

1 – RESPONSES LIKE THESE TOO

CONTENT

REFLEX ACTIONS – Cerebral, Spinal & Conditioned Reflexes.
SPINAL CORD – Structure.
 Action of **AUTONOMOUS NERVOUS SYSTEM** – Sympathetic and Parasympathetic Systems.
 Responses against internal stimuli – Chemo & Baro receptors.
DISORDERS of nervous system – Epilepsy, Alzheimer & Parkinson.
 Senses in other living beings.

1. Define Reflex action.

A **reflex action** is a sudden, involuntary reactions of the body in response to a stimulus.

2. Give examples for reflexes.

a). **Cerebral reflexes** [Reflexes formed from the brain]

Eg:- Blinking of the eye, Sudden movement when hearing a loud noise.

b). **Spinal reflexes** [Reflexes formed from the spinal cord]

Eg:- Sudden withdrawal of hands when we accidentally touch on an hot object,
 Withdrawal of legs when a thorn penetrates our leg.

*) **Conditioned reflexes** [Reflexes developed through constant practice and experience]

Eg:- Application of sudden brakes by a driver, Salivation at the thought of tasty food.

3. What is a Reflex arc ?

Reflex arc is the path of impulses in a reflex action.

It has (a)- stimulus receiving receptors (b)- Sensory neuron (c)- Inter neuron
 (d)- Motor neuron (e)- Acting part (like muscles)

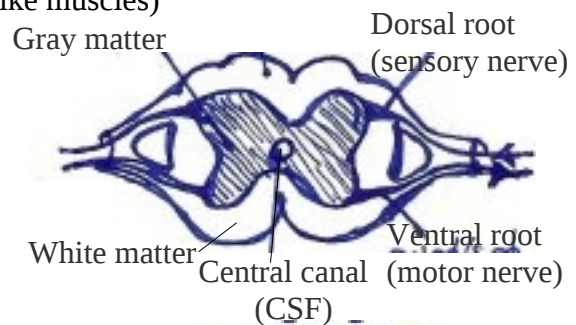
4. Structure of **spinal cord**

Spinal cord, which is the continuation of medulla oblongata, is situated with in the vertebral column and is covered by meninges.

Outer white matter and inner grey matter.

The **central canal** at its centre is filled with **CSF**.

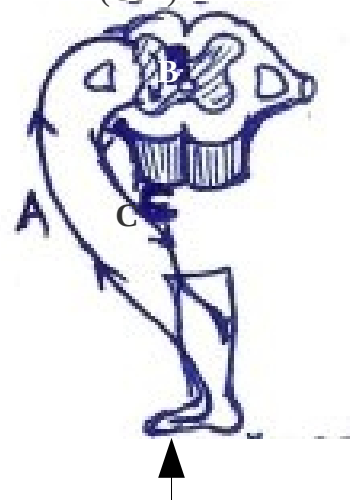
Spinal nerves originate from the spinal cord as **dorsal root** (sensory) and **ventral root** (motor).



5. Sensory impulses : Dorsal root ;
 Motor impulses : -----?

6. Observe the given reflex arc.

Name the neurons **A**, **B** and **C**.



7. Human nervous system

Central Nervous System

- * Brain
- * Spinal cord

Peripheral Nervous System

- * Cranial nerves (12 pair)
- * Spinal nerves (31 pair)

- * Autonomous nerves
 [sympathetic and parasympathetic]

8. Reflex actions, sometime, serve as a protective mechanism. How ?

Due to reflex action, the Sympathetic system start functioning and as a result, physiological activities like working of heart and lungs increase to produce more energy. Thus our body becomes equipped to face the critical situation.

9. The contrasting actions of Sympathetic and parasympathetic nervous systems

SYMPATHETIC SYSTEM	PARASYMPATHETIC SYSTEM
<ul style="list-style-type: none"> - Dilation of eye pupil - Increase the rate of heart beat - Dilation of trachea - Conversion of glycogen to glucose - Secretion of hormones increase -Relaxation of the muscles of urethra 	<ul style="list-style-type: none"> - Constriction of eye pupil - Decrease the rate of heart beat - Constriction of trachea - Conversion of glucose to glycogen - Secretion of hormones decrease -Contraction of the muscles of urethra
- Decrease in the secretion of saliva, functions of stomach, intestinal peristalsis.	- Increase in the secretion of saliva, functions of stomach, intestinal peristalsis.

10. List out the physiological changes that may occur when a boy facing the audience during a competition.

11. Give examples for receptors capable for receiving internal stimuli.

Chemoreceptors [stimulated by chemicals]

Baroreceptors [stimulated by internal pressure]

12. Give examples for internal stimuli.

Change in blood pressure, Change in the level of CO₂ in blood, Change in water content, Change in the content of blood, Presence of germs etc.

13. Give example for the responses due to internal stimuli.

Increase in the body temperature, Tiredness, Unconsciousness, Vomiting etc.

14. Disorders of the nervous system

Alzheimer disease, Parkinson disease, Epilepsy, Stroke, Paralysis, Poliomyelitis, Rabies, Leprosy etc are examples for nervous disorders.

Defect / Disorder	Cause, Symptom	Remedy
Alzheimer disease	Continuous degeneration of neurons due to plaque by the accumulation of an insoluble protein. Complete loss of memory.	No apt treatment. Patient need special attention and care.
Parkinson disease	Degeneration of specific ganglions in the brain due to the deficiency of dopamine (a neurotransmitter). Tremor(due to irregular movement of involuntary muscles),flow of saliva, loss of body balance...	Dopamine treatment. Patient need care and sympathetic approach
Epilepsy	Discharge of irregular electrical impulses from brain. Fits (due to uncontrolled muscular contractions), unconsciousness, clenching of teeth, biting of tongue, frothy discharge from mouth, noise...	Treatment taking medicine regularly till the prescribed period.
Stroke	Damage to brain tissues due to the lack of blood (either by cerebral thrombosis or haemorrhage) Paralysis of any one side of the body, completely.	-
Paralysis	Partial or complete loss of responses due to various reasons.	-

15. Mechanism of stimuli-responses in other animals.

Chlamidomonas, Euglena [Unicellular organisms]	- Plasma membrane and cytoplasm help in stimulus-response. They have eyespot to detect the presence of light.
Hydra	- A network of nerve cells seen through out the body
Insects	- The compound eyes made up of thousands of ommatidium make clear and good vision.
Bats	- Echo location by receiving the echo of the ultrasonic sound helps movements in night.
Snakes	- Though the power of hearing is absent, snakes can sense the vibrations on the ground. They can sense the smell by the olfactory receptors in the Jacobson's organ situated in the roof of their mouth.

16. What is **photomorphogenesis** ?

The process of the formation of chlorophyll in the presence of light.

17. Name a protein pigment which helps in flowering and seed germination.

Phytochrome.