DPP
DAILY PRACTICE PROBLEMS

Class : XIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 4

Topic :- Neural Control & Coordination

1 **(c)**
The gaps present two adjacent myelin sheaths are called nodes of Ranvier

2 **(a)**
Sympathetic nerve accelerates heart beat due to adrenaline. Adrenaline or epinephrine is a hormone secreted by the medulla of the adrenal gland. It presents the body for emergency action. It increases strength and rate of heart beat.

3 **(d)**
Neurotransmitters are the chemicals secreted by axon terminals for transmitting impulse to the next neuron. Acetylcholine, glutamic acid, glycine, GABA, epinephrine all are neurotransmitters. Tyrosine is not a neurotransmitter, it is an amino acid.

4 **(b)**
Oculomotor is a motor nerve, while optic, olfactory and auditory nerve are sensory in function.

5 **(c)**
Axons can be non-myelinated and myelinated both

6 **(d)**
Schwann cells, form a myelin sheath around the axon

7 **(c)**
Cranial nerves originates from brain. These nerves are motor, sensory and mixed types.
Abducens is the smallest cranial nerve, it carries stimulus from brain to posterior rectus muscles of eye. So, abducens is a purely motor nerve.
Vagus, facial and trigeminal nerves are mixed cranial nerve, *i.e.*, they are both sensory and motor in function.

8 **(c)**
Diencephalon is a small, unpaired and median squarish part of forebrain. Its dorsal wall called epithalamus and the overlying pia-arachnoid matter are thrown into highly vascular internal folds or tufts invaginated into the diocoel. This dorsal wall is, therefore, called anterior choroid plexus. From the blood capillaries of this plexus some amount of plasma fluid continuously oozes out into the cerebrospinal fluid.

9 **(a)**

All except I.

The inner parts of cerebral hemisphere and a group of associated deep structures like amygdala, hippocampus, etc. form a complex structure called the limbic lobe or limbic system along with hypothalamus. It is involved in the regulation of sexual behavior expression of emotional reactions, (*e.g.*, excitement, pleasure, rage and fear) and motivation

10 **(c)**

Alzheimer's disease in humans is associated with the deficiency of acetylcholine. Alzheimer's disease is an irreversible, progressive disorder, in which brain cells (neurons) deteriorate, resulting in the loss of cognitive functions, primarily memory, judgement and reasoning, movement, coordination and pattern recognition. In advanced stages of the disease, all memory and mental functioning may be lost.

11 **(d)**

II, III and IV.

Neuroglial cells are the packing and supporting cells found in brain and spinal cord. They are of three types, *i.e.,* astrocytes, oligodendrocytes and microglia

Astrocytes are responsible for separation of two neurons by insulation. Oligodendrocytes are a category of glial cells that form myelin sheath around the axon

Microglia are phagocytic as well as scavengers. They engulf microbes and cellular debris. Nearly 50% of all brain cells are neuroglia

Schwann cells are the neuroglial cell, which are present in PNS

12 **(c)**

Both (a) and (b).

Anatomically, the ear can be divided into three major sections called the outer ear, the middle ear and the inner ear.

The outer ear consists of pinna and external auditory meatus (canal)

13 **(b)**

Cornea is anterior, smaller transparent, thicker bulging outward and exposed part of eye. It is non-vascular and refracts the incident light rays to focus on the retina. It is used in eye donation.

14 **(d)**

The motor nerve endings secrete acetycholine, which activates nicotinic receptors of the muscle fibre membrane. Curare inhibits the nicotinic receptors and blocks neuromuscular transmission.

15 **(a)**

Lipofucsin granules are found in nerve cells. Their amount increases with age. These are made up of residual bodies derived from lysosomes.

16 **(c)**

The midbrain is located between the thalamus/hypothalamus of the forebrain and pons of the hindbrain. The hindbrain comprises pons, cerebellum and medulla. Midbrain and hindbrain forms the brain stem

17 **(c)**

Scala media contains the organ of hearing named organ of Corti. Organ of Corti rests on the basilar membrane.

18 **(d)**

In parasympathetic nervous system, acetycholine is released at effector.

19 **(d)**

Steps of Vision Light energy causes change in the shape of rhodopsin, leading to dissociation of retinal from opsin. Structure of opsin changes. Membrane permeability changes. Potential differences are generated in photoreceptor cells. Bipolar cells are depolarized. Ganglion cells are excited. Action potential (impulse) are transmitted by optic nerves in visual cortex. Neural impulses are analysed and image formed on ratina is recognised by visual cortex.

Mechanism of Vision

The light rays passes through cornea, aqueous humour, lens and vitreous humour and focusses on retina where they generate potential (impulses) in rods and cones. The photosensitive compound (photopigments) in the human eyes is composed of **opsin** (a protein) and retinal (an aldehyde of vitamin-A). Light induces dissociation of retinal from opsin which changes the structure of the opsin. Thus, potential differences are generated in the photoreceptor cells.

This causes action potentials in the ganglion cells through the bipolar cells. These action potentials (impulses) are transmitted by the optic nerves to the visual cortex area in the occipital lobe of the cerebral hemisphere of the brain where the neural impulses are analysed and erect image is recognised

20 **(b)**

Centrosome or cell centre is situated close of the nuclear envelope and also called microtubule organising centre (MIOC). It plays an important role in animal cell division by producing microtubules or bipolar mitotic spindles. As the nerve cells lack centrosome, they are not capable to divide.

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