

# Important Questions on Nervous System



## Nervous System

- Given below are some vertebrates. Match each vertebrate with their corresponding number of meninges present in their brain-
  - Scoliodon
  - Uromastix
  - Rabbit
  - three
  - one
  - two

A. a-ii, b-iii, c-i                      B. a-i, b-iii, c- ii  
C. a-iii, b-ii, c-i                      D. a-ii, b-i, c- iii
- Which of the following comparisons are true?
  - Nerve impulses produce their effects quickly, whereas hormonal responses generally are slower.
  - Nervous system effects are brief, whereas endocrine system effects are longer lasting.
  - The nervous system controls homeostasis through nerve impulses; the endocrine system works through hormones.
  - The nervous system can stimulate or inhibit the release of hormones by the endocrine system.
  - The nervous system includes organs scattered throughout the body; the endocrine system consists of only the pituitary gland, thyroid gland, adrenal gland, and pancreas.

A. 1, 2, 3 and 4                      B. 1, 2, 3, 4 and 5  
C. 2, 4 and 5                      D. 2, 3, 4 and 5
- Which of the following is not done by glial cells?
  - Receiving and conducting electrochemical signals.
  - Giving metabolic support to neurons.
  - Producing insulating sheaths around axons.
  - Removing debris after the death of a neuron.
- Given below are some statements about functions of the hypothalamus. Which of the following statement(s) are correct about it?
  - controls ANS
  - produces hormones
  - regulate emotional and behavioural patterns
  - control body temperature

A. P and Q                      B. Q, R, S  
C. P and S                      D. P, Q, R, S
- Neurotransmitters are removed from the synaptic cleft by
  - axonal transport
  - diffusion
  - neurosecretory cells
  - enzymatic breakdown
  - cellular uptake

A. 1, 2, 3 and 4                      B. 2, 3 and 4  
C. 2, 4 and 5                      D. 1, 4 and 5

6. Which of the below mentioned events is associated with neuron repolarization?
- The sodium-potassium pump's enhanced pace
  - The voltage-gated sodium channels open
  - The voltage-gated potassium channels close
  - Potassium channels that are voltage-gated open

7. Match the following-

COLUMN A (part of brain)	COLUMN B (respective parts)
a. Prosocephalon	i. pons and medulla
b. Mesencephalon	ii. thalamus
c. Rhombocephalon	iii. corpora quadrigemina

- a-ii, b-iii, c-i
  - a-i, b-iii, c- ii
  - a-iii, b-ii, c-i
  - a-ii, b-i, c- iii
8. A person reported severe headache, Pressure around the brain, hypertension and vision problem along with it, but the medication were showing effective results. Doctor was somewhat sure that patient has brain tumor, but the patient was negative for it. What medical condition is the patient going through
- Initial phase of Epilepsy
  - Intial phase of Parkinson's Diseases
  - Pseudotumor cerebri
  - Lipoma
9. When two axons are of the same diameter, a myelinated axon will conduct impulses faster than an unmyelinated axon. Which one of the given statements is the right reason?
- The channels through which ions flow are larger in the myelinated axon, allowing more rapid depolarization.
  - There are more sodium channels per mm<sup>2</sup> of the membrane in the myelinated axon.
  - Currents due to the presence of the action potential spread farther along the length of the myelinated axon before they cause the generation of a new action potential.
  - Myelinated axons have a lower internal resistance to the flow of ionic currents.
10. \_\_\_\_\_ form the middle cerebellar peduncle and act as a link between each cerebral hemisphere and the cerebellum's opposite half.
- Crus Cerebri
  - Arbor Vitae
  - Corpora Bigemina
  - Colliculi

## Answers

- |      |      |       |      |      |      |      |
|------|------|-------|------|------|------|------|
| 1. A | 2. A | 3. A  | 4. D | 5. B | 6. D | 7. A |
| 8. C | 9. C | 10. A |      |      |      |      |

## Solutions

### Solution 1:

- Scoliodon ii. One, protected by single membrane meninx primitiva
- Uromastix iii. Two, pia mater and dura mater
- Rabbit i. three, pia mater, arachnoid and dura mater

### Solution 2:

Nerve impulses produce their effects quickly, whereas hormonal responses generally are slower. Nervous system effects are brief, whereas endocrine system effects are longer lasting. The nervous system controls homeostasis through nerve impulses; the endocrine system works through hormones. The nervous system can stimulate or inhibit the release of hormones by the endocrine system. All these are correct but statement 5 is wrong because endocrine system also includes other glands too. Hence, A is the correct option.

### Solution 3:

Glial cell or neuroglia are the cells present within CNS which helps in phagocytosing foreign and degenerated materials. They also provide metabolic support to neurons and produce myelin sheaths around axon. But they don't initiate or conduct nerve impulses. Hence, A is the correct option.

### Solution 4:

All the statements are correct regarding the functions of hypothalamus which is mainly the part of diencephalon of forebrain. It helps in controlling ANS (autonomic nervous system). It produces various hormones reach the pituitary gland through portal circulatory system. It helps in regulating emotional and behavioural patterns and also body temperature. Hence, D is the correct option.

### Solution 5:

The neurotransmitter eg. Acetylcholine is released at the neuromuscular junctions present between the preganglionic and postganglionic neurons or at the synapses between the neurons. Once the signal is transmitted, this neurotransmitter is removed by the action of an enzyme acetylcholinesterase or it can be by neurosecretory cells. In some cases, it may simply diffuse. Hence, B is the correct option.

**Solution 6:**

The sodium channels close when the voltage in the cell rises, while voltage-gated potassium channels open. When potassium ions leave the cell, the voltage lowers to a negative level. Repolarization is the term for this procedure.

**Solution 7:**

COLUMN A (part of brain)	COLUMN B (respective parts)
a. Prosocephalon	ii. thalamus
b. Mesencephalon	iii. corpora quadrigemina
c. Rhombocephalon	i. pons and medulla

**Solution 8:**

Increased pressure inside the skull with no apparent reason, vision abnormalities, headaches, dizziness, and nausea are common symptoms of pseudotumor cerebri (fake brain tumour). It may potentially result in blindness.

**Solution 9:**

Myelin can greatly increase the speed of electrical impulses in neurons because it insulates the axon and assembles voltage-gated sodium channel clusters at discrete nodes along its length. Myelin damage causes several neurological diseases, such as multiple sclerosis.

**Solution 10:**

The middle cerebellar peduncle is made up of enormous crossing fibres called crus cerebri, which act as a bridge connecting each cerebral hemisphere to the opposite side of the cerebellum. The corticopontine tract is made up of fibres that originate in the cerebral cortex.



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