

**LESSON PLAN - SCIENCE**

<b>1.</b>	<b>Topic – Control and coordination</b>		
<b>2.</b>	<b>Logistics</b>	<b>No. Of Periods -9</b>	<b>Class- 10<sup>th</sup></b>
<b>3.</b>	<b>Objectives</b>	<b>General Objectives</b> <a href="#"><u>GENERAL OBJECTIVES.docx</u></a> <b>To comprehend</b> <b>1 Remembering: knowledge based</b> <b>2 Understanding: Comprehension</b> <b>3 Application: interpretation</b> <b>4 High order thinking skills: Analysis and synthesis</b> <b>5 Evaluation and multi-disciplinary</b> <b>6 Justifying the value of a decision or outcome</b>	<b>Specific Objectives</b> <a href="#"><u>SPECIFIC OBJECTIVES.docx</u></a> <b>At the end of lesson students will be able to</b> <b>1) Understand Chemical coordination in plants.</b> <b>2) Define and differentiate b/w nastic and tropic movements in plants.</b> <b>3) Understand the importance of different tropic movements in the growth of plants.</b> <b>4) Explain the role of phytohormones in controlling one or the other aspect of growth of plant.</b> <b>5) Differentiate b/w nervous and endocrine system in animals.</b> <b>6) Understand the structure of neuron and label its parts and explain their roles in conduction of nerve impulses.</b> <b>7) Know the importance of reflex actions and its reflex arc.</b> <b>8) Understand the structure and function of brain and spinal cord and their role in controlling different activities of human body.</b> <b>9) Get the knowledge of human endocrine glands and their hormonal secretions.</b>
<b>4.</b>	<b>Pre – Topic Requirement</b>	<b>Book Reading Previous Knowledge Required</b>	
<b>5.</b>	<b>Methodology (General Throughout The Topic)</b>	1- Classroom discussion method 2) Debriefing 3) Class room discussion method 4) Picture method 5) Lecture cum discussion method 6) Hands out worksheets	
	<b>Terminology</b>	Dendrites- Synapse –Receptor- Reflex action- Reflex arc- Cerebrum- Nastic movements- Tropic movements- Phyto hormones- Hormones- Pituitary gland- Dormancy-	

6.	Day 1	<b>Introductory Activity- Previous knowledge testing by asking simple questions from daily surroundings</b>
		<b>Methodology – Class room discussion method</b>
		<b>Teaching Aids required –Smart board contents, chalk-board.</b>
		<p style="text-align: center;"><b>Content <u>PLANT MOVEMENTS</u></b></p> <p>The changes in the environment to which the organisms respond and react are called stimuli.</p> <p>Control and coordination in plants is not as elaborate as in animals. Plants do not have nervous system, muscles and sense organs like the animals. Still, they can respond and react to various stimuli such as light, gravity, water, touch etc. Plants, in fact, show two different types of movements in response to various stimuli.</p> <p>Plants coordinate their responses against environment stimuli by using hormones.</p> <p>Plants, thus, possess only <u>chemical coordination</u>.</p> <p>Growth and movements in plants are regulated by both external and internal (hormones) factors.</p> <p><b><u>Plant movements</u></b></p> <p>Plants generally show movements at a very slow rate. The higher plants are fixed. They, therefore, show movements of their organs only.</p> <div style="text-align: center;"> <p><b><u>Movements</u></b></p> <p>↓</p> <hr style="width: 100%; border: 0.5px solid black;"/> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>↓</p> <p>Tropic movements or <b>Tropisms:-</b>These are directional Movements of a specific part of plants Revealing growth in response to External stimuli. Tropic movements are very slow.</p> </div> <div style="width: 10%; text-align: center;"> <p>↓</p> </div> <div style="width: 45%;"> <p>↓</p> <p>Nastic movements These are the movements that do not involve growth.</p> </div> </div> </div> <p>If the movement of the plant part is towards the stimulus, it is termed as +ve tropism. If the movement of the plant part is away from stimulus, it is termed as -ve tropism.</p>
<p><b>Home task</b></p> <p><b>Q1) How do plants coordinate their activities and movements? What is the term used for such type of coordination?</b>  <b>Ans) By hormones. This type is called chemical coordination.</b></p> <p><b>2) What are tropic movements?</b>  <b>Ans) Directional movements of specific part of plant parts revealing growth in response to external stimuli.</b></p>	<p><b>1. Pre Topic Requirement</b>  <b>Some general examples from surroundings</b></p> <p><b>2. Reading For Next Day</b>  <b>Read page no.</b></p> <p><b>3. One Open Ended Question</b>  <b>Differentiate between tropic and nastic movements</b></p>	
Day 2	<b>Introductory Activity- Discussion among students on activity based on phototropism.</b>	
<b>Methodology</b> <b>Classroom discussion method</b>		
<b>Teaching Aids required- Smart board contents, chalk-board.</b>		
<b>Content</b> <b><u>Types of Tropism</u></b> <b>(A) <u>Phototropism</u></b> :- it is the directional movement of the plant part in response to		

		<p>light stimulus stem moves towards light thus shows +ve phototropism roof of a plant away from light thus show –ve phototropism.</p> <p><b>(B) Geotropism:-</b> This is response to gravity. Roots move downward in the soil in the direction of gravity +ve geotropism shoot of a plant move away from gravity so -ve tropism.</p> <p><b>(C) Hydrotropism:-</b> It is the directional movement of the plant part in response to water stimulus. <u>Bending of roots</u> of the plant towards water signifies <u>+ve hydrotropism</u>.</p> <p><b>(D) Chemotropism:-</b> This is response to chemical stimulus. During the process of fertilization, growth of <u>pollen tube</u> towards the ovule in the ovary is an example of <u>+ve chemotropism</u>.</p> <p><b>(E) Thigmotropism:-</b> Directional movement due to growth in response to touch.  <b>Example:-</b> The movement of stem (tendrils) around the support___ +ve thigmotropism.</p> <p><b>Nastic movements:-</b> These movements are <u>very fast</u>.</p> <p><b>(A) Thigmonasty:-</b> Response towards touch.  <b>Eg.</b> If we touch the leaves of Chui Mui plant with our finger, we find that all its leaves immediately fold up and drop.</p> <p><b>(B) Photonasty:-</b> eg. Dandelion flower. It opens up in the morning in bright light and closes in the evening when the light fades.</p>		
		<table border="1"> <tr> <td data-bbox="440 884 1008 1423"> <p><b>Home Task</b></p> <p>1) Give an example of positive geotropism.  2) Give an example of nastic movement.  3) What is hydrotropism?</p> </td> <td data-bbox="1008 884 1443 1423"> <p><b>1. Pre Topic Requirement</b>  Students have the basic knowledge about the growth pattern in plants.</p> <p><b>2. Reading For Next Day</b>  Read pg no.</p> <p><b>3. One Open Ended Question</b>  What causes the drooping of leaves of <i>Mimosa pudica</i> when touched? Name and explain the phenomena involved.</p> </td> </tr> </table>	<p><b>Home Task</b></p> <p>1) Give an example of positive geotropism.  2) Give an example of nastic movement.  3) What is hydrotropism?</p>	<p><b>1. Pre Topic Requirement</b>  Students have the basic knowledge about the growth pattern in plants.</p> <p><b>2. Reading For Next Day</b>  Read pg no.</p> <p><b>3. One Open Ended Question</b>  What causes the drooping of leaves of <i>Mimosa pudica</i> when touched? Name and explain the phenomena involved.</p>
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Day 3		<p><b>Introductory Activity- Practice of terminology</b></p> <p><b>Methodology- Discussion</b>  Real life discussion  Scientific talk</p> <p><b>Teaching Aids required- Smart board contents, chalk-board.</b></p> <p><b>Content</b>  <u><b>Plant Hormones (Phytohormones)</b></u>  These are naturally occurring organic chemical substances present in plants which bring about control and coordination of various activities in them.  Now a days several manufactured chemicals (synthetic plant hormones) are also available.  <u><b>Phytohormones are:</b></u>  1. Auxins 2. Gibberlins 3. Cytokinins 4. Abscisic acid 5. Ethylene  <b>(1) Auxins:-</b> These are present at growing ( main growth tip of every vegetative</p>		

part regulator) of plant.

**Functions:-** (a) This promote cell enlargement  
(b) Promote stem and fruit growth  
(c) Regulate important plant growth movements (tropisms).

**(2) Gibberlins:-**

- (a) These promote cell enlargement
- (b) These also promote growth in stems and fruits.

**(3) Cytokinins:-**

- (a) These promote cell division in plants
- (b) Help in breaking dormancy of seeds and buds.
- (c) promote the opening of stomata.

**(4) Absciscic Acid:-** Its a growth inhibitors.

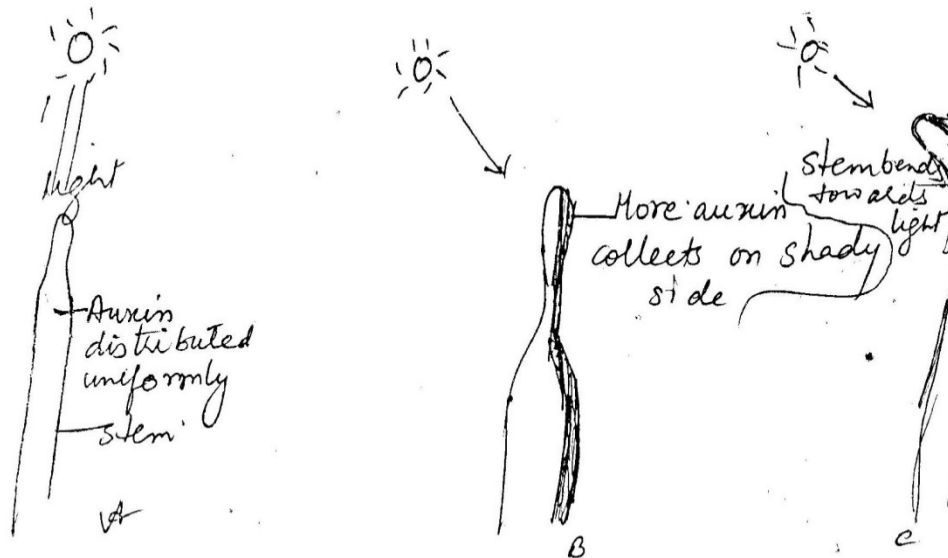
- (a) it promotes dormancy in seeds.
- (b) Promotes closing of stomata.
- (c) it promotes falling of leaves.

**(5) Ethylene (ethene):-** It is gaseous hormone in plants.

- (a) It promotes growth and ripening of fruits.
- (b) Helps in breaking dormancy in seeds.

**DORMANCY:-** It is inactive condition of seed when it fails to germinate even through the environmental conditions usually considered favourable for active growth are present.

#### **Role of auxin in phototropic movements**



#### **Role of auxin in thigmotropic movements**

The movement of tendril around the support is caused by the action of auxin. More auxin is diffused from its side of synthesis towards the side of the tendril away from the support that the side in contact with the support. This causes the tendril to circle around the support.

	<b>Home task</b> 1) Name any two phytohormones. 2) Name the plant hormone that inhibits the growth of plants. 3) Which plant hormone promotes ripening of fruits? 4) Name the plant growth hormone which is synthesized at the shoot tip.	<b>1. Pre Topic Requirement</b> Memorise the plant hormones and their functions <b>2. Reading For Next Day</b> Read page no. <b>3. One Open Ended Question</b> a) Is there any harm caused
	<b>Day 4</b>	<p><b>Introductory Activity-</b>Ask the students to tell some points about velocity the tell them to compare these points with speed.</p> <p><b>Methodology</b>  1-Actively involve students in their own learning.  2-Help students to develop a conceptual framework as well as to develop problem solving skills.  3-Promote student discussion and group activities.</p> <p><b>Teaching Aids required-</b> Smart board contents, chalk-board.</p> <p><b>Content</b>  <b><u>COORDINATION IN ANIMALS</u></b>  In lower multicellular animals, the coordination takes place through nervous system. However in higher animals, coordination takes place through two types of control systems : nervous system and endocrine system.  <b><u>Nervous system:-</u></b> This system is composed of specialized cells called neurons which exercise control by sending electrical signals called nerve in pulses. The nervous control is speedy.  <b><u>Endocrine system:-</u></b> This consists of specialized glands (endocrine glands) which bring about control by sending chemical messengers termed hormones. The hormonal control is slow acting.</p> <p><b><u>Chemical coordination in Animals:</u></b>  <b>(Nervous System)</b>  <b><u>Hormones:-</u></b> These are chemical substances secreted by ductless glands (endocrine glands) in specific part of the body in response to changes in external or internal environment.  <b><u>Features of hormones:</u></b>  (a) These act as chemical messengers.  (b) These are secreted by endocrine glands in small amounts.  (c) These act on specific organs called target organs.  (d) Hormonal action is slow.  <b><u>Types of Glands:</u></b>  <b><u>Gland:-</u></b> This is cell, a tissue, or an organ which secretes certain useful chemical compounds required for particular function.  (1) <b><u>Exocrine Glands:-</u></b> These have ducts to pour their secretions on to the body surface or into the cavities in the body. Eg. Sweet glands, Salivary glands, gastric glands in stomach etc.  (2) <b><u>Endocrine Glands:-</u></b> These are ductless glands that pour their secretions (hormones) directly into the blood stream. Eg. Pituitary glands, thyroid glands etc.  (3) <b><u>Heterocrine Glands:-</u></b> These glands consist of both exocrine tissue and endocrine tissue. Eg. <u>Pancreas-</u> its endocrine portion secretes <u>insulin</u> and <u>glucagon hormones</u>. On the other hand, its exocrine portion secretes</p>

		<p>pancreatic juice containing digestive enzymes into the pancreatic duct that leads to the alimentary canal.</p> <p><b>ENDOCRINE GLANDS ARE:-</b></p> <p><b>(A) Hypothalamus:-</b> It is situated at the base of brain. Its cells secretes <u>Releasing Hormones</u> and <u>Inhibiting Hormones</u>. These hormones are carried to the <u>pituitary gland</u> to stimulate and inhibit the secretion of anterior pituitary hormones.</p> <p><b>(B) Pituitary Gland:-</b> It is present just below the brain. It is a small, red-grey, pea shaped gland attached to the hypothalamus of brain by a stalk.</p> <p>It secretes <u>Growth Hormone</u>. It stimulates growth and development of all tissues by accelerating protein synthesis and cell division and by retaining calcium in the body.</p> <p><b>Disorders:</b></p> <p><b>(i) Dwarfism:-</b> It is due the deficiency of growth hormone from early age.</p> <p><b>(ii) Gigantism:-</b> It is caused due to excess secretion of growth hormone from childhood.</p>		
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the posterior surface of the thyroid gland, two in each lobe of thyroid hormone secreted by this gland is Parathormone – It regulates calcium – phosphorus balance in the blood.

(E) Adrenal Gland:- These are a pair of glands situated on upper side of each kidney. It secretes adrenaline hormone- This is also called emergency hormone. However, when a person faces stress or danger, this is secreted in large amounts to prepare the body to face emergency situations. These increase the rate of heart beat to supply more oxygen to muscles. Also, blood supply to the digestive system and skin is reduced due to contraction of muscles around small arteries in these organs to direct more blood to our muscles. The breathing rate also increases due to contraction of the diaphragm and rib muscles. Also, blood pressure, basal metabolic rate and sugar level in blood is increased. Because of the above roles of these hormones in fight- flight reaction. The adrenals are known as the glands of emergency.

(F) Pancreas:- It lies below the stomach in the loop of duodenum part of small intestine. It is elongated, yellowish heterocrine gland.

Endocrine part of pancreas secretes two hormones.

- (i) Insulin-it is secreted by  $\beta$  cells of islets of Langerhans. Insulin helps to regulate the blood glucose level. Deficiency of insulin hormone in the body cause a disease called diabetes mellitus. In this disease, a patient excretes sugar in urine.

(G) Thymus Gland:-it is situated in the upper chest near the front side of heart. It is soft, pinkish, bilobed structure and is prominent gland in young child. It secretes thymosin hormone which stimulates development of lymphocytes and thereby increases resistance to infection, however, it gradually atrophies in adult .

(H) Pineal Gland:- It is small, reddish grey, solid body lying between the two cerebral hemispheres of brain. It secretes melatonin hormone. It regulates the working of glands (reproductive organs i.e., testes in male and ovaries in female).

Testes in males: (it is male reproductive organ. It secretes hormone- Testosterone).

Functions of this hormone: (a) It stimulates formation of sperms. (b) It stimulates the development of secondary sexual characters in boys.

- (I) Ovaries:- It is female reproductive organ.

It secretes (a) Estrogen (b) progesterone

Estrogen:- Its function (a) help in formation of ova (eggs)

	<p><u>(b) It stimulates the development of secondary sexual characters in girls.</u></p> <p><u>Progesterone:- Maintenance of pregnancy.</u></p>	
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DAY 6	Introductory Activity
	Methodology
	Teaching Aid required
	<p><b>Content</b></p> <p><u>NERVOUS COORDINATION</u></p> <p style="text-align: center;">Nervous System</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>↓</p> <p>Central Nervous System</p> <p>↓</p> <div style="display: flex; justify-content: space-around;"> <p>↓</p> <p>Brain</p> </div> <p>↓</p> <p>Spinal cord</p> </div> <div style="text-align: center;"> <p>↓</p> <p>Peripheral Nervous System</p> <p>↓</p> <div style="display: flex; justify-content: space-around;"> <p>↓</p> <p>Automatic Nervous System (involuntary)</p> </div> <p>↓</p> <p>Voluntary Nervous System</p> </div> </div> <p><b>Brian:-</b> It is highest coordinating centre in the body . Brain is situated in the cranial cavity of skull in the head region of the body. The bones of cranium or brain box protect this delicate organ from mechanical injury. The brain is soft, whitish organ. It is surrounded by 3 meninges (membranes) which provide protection to it. The space between these three meninges is filled with cerebrospinal fluid. Which protects the brain from mechanical shocks</p> <p><b>Three regions of brain</b><u>Fore-brain:-</u> Main and largest part of this region is cerebrum –</p> <p><b>(A)</b> Different part of cerebrum have different functions. It controls the functioning of all (five) sense organs. This also has controls centres for hunger, thirst, fatigue, sleep body temperature, sweating and emotions.</p> <p><b>(B)</b> <u>Mid-brain:-</u> This controls reflex movements of (a) head, neck and trunk in response to visual and auditory stimuli and (b) the eye muscles ; changes in pupil size</p>



**(C) Hind-brain:-** It has 3 parts

↓  
**Cerebellium**

↓  
Second largest part of Brain. It maintains posture, Equilibrium and muscle tone.

↓  
**Pons Varolli**

↓  
It controls some aspects of respiration.

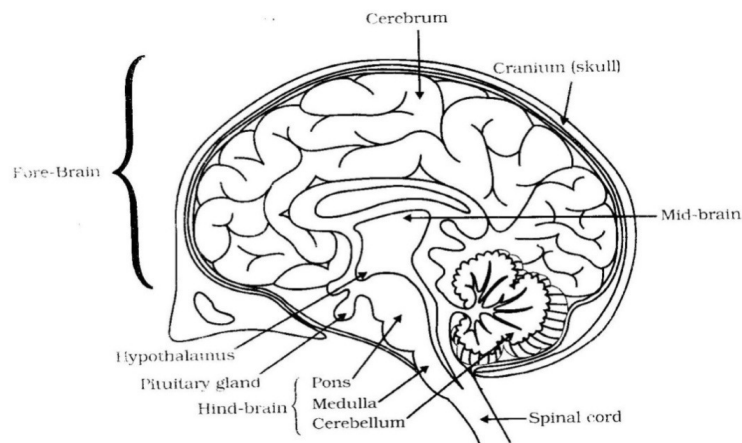
↓  
**Medulla Oblongata**

↓  
Lies below cerebellum. It continues posteriorly to Spinal cord. It contains  
(i) rate of heart beat  
(ii) breathing movements  
(iii) expansion and contraction of blood vessels. (iv) Swallowing, coughing, Sneezing and vomiting.

**Spinal cord:-** Its a cylindrical structure that begins in continuation with medulla of brain. It is enclosed in the vertebral column or back bone which protects it. Spinal cord is surrounded by meninges like brain.

Thirty one pairs (62) of spinal nerves arise from the spinal cord.

**Spinal cord** – acts as a centre for the reflex actions.



**Home task**

- 1) Name the fluid that is present in spaces between the meninges that protect the brain.
- 2) Name the two parts of vertebrate nervous system
- 3) Which part of brain is the seat of intelligence and memory?

**Pre topic requirement**

**DAY 7**

**Introductory Activity**

**Methodology**

**Teaching Aid required**

**Content**

**Peripheral nervous system** is under control of will.  
Autonomic nervous system – is not under the control of human. Will.

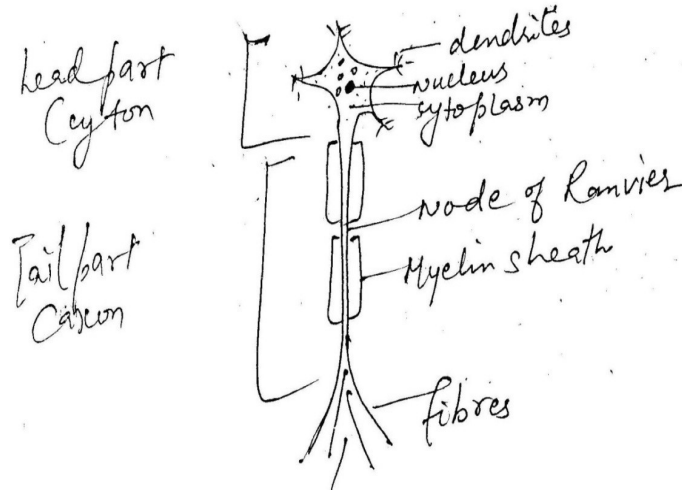
**Sensory receptors(sense organs)-** these receive a variety of external

stimuli.

<u>Name of receptor</u>	<u>Stimulus</u>	<u>Location of receptor</u>
Photoreceptors	Light	Eyes
Thermo/Thigmoreceptors	heat/touch	Skin
Phonoreceptors	Sound	Ear
Orfactoreceptors	Smell	Nose
Gustatoreceptors	Taste	Tongue

**Neurons** or nerve cells are the structural and functional unit of nervous system.

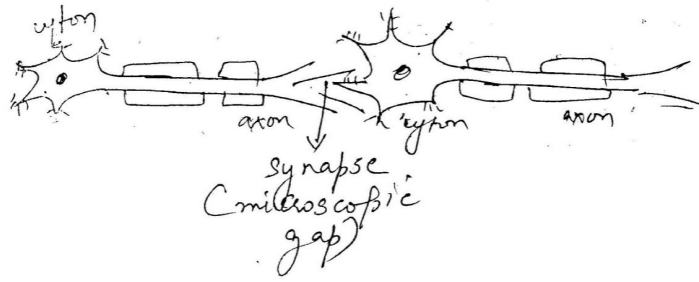
**Structure of neuron**



Neurons transmit messages in the form of nerve impulses. **Its special properties.**

- (a) Do not divide.
- (b) From shortly after birth, new neurons do not develop.
- (c) Not repaired, when injured.

	<p>Home task</p> <ol style="list-style-type: none"> <li>1) What is a neuron?</li> <li>2) Draw the structure of neuron and label the following on it Dendrite, axon, cell body, nucleus</li> <li>3) What is the function of myelin sheath?</li> </ol>	Pre topic requirement
DAY8	Introductory Activity	
	Methodology	
	Teaching Aid required	
	<p>Content</p> <p><u>How one neuron is connected to another neuron</u></p>	



The neurons are not connected. There occurs a microscopic gap between terminal portion of axon of one neuron and the dendron of another neuron. This gap is called Synapse.

Neuron transmit messages in the form of nerve impulses. It is a self propagated electrochemical current that travels from one neuron to another for the passage of message.

#### Conduction of Nerve Impulse

Stimulus → dendrite → cell body → axon → axon terminal → passage of impulse through synapse.

As the nerve impulse reaches the terminal part of axon, a chemical called neurotransmitter is released by synaptic vesicles present at terminal end of axons. This chemical diffuse across the gap (synapse) and thus, helps in transfer of impulse to the dendron of other neuron.

The synapse acts as a one-way valve to conduct nerve impulse in one direction only. This is so because chemical substance, called neurotransmitter is secreted by synaptic vesicles only on one side of gap, i.e. on axon's side.

#### Reflex actions or Reflex

A reflex may be defined as a spontaneous, automatic, quick response to a stimulus, acting on a specific resistor, without will of an animal.

eg. Blinking of eyes, withdrawl of hand when pricked by needle, coughing, sneezing

#### What happens in Reflex actions

(stimulus received by receptor) Spinal cord → Motor neuron → Muscle on gland ↓

The path taken by nerve impulse in a reflex action is called Reflex arc.

Receptor(Affector) → Sensory Neuron → Spinal cord(Relay Neuron) → Motor Neuron(efferent neuron)

(sense organ) (Affarent neuron) (efferent neuron)

		<p>Reflex actions generally involve spinal cord. Hence majority of the reflexes are spinal reflexes.</p> <p>However there are some reflexes that involve brain (cerebral reflexes).</p> <p>e.g. contraction of pupil in bright light.</p>		
		<table border="1"> <tr> <td> <p><b>Home task</b></p> <p>1) We suddenly withdraw our hand when a pin pricks. Name the type of response involved in this action.</p> <p>2) What happens at the synapse between two neurons?</p> </td> <td> <p><b>Pre topic requirement</b></p> <p>Why is the flow of signals in a synapse from axonal end of one neuron to dendritic end of another neuron but not the reverse?</p> </td> </tr> </table>	<p><b>Home task</b></p> <p>1) We suddenly withdraw our hand when a pin pricks. Name the type of response involved in this action.</p> <p>2) What happens at the synapse between two neurons?</p>	<p><b>Pre topic requirement</b></p> <p>Why is the flow of signals in a synapse from axonal end of one neuron to dendritic end of another neuron but not the reverse?</p>
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Day 9	Introductory Activity			
	Methodology			
	Teaching Aid required			
	<p><b><u>Content</u></b></p> <p><b><u>Significance of spinal reflex:-</u></b></p> <p>(a) It checks overloading and overtaxing of brain.</p> <p>(b) It has a survival valve.</p> <p><b><u>How does the Nervous Tissue cause Action?</u></b></p> <p>So far, we have been talking about nervous tissue, and how it collects information, sends it around the body, processes information, makes decisions based on information, and conveys decisions to muscles for action. In other words, when the action or movement is to be performed, muscle tissue will do the final job. How do animal muscles move? When a nerve impulse reaches the muscle, the muscle fibre must move. How does a muscle cell move? The simplest notion of movement at the cellular level is that muscle cells will move by changing their shape so that they shorten. So the next question, is how do muscle cells change their shape? The answer must lie in the chemistry of cellular components. Muscle cells have special proteins that change both their shape and their arrangement in the cell in response to nervous electrical impulses. When this happens, new arrangements of these proteins give the muscle cells a shorter form. Remember when we talked about muscle tissue in class IX, there were different kinds of muscles, such as voluntary muscles and involuntary muscles. Based on what we have discussed so far, what do you think the differences between these would be?</p> <p><b><u>Commit To Memory</u></b></p> <p><b><u>Oxytocin:-</u></b> This hormone is secreted by pituitary gland.- it induces contractions of smooth muscles of the uterus during the birth of the young one and myoepithelial cells of mammary glands to cause release of milk during sucking by the infant. So oxytocin is also called 'birth hormone' and milk ejecting hormone.</p> <p><b><u>Vasopressin:-</u></b> It is also called anti diuretic hormone (ADH). It decreases the loss of water in the urine by increasing the reabsorption of water in the distal convoluted tubules, collecting tubules and collecting ducts in the kidneys.</p> <p><b><u>Disorder:-</u></b> Deficiency of ADH reduces reabsorption of water and increases urine output, causing excessive thirst. This disorder is called <u>diabetes insipidus</u>. No glucose is lost in the urine of such a patient.</p>			
	<p><b><u>Homeostasis and feed back</u></b></p> <p>It is the tendency of an organism or cell to regulates its internal environment and</p>			

		<p>maintain equilibrium, usually by a system of feedback controls, so as to stabilize health and functioning.</p> <p>Feed back mechanisms have evolved in living things as a mechanism by which they maintain homeostasis.</p> <p>A feed back mechanism occurs when the level of one substance influences the level of another substance or activity of another organ.</p> <p>Feed back control is mostly negative and rarely positive.</p>
		<p>Home task</p> <p>1) What is feedback mechanism?</p> <p>2) What is homeostasis?</p>
		<p>Pre topic required</p> <p>Explain negative feedback control with the help of example.</p>
7.	Rubrics of activities	
8.	Life skills	
9.	Suggestive FA Activities	
10	Concept Based Questions	<p>Abhay went to the market along with his father to buy fruits for the function. He saw the fruit dealer putting small quantity of some powder wrapped in a paper in each wooden pack containing unripe mangoes. On enquiry, the fruit dealer told him that the powder is specific which will help the mangoes to ripe early. Abhay was not convinced and he discussed the incidence with his class teacher the next day.</p> <p>Now answer the following questions:</p> <ol style="list-style-type: none"> <li>Name the chemical that fruit dealer had kept in each box.</li> <li>Name at least one other plant hormone- <ul style="list-style-type: none"> <li>*Which promotes fruit growth.</li> <li>* Which promotes the falling of leaves.</li> </ul> </li> <li>List at least two other functions that natural analogue of chemical plays in plants.</li> </ol>
11	HOTS questions	<ol style="list-style-type: none"> <li>Which organ secretes a hormone when the blood sugar rises? Name a digestive enzyme released by this organ.</li> <li> <ol style="list-style-type: none"> <li>Which plant hormone promotes the dormancy in seeds and buds and thus inhibits growth?</li> <li>Which plant hormone regulates plant growth movements, i.e., tropisms?</li> </ol> </li> <li>Give reasons for the following <ol style="list-style-type: none"> <li>Pituitary is often termed as master endocrine gland.</li> <li>Pancreas is often categorized as heterocrine gland.</li> <li>Adrenals are known as glands of emergency.</li> </ol> </li> <li>Why do the leaves of 'Touch Me Not' plant droop down when touched?</li> <li>Explain the mechanism of reflex action with a suitable example.</li> <li>Explain male sex hormone and its functions</li> </ol>
12	MCQs	1) In a neuron, conversion of electrical signal to a chemical signal occurs at/in

	related to topic	<p>a) Cell body  b) Axonal end  c) Dendritic end  d) axon</p> <p>2) Which of the following is not associated with growth of plant?  a) Auxin  b) Gibberelins  c) Cytokinins  d) ABA</p> <p>3) Choose the incorrect statement about insulin  a) Produced from pancreas  b) Regulates growth and development of the body  c) Regulates blood sugar level  d) Its deficiency causes diabetes</p> <p>4) Dwarfism results due to  a) Excess secretion of thyroxine  b) Deficiency of growth hormone  c) Less secretion of adrenaline  d) Excess secretion of growth hormone</p> <p>5) Which of the following is not an involuntary action?  a) Vomiting  b) Salivation  c) Heart beat  d) Chewing</p> <p>6) The growth of pollen tubes towards ovules is due to  a) Hydrotropism  b) Chemotropism  c) Geotropism  d) Phototropism</p> <p>7) Involuntary actions in the body are controlled  a) Medulla in forebrain  b) Medulla in mid brain  c) Medulla in hind brain  d) Medulla in spinal cord</p> <p>8) Spinal cord originates from  a) Pons  b) Cerebrum  c) Cerebellum  d) Medulla</p> <p>Answers 1-b, 2-d, 3-b, 4-b, 5-d 6-b, 7-c, 8-d</p>
13	Lab work	To study the phenomenon of phototropism and geotropism in plants( 4 to 5 days required)
14	Numericals	Not applicable for the topic
15	Remedial Measure For	A) True/false statements

	<p><b>Low Achievers</b></p>	<p>1 Axon of neuron carry impulses from the cyton</p> <p>2 Voluntary actions occur with the will of the animal.</p> <p>3 Brain and spinal cord are covered by three meninges.</p> <p>4 Cranial nerves arise from the spinal cord.</p> <p>5 Bending of shoot of a growing part is an example of negative phototropism.</p> <p>6 Insulin is secreted by pancreas.</p> <p>7 Adrenaline is an example of plant hormone.</p> <p><b>B) Fill in the blanks</b></p> <p>1 Full form of ABA is _____</p> <p>2 Bony covering enclosing the brain is _____</p> <p>3 Largest part of brain is _____</p> <p>4 _____ is the structural and functional unit of nervous system.</p> <p>5 _____ are also known as ductless gland</p> <p><b>ANSWERS</b></p> <p><b>A)1- true 2-true 3-true 4-false 5-false 6-true 7-false</b></p> <p><b>B) 1-abscissic acid 2-cranium 3-cerebrum 4-neuron 5-endocrine glands</b></p>
<p>16</p>	<p><b>Worksheets for revision and practice</b></p>	<p><b>Answer the following questions</b></p> <p>1 What is synapse?</p> <p>2 Name the chemical that transmits nerve impulse across the neuron.</p> <p>3 Name the control system which is quick and fast acting in human beings.</p> <p>4- Why reflex actions are also generally called spinal reflexes?</p> <p>5 Define phototropism</p> <p>6 Give the function of thyroxine in our bodies</p> <p>7 Describe how auxins are related with the bending of shoots towards the source of light?</p> <p>8 Human brain can be broadly divided into three regions. Name them</p>

**9 What is homeostasis? Also define negative feedback control.**

**ANSWERS**

**1-Microscopic gap between terminal portion of one axon of one neuron and Dendron of other neuron.**

**2- Neurotransmitter**

**3- Nervous system**

**4- Involuntary action and most of them involve spinal cord**

**5- It is the directional movement of part of the plant in response to light stimulus.**

**6- Regulating the rate of oxidation of fats, carbohydrates and proteins and production of energy**

**7- When growing shoot is exposed to source of light coming from one side, it results in the unequal distribution of auxins on the two sides. The shaded side has more auxin as compared to lighted side. More auxin causes more growth in shaded side of shoot resulting in the bending stem towards the source of light.**

**8- The three regions of brain are**

**Forebrain, midbrain and hindbrain**

**9- Homeostasis means keeping the internal chemical environment of the body constant. Hormones help to maintain homeostasis by their integrated action and feedback control. Feedback control is mostly negative and rarely positive.**