



**NEURAL CONTROL AND COORDINATION**

- Q1. What are the structural & functional units of neural system of animals?  
Q2. Name the type of neural system found in: - Sponges, Hydra, earthworm, insects & Vertebrates.  
Q3. Classify the neural system in the form of flow chart.  
Q4. Draw the labelled diagram of neuron.  
Q5. What are neurotransmitters & synaptic knob?  
Q6. Classify the neurons on the basis of number of axons & dendrites.  
Q7. Give differences between myelinated and non myelinated fibers.  
Q8. Describe the generation and conduction of nerve impulse.  
Q9. Draw a labelled diagram showing axon terminal and synapse.  
Q10. Give differences between electrical and chemical synapse.  
Q11(a) Name 3 meninges of human brain. (b) Draw labelled diagram of human brain.  
Q12(a) What are parts of forebrain? (b) What is corpus callosum? (c) What is association area in cerebrum? (d) Give the functions of hypothalamus & thalamus.  
Q13. What are the functions of hind brain?  
Q14(a) Define reflex action. (b) Draw reflex action (showing knee jerk reflex)  
Q15. How is balance & posture of human body maintained?

**Directions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as:**

- (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.**

1. Assertion : The chemical stored in the synaptic vesicles are termed as neurotransmitters.  
Reason : Synaptic vesicles release these chemicals in the synaptic cleft.
2. Assertion: Transmission of nerve impulse across a synapse is accomplished by neurotransmitters.  
Reason : Transmission across a synapse usually requires neurotransmitters because there is a small space, i.e., synaptic cleft, that separates one neuron from another.
3. Assertion : The axonal membrane of the neuron is more permeable to sodium ion ( $\text{Na}^+$ ) and nearly impermeable to potassium ( $\text{K}^+$  ).  
Reason : In a resting state, neuron conducts impulses.
4. Assertion : Medulla oblongata causes reflex actions like vomiting, coughing and sneezing.  
Reason : It has many nerve cells which control autonomic reflexes.
5. Assertion : A cerebellum is related with skilful voluntary movement and involuntary activity like body balance, equilibrium, etc.  
Reason : It is a part of hind brain and is situated behind the pons.
6. Assertion: When all the three types of cones are stimulated equally, a mosaic of red, green and blue lights is produced.  
Reason: Twilight or scotopic vision is produced by cones.
7. Assertion: The inner ear contains three ossicles (malleus, incus and stapes) which are attached to one another in a chain-like fashion.  
Reason: The stapes is attached to the tympanic membrane and the malleus is attached to the oval window of the cochlea.
8. 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.

9. Assertion: The Eustachian tube helps in equalising the pressures on either sides of the ear drum.

Reason: The Eustachian tube connects the middle ear cavity with the pharynx.

10. Assertion: The resting membrane of the neuron exhibit Polarity of charges.

Reason: The outer surface of the axonal membrane possesses a negative charge while its inner surface becomes positively charged.

11. 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.

12. Assertion: Reflex arc comprises of at least one afferent neuron, one efferent neuron and a part of PNS.

Reason: The efferent neuron receives signal from a sensory organ and transmits the impulse via a ventral nerve root into the PNS.

13. Assertion: Neuroglial cells are known as the packing cells of brain.

Reason: A type of neuroglial cells forms the myelin sheath around axon

### **CHEMICAL COORDINATION & INTEGRATION**

Q1. Define hormone, ductless glands and exocrine glands.

Q2. How do anterior & posterior pituitary regulate the functioning of body? Name the hormones released by hypothalamus.

Q3. Discuss the role of hypothalamus & pituitary as a coordinated unit in maintaining physiological process.

Q4. Name the hormones secreted by the Pituitary gland and write the function of each.

Q5. Enumerate the source & function of each of the following:- (a) Melatonin (b) Glucocorticoids (c) Anti – diuretic hormone (d) Thyroxin (e) Oxytocin (f) Parathyroid Hormone (g) Epinephrine

Q6. Describe the physiological functions and disorders of thyroid hormones.

Q7. Draw dorsal & ventral side of thyroid & parathyroid glands.

Q8. Write briefly about the endocrine gland which helps to combat stress.

Q9. Explain the following:- (a) Insulin lowers blood sugar level. (b) Adrenal cortex maintains the balance of water and electrolytes in our body. (c) Glucocorticoids are anabolic steroids.

Q10. Explain the role of the following hormones / proteins with reference to control of human male reproductive system:- (a) GnRH (b) LH (c) Testosterone (d) FSH

Q11. How is the blood pressure reduced by non-endocrine glands in our body?

Q12. Four major peptide hormones are secreted by GI tract. Name the hormones & also mention their function.

Q13. Differentiate between mechanism of action of protein & steroid hormone

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1. Assertion: Neurohypophysis is under the direct regulation of the hypothalamus.

Reason: Neurohypophysis stores and releases two hormones called oxytocin and vasopressin which are actually synthesized by the hypothalamus.

2. Assertion: Failure of secretion of hormone vasopressin causes diabetes mellitus in the patient.

Reason: Vasopressin increases the volume of urine by increasing the reabsorption of water from the urine.

3. Assertion : The person with diabetes insipidus feels thirsty.

Reason : A person with diabetes insipidus suffers from excess secretion of vasopressin.

4. Assertion: Oxytocin is also known as Anti Diuretic hormone (ADH).

Reason: It can cause an increase in the renal reabsorption of water.

5. Assertion: Hormone calcitonin has antagonistic effect to that of parathormone.

Reason : Calcitonin decreases blood calcium level while parathormone increases blood calcium level.

6. Assertion: PTH is a hypercalcemic hormone.

Reason: It stimulates the process of bone resorption.

7. Assertion: Adrenal medulla is called the gland for 'fight, fright and flight'.

Reason: The hormones adrenaline and nor-adrenaline help the body to combat against stress and emergency conditions.

8. Assertion : Our body secretes adrenaline in intense cold.

Reason : Adrenaline raises metabolic rate.

9. Assertion : Mammary glands are apocrine glands.

Reason : The distal part containing secretory granules break down and leaves as a secretion.

10. Assertion: Oxytocin is called as 'milk ejection hormone'.

Reason: Oxytocin acts on the smooth muscles of our body and stimulates their contraction.

11. Assertion: Prolactin is also called the 'milk ejection hormone'.

Reason: It stimulates the smooth muscle contractions of the mammary glands.

12. Assertion: Adrenal cortex is not vital for survival and may be removed without subsequently leading to death.

Reason: It secretes a number of steroid hormones which have only cumulative effects on the hormones of other glands.

13. Assertion: Insulin is an anabolic hormone.

Reason: A fall in blood amino acids also increases insulin secretion.

14. Assertion: A tumor of adrenal cortex may cause Addison's disease.

Reason: This happens due to over secretion of cortisol by the tumor.