

Control and Coordination: In-Text Questions

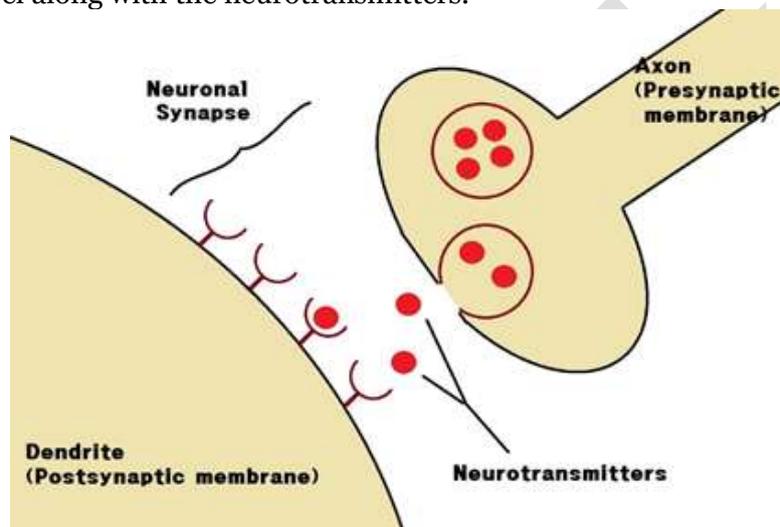
[Page – 119]

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

Sol. Action walking is part of routine activities and it is a voluntary action. Brain instructs and controls the legs muscle for walking. While, reflex action happens as a response to a sudden danger to a voluntary organ. It is involuntary action. It is controlled by spinal cord.

Q.2 What happens at the synapse between two neurons?

Sol. Synapse is the small empty space between the two nerve cells. At this synapse, transmission of nerve impulses takes place. The axon ending of a neuron releases specialized chemicals, called neurotransmitters. These neurotransmitters travel through the synapse and reach the dendrites of the next neuron. In this way, the nerve impulses travel along with the neurotransmitters.



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

Sol. Cerebellum of the brain maintains posture and equilibrium of the body.

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

Sol. Smell of an agarbatti is detected by the olfactory receptors present in the nose. They pick the smell and send signals to the forebrain. Then forebrain interprets those signals. In this way, we detect the smell of an incense stick.

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

Sol. There is no involvement of brain in reflex action. Reflex action is mainly controlled by the spinal cord.

[Page – 122]

Q.1 What are plant hormones?

Sol. Plant hormones are special chemicals which helps in regulate the growth, flowering, development of various plant parts and their response to the environment.

Q.2 How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light?

Sol. The movement of leaves of the sensitive plant does not depend on the direction of the stimulus. So, it is a nastic movement. On the other hand, the movement of a shoot towards light depends on the direction from which light is coming i.e. direction of stimulus. So, it is a tropic movement.

Q.3 Give an example of a plant hormone that promotes growth.

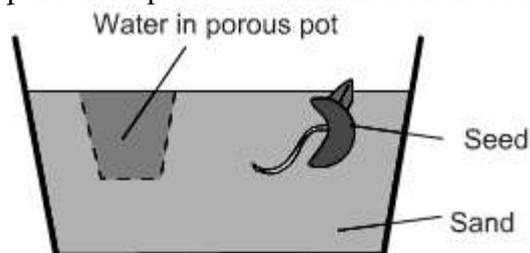
Sol. Auxin is a plant hormone that promotes growth.

Q.4 How do auxins promote the growth of a tendril around a support?

Sol. When the tip of a tendril touches a support, auxin hormone present in its tips accumulates in the part of the tendril which is away from the support. Due to this, increase the cell division in that part. The part which is nearer to the support has lower rate of cell division. And the outer part of the tendril grows more than the inner part and the tendril coils around the support.

Q.5 Design an experiment to demonstrate hydrotropism.

Sol. Apparatus required for demonstration: Seeds of bean, a big deep tray, sand, a porous flower pot etc.



Set up showing hydrotropism

Procedure:

- (i) Take the porous pot in big deep tray.
- (ii) Fill this tray with sand and insert seeds of beans in it as shown in fig.
- (iii) Fill the porous pot with water.
- (iv) Leave this set up for about 5-7 days.

Observation: After 5-7 days, when seeds are taken out, we will observe that roots will grow in the direction of the porous pot. This activity shows hydrotropic movement in roots.

[Page – 125]

Q.1 How does chemical coordination take place in animals?

Sol. Chemical coordination in animals takes place through hormones secreted by several endocrine glands present in our body. These endocrine glands secrete hormones directly into the blood and reach to the specific cells. These cells act according to the information that hormone carries. Different hormones regulate different functions in our body. Example: insulin hormone regulates the blood sugar level.

Q.2 Why is the use of iodised salt advisable?

Sol. Thyroid gland of endocrine system needs iodine to secrete the thyroxine hormone. Iodine is an important constituent of the hormone thyroxine. Iodine deficiency causes a disease called goiter. Iodised salt is advised to prevent chances of goiter disease.

Q.3 How does our body respond when adrenaline is secreted into the blood?

Sol. Adrenaline is a hormone secreted by adrenal gland when a person is frightened, mentally disturbed or in emergency situation. In these situations increase secretion of adrenaline in the blood. It increases the heart rate and breathing rate, blood pressure so that more oxygen could be supplied. It allows the entry of more glucose for more energy production to overcome these situations.

Q.4 Why are some patients of diabetes treated by giving injections of insulin?

Sol. In diabetes, secretion of insulin hormone is less or stopped by pancreas. Insulin plays an important role to regulate the blood sugar level. In some patients of diabetes, secretion of insulin is reduced. Insulin injection is given to patients to compensate for reduced insulin hormones.