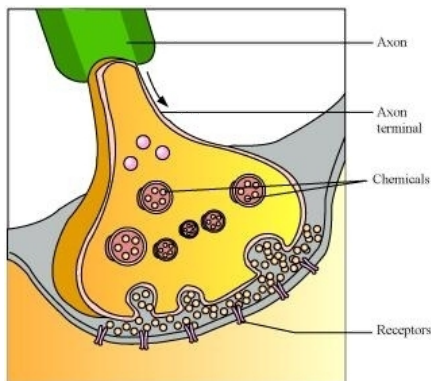


1. What is the difference between a reflex action and walking?

**Ans.** A reflex action is a rapid, automatic response to a stimulus. It does not involve any thinking. For example, we close our eyes immediately when the bright light is focused. Walking, on the other hand, is a voluntary action. It is under our conscious control.

2. What happens at the synapse between two neurons?

**Ans.** A very small gap that occurs between the last portion of the axon of one neuron and the dendron of the other neuron is known as a synapse. It acts as a one-way valve to transmit impulses in one direction only. This uni-direction transfer of impulses occurs as the chemicals are produced on only one side of the neuron i.e., the axon's side. From the axon, the impulses travel across the synapse to the dendron of the other neuron.



3. Which part of the brain maintains the posture and equilibrium of the body?

**Ans.** The Cerebellum, a part of the hindbrain is responsible for maintaining posture and equilibrium of the body.

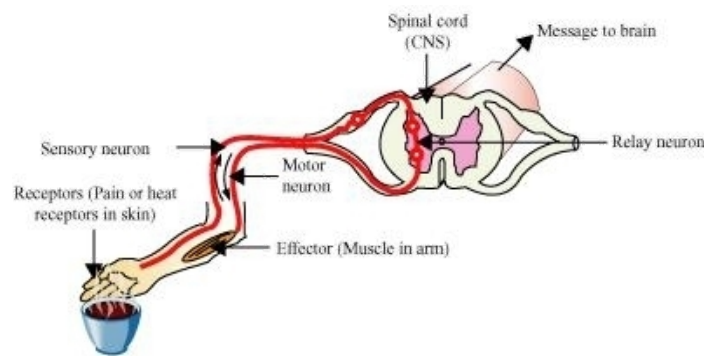
4. How do we detect the smell of an agarbatti (incense stick)?

**Ans.** The thinking part of our brain is the forebrain. It has separate areas that are specialized for hearing, smelling, sight, taste, touch, etc. The forebrain also has regions that collect information or impulses from the various receptors. When the smell of an incense stick reaches us, our forebrain detects it. Then, the forebrain interprets it by putting it together with the information received from other receptors and also with the information already stored in the brain.

5. What is the role of the brain in reflex action?

**Ans.** Reflex actions are sudden responses, which do not involve any thinking. For example, when we touch a hot object, we withdraw our hand immediately without thinking as thinking may take time which would be enough to get us burnt.

The sensory nerves that detect the heat are connected to the nerves that move the muscles of the hand. Such a connection of detecting the signal from the nerves (input) and responding to it quickly (output) is called a reflex arc. The reflex arcs –connections present between the input and output nerves – meet in a bundle in the spinal cord.



### Reflex arc

Reflex arcs are formed in the spinal cord and the information (input) reaches the brain. The brain is only aware of the signal and the response that has taken place. However, the brain has no role to play in the creation of the response.

6. What are plant hormones?

**Ans.** Plant hormones or phytohormones are naturally-occurring organic substances. These are synthesized in one part of the plant body (in minute quantities) and are translocated to other parts when required. The five major types of phytohormones are auxins, gibberellins, cytokinins, abscisic acid, and ethylene.

7. How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light?

**Ans.** The movement of leaves of the sensitive plant, *Mimosa pudica* or “touch me not”, occurs in response to touch or contact stimuli. This movement is independent of growth. The movement of a shoot towards light is known as phototropism. This type of movement is directional and is growth-dependent.

8. Give an example of a plant hormone that promotes growth.

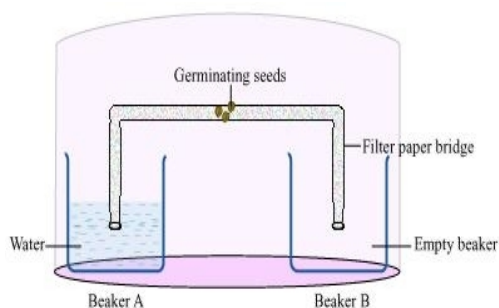
**Ans.** Auxin is an example of a growth-promoting plant hormone.

9. How do auxins promote the growth of a tendril around a support?

**Ans.** Auxin is synthesized at the shoot tip. It helps the cell grow longer. When a tendril comes in contact with a support, auxin stimulates faster growth of the cells on the opposite side, so that the tendril forms a coil around the support. This makes the tendrils appear as a watch spring.

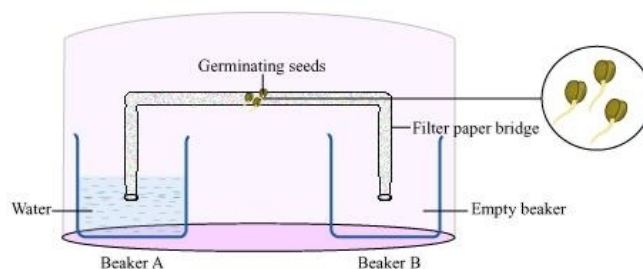
10. Design an experiment to demonstrate hydrotropism.

**Ans.** Take two small beakers and label them as A and B. Fill beaker A with water. Now make a cylindrical-shaped roll from filter paper and keep it as a bridge between beaker A and beaker B, as shown in the figure. Attach a few germinating seeds in the middle of the filter paper bridge. Now, cover the entire set-up with a transparent plastic container so that the moisture is retained.



Observation.

The roots of the germinating seeds will grow towards beaker A.



This experiment demonstrates the phenomenon of hydrotropism.

11. How does chemical coordination take place in animals?

**Ans.** Chemical coordination takes place in animals with the help of hormones. Hormone is the chemical messenger that regulates the physiological processes in living organisms. It is secreted by glands. The regulation of physiological processes and control and coordination by hormones

comes under the endocrine system. The nervous system along with the endocrine system in our body controls and coordinates the physiological processes.

**12.** Why is the use of iodized salt advisable?

**Ans.** Iodine stimulates the thyroid gland to produce the thyroxin hormone. It regulates carbohydrate, fat, and protein metabolism in our bodies. Deficiency of this hormone results in the enlargement of the thyroid gland. This can lead to goitre, a disease characterized by a swollen neck. Therefore, iodized salt is advised for the normal functioning of the thyroid gland.

**13.** How does our body respond when adrenaline is secreted into the blood?

**Ans.** Adrenalin is a hormone secreted by the adrenal glands in case of any danger or emergency or any kind of stress. It is secreted directly into the blood and is transported to different parts of the body.

When secreted in large amounts, it speeds up the heartbeat and hence supplies more oxygen to the muscles. The breathing rate also increases due to contractions of the diaphragm and rib muscles. It also increases blood pressure. All these responses enable the body to deal with any stress or emergency.

**14.** Why are some patients with diabetes treated by giving injections of insulin?

**Ans.** Diabetes is a disease in which the level of sugar in the blood is too high. Insulin, a hormone secreted by the pancreas, helps in regulating blood sugar levels. This is the reason why diabetic patients are treated by giving injections of insulin.