

QB365
Important Questions - Neural control and Coordination
11th Standard CBSE

Biology

Reg.No. :

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Time : 01:00:00 Hrs

Total Marks : 50

Section-A

- 1) Give the name of the part of human neural system that lies along the main axis of the body. 1
- 2) What are Nissl's granules? 1
- 3) Give the name of the chemicals, which are released at the synapypic junction. 1
- 4) Give the name of the central information processing organ of our body. 1
- 5) Name the structure which contains and protects the brain vertebrate animals. 1
- 6) Give the name of the covering layer that maintain the shape of the eyeball 1
- 7) Which part of our body helps us in maintaining the body balance? 1
- 8) What are scotopic and photopic vision? 1
- 9) Give the name of the nervous tissues, which form the spinal cord. 1
- 10) How do the efferent fibres work? 1

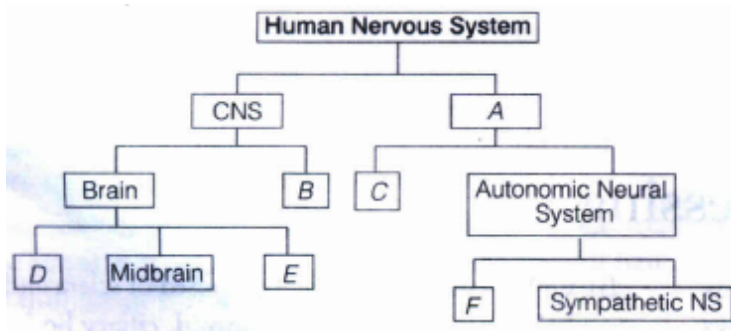
Section-B

- 11) The autonomic nervous system is considered as involuntary nervous system. Why? 2
- 12) Name te main division of nervous system in man 2
- 13) Differentiate between Myelinated and non-Myelinated axons. 2
- 14) Explain the factors on which the impluse conduction depends. 2
- 15) Write a short note on neural coordination. 2
- 16) Explain the significance of saltatory conduction. 2
- 17) Differentiate between rods and cones cells of retina 2
- 18) Describe the functions of limbic system? 2
- 19) Explain the role of Na⁺ in the generation of action potential. 2
- 20) Differentiate between 2
Cerebrum and cerebellum

Section-C

- 21) Differentiate between 5
Thalamus and hypothalamus
- 22) Answer briefly 5
 - (i) How do you perceive the colour of an object?
 - (ii) Which part of our body helps us in maintaining the body balance?
 - (iii) How does the eye regulate the amount of light that falls on the retina?

- 23) Explain the mechanism of generation of light-induced impulse on the retina. 5
- 24) Distinguish between cranial nerve and spinal nerve in human. 5
- 25) The major parts of the human neural system is depicted below. Fill in the empty boxes with appropriate words. 5



Section-A

- 1) Central neural (nervous) system, lies along the main central axis of the body. 1
- 2) These are proferin protein present in the cytoplasm of the neurons. 1
- 3) Neurotransmitters are the chemicals which are present at sybnaptic junctions. 1
- 4) Brain 1
- 5) Cranium 1
- 6) sclera (outmost layer) 1
- 7) Internal ear 1
- 8) Scotopic is twilightvision and photoppic is daylight vision 1
- 9) Gery matter and white matter 1
- 10) 1
The efferent nerve fibres transmit motor impulses from CNS to the concerned tissues/organs and form the motor or efferent pathway

Section-B

- 11) 2
This system transmits impulses from the CNS to the involuntary organs and smooth muscles of the body. So, it is also called involuntary nervous system.
- 12) Central nervous (neural) system and pheripheral nervous (neural) system. 2

13)

2

Difference between myelinated and non-myelinated axons are as follows

Myelinated	Non-myelinated
The Myelinated nerve fibres are enveloped with Schwann cells, which form a myelin sheath around the axon	Unmyelinated nerve fibers are enclosed by a Schwann cell that does not form a myelin sheath around the axon.
Myelinated nerve fibres are found in spinal and cranial nerves.	These are commonly found in autonomous and the somatic nervous systems.

14) Impulse conduction depends upon

2

- (i) Permeability of axolemma (axon membrane)
- (ii) osmotic equilibrium between the axoplasm and extracellular fluid present outside the axon.

15)

2

The organised network of point-to-point connection for quick coordination provided by neural system is called neural coordination. The mechanism of neural coordination involves transmission of nerve impulse, impulse conduction across a synapse and the physiology of reflex action.

16)

2

This process accounts for the greater speed of an impulse travelling along a myelinated neuron than along a non-myelinated one. It is upto 50 times faster than the non-myelinated nerve fibre.

17)

2

Differences between rods and cones are given below

Rods	Cones
The twilight vision is the function of rods	The daylight vision and the colour vision are functions of cones
The rods contain a purplish-red protein called the rhodopsin or visual purple, which contains a derivative of vitamin-A	In three human eye, there are three types of cones which possess their own characteristic photopigments that responds to red, green and blue lights

18)

2

Along with the hypothalamus, it is involved in the regulation of sexual behaviour, expression of emotional reactions, e.g., pleasure, excitement, rage and fear and motivation.

19)

2

When a stimulus is applied to a nerve becomes freely permeable to Na⁺ followed by the reversal of the polarity at that site. i.e., the outer surface of the membrane becomes negatively charged and the inner sides become positively charged. The electrical potential difference across the plasma membrane is called the action potential, which is in fact termed as a nerve impulse. Thus, this shows that Na⁺ ions play an important role in the conduction of nerve impulse

20)

2

Cerebrum	Cerebellum
It is the most developed part in brain	It is the second developed part of brain also called as little cerebrum
A deep cleft divides cerebrum into two cerebral hemispheres	Externally the whole surface contains gyri and sulci
Its functions are intelligence, learning, memory, speech, etc.	It contains centres for coordination and error checking during motor and cognition.

Section-C

21)

5

Thalamus	Hypothalamus
The cerebrum wraps around a structural part of brain called thalamus	It lies at the base of the thalamus
All types of sensory input passes synapses to the thalamus.	It contains neurosecretory cells that secrete hypothalamus hormones
It controls emotional and memory function.	It regulates, sexual behaviour expression of emotional reaction and motivation.

22)

5

(i) The daylight (photopic) vision and colour vision are functions of cones. In the human eye, there are three types of cones which possess their own characteristic photopigments that respond to red, green and blue lights. The sensations of different colours are produced by various combinations of these cones and their photopigments. When these cones are stimulated equally, a sensation of white light is produced.

(ii) The crista and macula are the specific receptors of the vestibular apparatus of inner ear which are responsible for the maintenance of balance of the body and posture.

(iii) The diameter of the pupil is regulated by the muscle fibre of iris. Photoreceptors, rods and cones regulate the amount of light that falls on the retina.

23)

5

Light induces dissociation of the retinol from opsin. It brings about changes in the structure of the opsin. This causes membrane permeability changes. As a result, potential difference are generated in the optic nerves to the visual cortex area of the brain, where the nerves impulses are analysed and the image formed on the retina is recognised.

24)

5

Differences between cranial nerve and spinal nerve in human are given below.

Cranial Nerve	Spinal Nerve
The cranial nerves originate in the brain and terminate mostly in organs head and upper body.	The spinal nerves originate in the spinal cord and extend to partsof the body below the head.
There are 12 pairs of cranial nerves.	There are 31 pairs of spinal nerves
Most of the cranial nerves contain axon and both sensory and motor neurons.	All of the spinal nerves contain axons both sensory and motor neurons.

