CBSE TEST PAPER-03

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. What types of neurons are found in dorsal root of spinal nerve?

2. What is the basic unit of neural system?

3. Why is blind spot devoid of the ability for vision?

4. Where does cerebrospinal fluid occur in our body? Mention two if its function.

5. What is the chemical difference between rods & cones?

6. Why are grey matter and white matter contained in human nervous system named so?

7. Give the location and function in the human eye, of the following –

(i) Cornea (ii) Iris (iii) Vitreous humor

8. Why are nerve impulses conducted more rapidly in myelinated nerve fibre than in a non – myelinated one? Explain.

9. Taking one example, describe the functioning of the various components of a spinal reflex arc.

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[ANSWERS]

Ans 01. Sensory neurons.

Ans 02. Neuron.

Ans 03. Blind spot has no photoreceptor cells – rods or cones.

Ans 04. Cerebrospinal fluid is found in the subarachnoid space between arachnoid matter and parameter of the meninges around the brain and spinal cord and also in the cavities of the brain.

Functions –

1) It protects brain and spinal cord by acting as shock absorber.

2) It helps in removing harmful metabolites, drugs etc. away from the brain.

Ans 05.

	Rods	Cones
1.	These are meant for vision in dim light.	These are meant for vision in bright light.
2.	They do not have the ability to make colored image	They have ability to make colored image.
3.	They contain the visual pigment, rhodopsin.	These contain the pigment iodopsin.

Ans 06. Gray matter contains spindle, pyramidal, cell bodies with greyish brown appearance and hence called as grey matter.

White matter contains millions of myelinated axons; the large amount of myelin gives this tissue an opaque white appearance and hence called white matter.

Ans 07. 1) Cornea – The cornea is the eye's outermost layer. It is a clear, dome shaped surface that covers the front of the eye. It plays an important role in focusing your vision.

Function – i) The cornea also plays a key role in vision by helping focus the light that comes into the eye.

ii) It acts as a barrier against dirt, germs, and other particles that can harm the eye.

iii) The cornea also serves as a filter that screens out damaging ultraviolet (UV) light from the sun. Without this protection, the lens and the retina would be exposed to injury from

UV rays.
2) Iris – It is a flat, coloured, ring-shaped membrane behind the cornea of the eye, with an adjustable circular opening (pupil) in the centre.
Functions:- (i) It encloses pupil.
(ii) Iris contains cilliary muscles which regulate the size of pupil and controls the amount of light entering the eye ball.
3) Vitreous humor –The transparent jelly-like tissue filling the eyeball behind the lens.
Functions:- (i) It helps in giving shape to the eye & supports retina & lens.
(ii) It refracts the light rays.
Ans 08. In a myelinated nerve fiber, the lipid rich myelin acts as an insulator and depolarization occurs in the nodes of Ranvier where myelin sheath is absent. Since the action potential jumps from one node of Ranvier to another, the conduction becomes faster and such a type of conduction is called saltatory conduction.
In a non–myelinated fiber, the depolarization occurs all along its length and hence conduction becomes slower.
Ans 09. A Reflex arc is the shortest possible neural pathway from stimulus to reflex.
Components of Reflex arc are –
(1) Receptors – These are the organs / tissues which receive the stimulus and send it as an impulse.
(2) Sensory or afferent nerves – These are neurons which conduct the impulse from the receptor to the Central Nervous system (spinal cord)
(3) Relay or intermediate neurons – They are neurons which conduct the impulse from the afferent neurons to the efferent neurons.
(4) Motor or efferent neurons – These neurons conduct the impulse from the spinal cord/ relay neurons to the effector organs concerned.
(5) Effector organ – It is the organ / tissue or gland that functions accordingly.