

Topic :- Neural Control & Coordination

1 (a)
Frog has 10 pairs of cranial nerves, while man has 12 pairs.

2 (b)
Atropine is an alkaloid obtained from *Atropa belladonna* and
Datura stramonium.

3 (a)
A-Afferent, B-Efferent, C-Somatic motor, D-Autonomic, E-Sympathetic.
The afferent nerve fibres transmit impulses from tissues/organs to the CNS and the efferent fibres transmit regulatory impulses from CNS to the concerned peripheral tissues/organs.
The somatic neural system transmits impulses from the CNS to skeletal muscles while the autonomic nervous system transmits impulses from CNS to the involuntary organs and smooth muscles of the body. The autonomic neural system is classified into sympathetic neural system and parasympathetic neural system

4 (c)
Correct pairs are as follows:

Part/Gland	Secretion
Corpus luteum	Progesterone and oestrogen
Interstitial cells (testis)	Testosterone
Adenohypophysis (pituitary)	FSH
Acrosome	Hyaluronidase
Hypothalamus	Releasing or inhibiting neurohormones

5 (a)
A-Forebrain, B-Brain stem C-Corpus callosum, D-Cerebral aqueduct.
Forebrain consists of cerebrum, thalamus and hypothalamus. The medulla pons, midbrain and diencephalon are collectively called the brain stem. Cerebrum is divided longitudinally into the left and right cerebral hemisphere. The hemispheres are connected by a tract of nerve fibres called corpus callosum. **Cerebral aqueduct** is a canal that passes through the

midbrain

6

(a)

One nerve fibre is attached to another nerve fibre *via* a junction called synapse. It is not a tight junction. A synapse is formed by the membrane of a presynaptic neuron and postsynaptic neuron, which may or may not be separated by a gap called synaptic cleft, *i.e.*, axon of one neuron end on the dendrite of next neuron

7

(d)

A resting nerve fibre is not conducting an impulse shows positive charge outside with respect to the inside of the plasma membrane. This difference in electrical charges across the plasma membrane is called the resting potential

8

(b)

Severe diarrhea, vomiting, watery stools are the chief symptoms of cholera. All these lead to dehydration. Therefore patient suffering from cholera are given a saline drip because Na^+ ions help in the retention of water in the body tissue.

9

(a)

Lateral to the blind spot, there is a depressed area of the retina, called **fovea centralis**, which contains only cones. Ability for vision is highest in the fovea.

10

(a)

Types of Sensory Nerves Olfactory, optic and auditory cranial nerves

Types of Motor nerves Oculomotor, trochlear, abducens, spinal, accessory and hypoglossal cranial nerves

Types of Mixed nerves Trigeminal, facial, glossopharyngeal and vagus cranial nerves

11

(c)

Bowman's glands, present in the lining of nasal epithelium, secrete mucus. All odoriferous materials give off chemical particles, which are carried into the nose with inhaled air and stimulate the nerve cells of the olfactory region when dissolved in this mucus.

12

(a)

Out of the given, accessory spinal is a motor nerve.

13

(b)

A nerve impulse is transmitted from one neuron to another through junctions called synapses. A synapse is formed by the membranes of a presynaptic neuron and a postsynaptic neuron, which may or may not be separated by a gap called synaptic cleft. There are two types of synapses, *i.e.*, electrical synapses and chemical synapses. At electrical synapses, the membrane of pre- and postsynaptic neurons are in very close proximity. Electrical current can flow directly from one neuron into the other across these synapses

Transmission of an impulse across electrical synapses is very similar to impulse conduction along a single axon. Impulse transmission across an electrical synapse is always faster than across a chemical synapse. Electrical synapses are rare in our system

At a chemical synapse, the membranes of the pre- and postsynaptic neurons are separated

by fluid-filled space called synaptic cleft. Chemicals called neurotransmitters are involved in the transmission of impulses at these synapses

14

(b)

The leg of frog moves on pinpointing even, when brain is crushed, because of simple reflex or unconditioned or inborn reflex.

15

(b)

Myelin sheath is interrupted at some places to form gaps. These gaps are called nodes of **Ranvier**.

16

(a)

Cerebrum forms the major part of the human brain. A deep cleft divides the cerebrum longitudinally into two halves, termed as the left and right cerebrum hemispheres. The layer of cells, which covers the cerebral hemisphere is called cerebral cortex. Cerebral cortex is referred to as the grey matter. While the inner part is made up of white matter

17

(a)

Brain acts as the command and control system

18

(d)

Presbyopia is the far sightedness which commonly develops with advancing age. This condition is due to loss of elasticity of the lens of the eye and reduced power of accommodation.

19

(d)

Muller's fibres occur in **retina** of eye.

20

(c)

Cerebrum is formed of one pair largest sized lobes called cerebral hemisphere. These form 80% weight of brain. Cerebral hemisphere controls all the voluntary activities of body. It is seat of memory, will, intelligency, reasoning and learning.

ANSWER-KEY

Q.	1	2	3	4	5	6	7	8	9	10
A.	A	B	A	C	A	A	D	B	A	A
Q.	11	12	13	14	15	16	17	18	19	20
A.	C	A	B	B	B	A	A	D	D	C