

HOTS (Higher Order Thinking Skills)

Q.1. Why do stem and root move (grow) towards light and the centre of gravity of the Earth respectively?

Ans. It is due to auxins (Plant hormones) produced by the shoot apex and root tip. In stem, growth is more on the shaded side (lower side of apex) due to accumulation of auxins. In root, growth is more on the illuminated side as auxins accumulated on the lower side (shaded side) of root tip inhibits the growth of that side. Thus, there is greater growth on the upper side (illuminated side), resulting in the growth of roots apex towards gravity of earth.

Q. 2. What is association neuron?

Ans. It is found in the cortex part of spinal cord in between the sensory neuron and motor neuron. It forms synapse with the axon of sensory neuron and dendrites of motor neuron.

Q.3. 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?

Ans. When an electrical signal reaches the axonal end of a neuron, it releases a chemical substance. This chemical diffuses towards the dendrite end of next neuron where it generates an electrical impulse or signal. Hence, the electrical signal is converted into a chemical signal at the axonal end. Since these chemicals are absent at the dendritic end of the neuron, the electrical signal cannot be converted into chemical signal.

Q4. Sameer was studying in his room. Suddenly he smel 1s something burning and sees smoke in the room. He rushes out of the room immediately. Was Sameer's action voluntary or involuntary? Why?

Ans. Sameer's action was voluntary because rushing out of the room was under his conscious control. The smoke and smell were perceived by the receptors in the sense organs and signals are sent to the brain. The brain, then sent signals to the effector organs, i.e., the muscles, to move out of the room.