

QB365 Question Paper Software
11th Standard - Biology

Neural Control and Coordination Assertion and reason

Exam Time: 00:20 Hrs

Date: 2025-10-10

Total Marks: 10

Questions:

Assertion and reason

1. **Assertion** : Nerve conduction is the one way conduction.

Reason : Nerve impulse is transmitted from dendrite terminals to axon terminals.

Codes:

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If both Assertion and Reason are false.

2. **Assertion** : The imbalance in concentration of Na^+ , K^+ and proteins generates resting potential.

Reason : To maintain the unequal distribution of Na^+ & K^+ , the neurons use electrical energy.

Codes:

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If both Assertion and Reason are false.

3. **Assertion** : The axonal membrane of the neuron is more permeable to sodium ion (Na^+) and nearly impermeable to potassium (K^+).

Reason : In a resting state, neuron conducts impulses.

Codes:

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If both Assertion and Reason are false.

4. **Assertion**: Electrical synapses are rare in our system.

Reason: Impulse transmission across an electrical synapse is slower than that across a chemical synapse.

Codes:

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

5. **Assertion:** Nerve fibre can become excited through touch, smell, pressure and chemical changes and there is a change in polarity.

Reason: It is called action potential.

Codes:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

6. **Assertion :** Medulla oblongata causes reflex actions like vomiting, coughing and sneezing.

Reason : It has many nerve cells which control autonomic reflexes.

Codes:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

7. **Assertion :** Cerebral cortex appears white.

Reason : It is because of the myelin sheath covering of the tracts.

Codes:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

8. **Assertion:** Rabies is an acute infectious disease of warm blooded mammals characterized by involvement of central nervous system resulting in paralysis and finally death.

Reason: This is caused due to neurotropic filterable bacteria in saliva of rabid animals.

Codes:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.

9. **Assertion :** Circular smooth muscles of iris contract when bright light falls on the eye.

Reason : Pupil gets constricted by the contraction of circular smooth muscles of iris.

Codes:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If both Assertion and Reason are false.

10. **Assertion:** Vestibular apparatus helps us in maintaining balance of body and posture.

Reason: Due to the arrangement of semicircular canals of vestibular apparatus, movement of head in any direction will stimulate sensory cells to maintain dynamic equilibrium.

Codes

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If both Assertion and Reason are false.

Answers Key:

Assertion and reason

1. (c) If Assertion is true but Reason is false.

Explanation:

Nerve impulses are always transmitted across a synapse from the axon terminals of one neuron to the dendrite/cell body of the next neuron but never in the reverse direction. Since the neurotransmitter is present only in the axon terminals and not in the dendrite or cell body, it cannot be released from the dendrite or cell body even if the impulse reaches there.

2. (c) If Assertion is true but Reason is false.

Explanation:

To maintain the unequal distribution of Na^+ and K^+ ion, the neurons use chemical energy in the form of ATP to actively transport Na^+ ion out of cell and more K^+ inside the cell.

3. (d) If both Assertion and Reason are false.

Explanation:

The axonal membrane of neuron is more permeable to potassium ions (K^+) and nearly impermeable to sodium ions (Na^+). In a resting state, neuron does not conduct any impulse as the fluids outside the cell membrane carry a relatively high positive charge while the fluids inside the cell membrane carry a less positive, or relatively negative charge.

4. (c) If Assertion is true but Reason is false.

Explanation:

There are two types of synapses, namely, electrical synapses and chemical synapses. At electrical synapses, the membranes of pre- and post-synaptic neurons are in very close proximity. Electrical current can flow directly from one neuron into the other across these synapses. At a chemical synapse, the membranes of the pre- and post-synaptic neurons are separated by a fluid-filled space called synaptic cleft. Chemicals called neurotransmitters are involved in the transmission of impulses at these synapses. Impulse transmission across an electrical synapse is always faster than that across a chemical synapse. Electrical synapses are rare in our system.

5. (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

Explanation:

Action potential occurs in response to stimulation of nerve fibre as a result of various stimuli like touch, smell, pressure and chemical changes.

6. (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

Explanation:

Medulla oblongata consists of accumulation of nerve cells act as vital centres of many autonomic reflexes like vomiting, coughing and sneezing.

7. (d) If both Assertion and Reason are false.

Explanation:

The layer of cells which covers the cerebral hemisphere is called cerebral cortex and is thrown into prominent folds. The cerebral cortex is referred to as the grey matter due to its greyish appearance. The neuron cell bodies are concentrated here giving the colour.

8. (c) If Assertion is true but Reason is false.

Explanation:

Rabies is an overwhelming encephalomyelitis and includes severe headache and high fever with excitement and depression. This disease occurs by a virus called rhabdovirus.

9. (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

Explanation:

It is a pigmented, muscular, opaque diaphragm which extends from the ciliary body in front of a biconvex transparent lens. Iris has a small central aperture called pupil. Light passing through cornea enters through the pupil to fall on the lens behind it. The iris has two sets of smooth muscles arranged circularly and radially around the pupil. The pupil gets constricted by the contraction of circular muscles to reduce the amount of light falling on the lens. On the contrary, the pupil gets dilated by the contraction of radial muscles to increase the amount of light falling on the lens.

10. (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

Explanation:

The inner ear contains a complex system called vestibular apparatus, located above the cochlea. The vestibular apparatus is composed of three semi-circular canals and the otolith organ consisting of the saccule and utricle. Each semi-circular canal lies in a different plane at right angles to each other. The membranous canals are suspended in the perilymph of the bony canals. The base of canals is swollen and is called ampulla, which contains a projecting ridge called crista ampullaris which has hair cells. The saccule and utricle contain a projecting ridge called macula. The crista and macula are the specific receptors of the vestibular apparatus responsible for maintenance of balance of the body and posture. Cristae detect turning or rotational movements of the head (angular acceleration). Maculae detect changes in the head (or body) with respect to gravity (static equilibrium) and movement in one direction (linear acceleration). Since the three semicircular ducts are arranged in three different planes, movement of the head in any direction will stimulate the sensory cells of at least one crista.