Nerve ending.
- ✓ Synapse allows communication between neurons.
- ✓ Neuromuscular junction transmits impulse to muscles. ★