

CBSE TEST PAPER-01
CLASS - XI BIOLOGY
(Neural Control and Coordination)

General Instruction:

- All questions are compulsory.
 - Question No. 1 to 3 carry one marks each. Question No. 4 to 6 carry two marks each. Question No. 7 and 8 carry three marks each. Question No. 9 carry five marks..
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1. How does an impulse travel across a synapse?
2. How many pairs of cranial nerves are present in man?
3. What is saltatory conduction?
4. What is a reflex?
5. What happens when the membrane of a nerve cell carries out a sodium pump?
6. What are the events that take place at the point of stimulation of axon?
7. Differentiate between dorsal spinal roots and ventral spinal roots.
8. Describe human neural system.
9. Draw a labeled diagram to show the structural view of human ear in the sectional view.

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[ANSWERS]

Ans 01. The impulse travels across a synapse in the form of electromagnetic waves.

Ans 02. 12 pairs.

Ans 03. Saltatory conduction refers to the type of conduction of nerve impulse by a myelinated nerve fibre, where the action potential jumps from one node of Ranvier to the other.

Ans 04. Reflex action can be defined as an involuntary motor response due to sensory stimulus without the involvement of brain. e. g. Respiration, peristalsis, watering of the mouth, secretion of saliva in the mouth, etc.

Ans 05. When the nerve cell membrane carries a sodium pump, it transports three sodium ions from the axoplasm to the cell exterior:

- It transfers two potassium ions from the ECF to the cell interior.
- The exterior is positively charged while the interior becomes negatively charged.

Ans 06. At the point of stimulation the membrane permeability changes; it becomes freely permeable to Na⁺ ions.

There is a rapid inflow of Na⁺ ions and the interior / axoplasm becomes positively charged and the exterior becomes negatively charged.

This condition is known as depolarized state and the potential difference across the membrane is known as action potential.

Now the current flows through the axoplasm from the depolarized region to the next polarised region and through the ECF from the polarised region to the depolarised region.

Ans 07.

	Dorsal spinal Roots	Ventral spinal Roots
1.	They are made of sensory (afferent) nerves.	They are made of motor (efferent) nerves.
2.	They have dorsal root ganglia.	They have no ganglia.
3.	Their cell bodies are located in dorsal root ganglia.	The cell bodies of ventral spinal nerve root is located in ventrolateral horn of grey matter.

Ans 08. It is divided into two parts-

1) Central Neural system (CNS) – CNS includes brain and spinal cord. This is the site of information processing and control.

2) Peripheral neural system (PNS) – PNS consists of all nerves of the body associated with the CNS. Nerve fibers of PNS are of two types i.e. afferent fibers and efferent fiber.

(a) Afferent nerve fibers transmit impulses from tissues / organs to CNS.

(b) Efferent nerve fibers transmit impulses from CNS to concerned peripheral tissues / organs.

PNS is further divided into –

(1) Somatic neural system – It relays impulse from CNS to skeletal muscles.

(2) Autonomic neural system – ANS transmits impulses from CNS to involuntary organs as well as the smooth muscles of body

It is again divided into two parts -

a) sympathetic neural system

b) Para sympathetic neural system.

Ans 09.

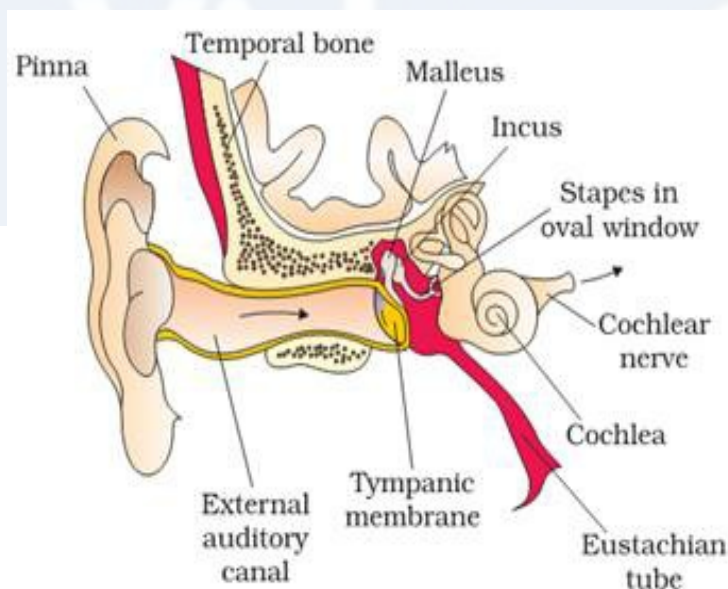


Figure 21.7 Diagrammatic view of ear