

CHAPTER - 09

NEURAL CONTROL AND CO-ORDINATION

QUESTIONS

1. When a person is doing a vigorous exercise, all the following activities are increased except
 - 1) Voluntary muscular activity
 - 2) Rate of respiration
 - 3) Rate of peristalsis
 - 4) Cardiac output
2. Find the wrong statement
 - 1) Neurons detect, receive and transmit different kinds of stimuli
 - 2) Platyhelminthes have ladder like CNS
 - 3) Supra - oesophageal ganglion is the brain of insects
 - 4) Echinoderms have most evolved brain among invertebrates
3. Mark the wrong statement.
 - 1) Neurons are the structural and functional units of neural system
 - 2) Neuroglia cells are non-nervous supporting cells of neural system
 - 3) Ganglia are clusters of cytons in peripheral nervous system.
 - 4) Among the invertebrates, echinoderms have the best evolved brain
4. Find the wrong statement
 - 1) CNS has brain and spinal cord
 - 2) PNS contains afferent and efferent fibres
 - 3) ANS innervates involuntary organs
 - 4) Visceral neural system has efferent neurons only
5. Autonomic neural system consists of
 - 1) Brain and spinal cord
 - 2) Somatic and autonomic neural system
 - 3) Sympathetic and parasympathetic NS
 - 4) Afferent and efferent pathways
6. Which of the following is not true of a neuron?
 - 1) The major parts of a neuron are cell body , dendrites and axon
 - 2) Nissl's granules are seen in axoplasm
 - 3) Dendrites transmit impulses towards cyton
 - 4) Synaptic knob is the part of axon in a synapse

7. Match correctly and find the answer

Column I

- 1) Multipolar neurons
- 2) Bipolar neurons
- 3) Unipolar neurons
- 4) Pseudounipolar neurons

Column II

- k) retina
- m) dorsal ganglia
- n) cerebral cortex
- p) embryos

1) $\frac{1234}{nmkp}$

2) $\frac{1234}{nkpm}$

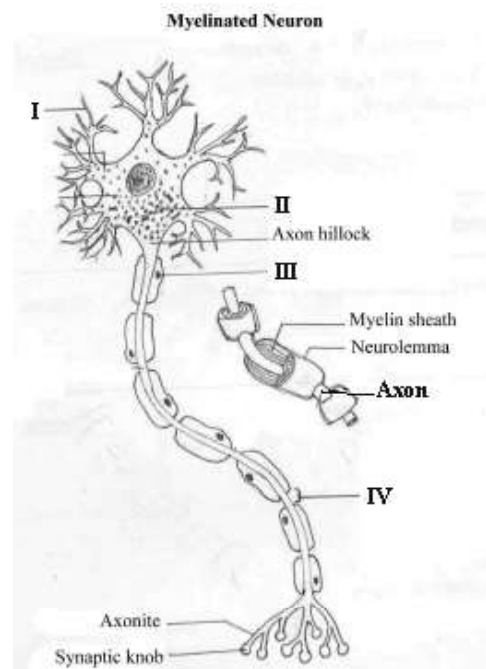
3) $\frac{1234}{npmk}$

4) $\frac{1234}{pmkn}$

8. Find the incorrect one

- 1) CNS $\xleftarrow{\text{Afferent pathway}}$ receptors
- 2) CNS $\xrightarrow{\text{Somatic NS}}$ skeletal muscles
- 3) CNS $\xrightarrow{\text{ANS}}$ visceral organs
- 4) CNS $\xleftarrow{\text{Efferent pathway}}$ peripheral tissues

9. Cell parts labelled II and IV are



- 1) Synaptic knob and myelin sheath
- 2) Nissl bodies and nodes of Ranvier
- 3) Nissl granules and nucleus
- 4) Centrioles and Schwann cells

10. Which of the following statement is not true?
- 1) Neurons are excitable cells with polarised membrane.
 - 2) Nodes of Ranvier are electrically active.
 - 3) "Axon → Cyton → dendron" is the impulse flow direction along a neuron
 - 4) Schwann cells are myelin producing cells of PNS.
11. Find the correct match.

	Column I		Column II
1	Saltatory conduction	a.	Neurotransmitters
2	Nissl's bodies	b.	Synaptic vesicles
3	Synaptic knob	c.	Myelinated axon
4)	Nodes of Ranvier	d.	Gaps in myelin sheath

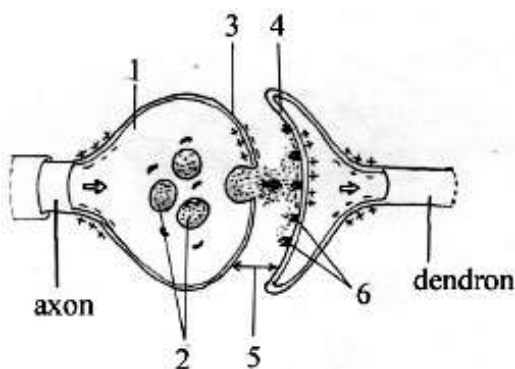
1) $\frac{1234}{cabd}$

2) $\frac{1234}{cbad}$

3) $\frac{1234}{dacb}$

4) $\frac{1234}{dcab}$

12. Which of the following statement is not true of a resting axon?
- 1) Axoplasm has a high concentration of K^+ and low concentration of Na^+
 - 2) $Na^+ - K^+$ pumps are active even in resting state pumping $3Na^+$ out for every $2K^+$ into axoplasm
 - 3) Na^+ channel remain opened and free flow of Na^+ occurs.
 - 4) Resting potential is $-70mV$
13. Mark the true statement
- 1) Depolarisation is due to Na^+ efflux
 - 2) Impulse is, transmitted action potential
 - 3) On depolarisation, the inside of the axon becomes $-ve$
 - 4) Axolemma is freely permeable to Na^+
14. In the given diagram the synapse is formed of parts marked



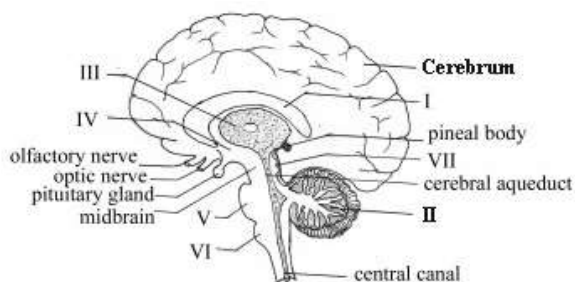
1) 1,2 and 3

2) 3,4 and 5

3) 4,5 and 6

4) 2,3 and 4

15. Mark the false statement
- 1) Myelinated axons conduct impulses faster.
 - 2) Neurotransmitters are employed in transmitting impulses through electrical synapses
 - 3) Ca^{2+} helps in chemical synaptic conduction
 - 4) Neurotransmitters are stored in synaptic vesicles of synaptic knob
16. Find the false statement
- 1) Acetyl choline is the most abundant neurotransmitter in our body.
 - 2) Ca^{2+} ions enter synaptic knob on depolarisation of presynaptic membrane
 - 3) Electrical synaptic conduction is faster
 - 4) Chemical synapses are very few in our body
17. The layer of cranial meninges lining the inside of brain box (cranium) is
- 1) dura mater
 - 2) pia mater
 - 3) arachnoid
 - 4) ependyma
18. Match the following
- | | |
|------------------|--|
| 1) Forebrain | a) Cerebellum, pons, medulla oblongata |
| 2) Hind brain | b) Amygdala, Hippocampus, Hypothalamus |
| 3) Brain stem | c) Cerebrum, thalamus, hypothalamus |
| 4) Limbic system | d) Midbrain, pons, medulla oblongata |
- 1) $\frac{1234}{adbc}$ 2) $\frac{1234}{cabd}$ 3) $\frac{1234}{cadb}$ 4) $\frac{1234}{dabc}$
19. Which of the following is true of association area of cerebral cortex?
- 1) A tract of 200 million myelinated nerve fibres connecting the two cerebral hemispheres.
 - 2) For intersensory association, memory and communication.
 - 3) Controls body temperature, urge for eating and drinking
 - 4) Regulates sexual behaviour, emotional reactions and motivation.
20. Sagittal section of human brain



In the above diagram, part labelled II is

- 1) Controls voluntary functions
- 2) Controls involuntary functions
- 3) Corpora quadrigemina for the relay centre
- 4) Crura cerebri for maintaining balance and equilibrium

21. Find the false statement
- 1) Limbic system has amygdala and hippocampus
 - 2) Cerebellum wraps around thalamus
 - 3) Cerebral medulla is made of white matter.
 - 4) Cerebral cortex contains cell bodies and dendrites
22. The biggest part of hindbrain is
- 1) Pons varoli
 - 2) Medulla oblongata.
 - 3) Cerebellum
 - 4) Arbor vitae
23. Which of the following is on the dorsal part of midbrain?
- 1) Amygdala
 - 2) Hippocampus
 - 3) Cerebral aqueduct
 - 4) Corpora quadrigemina
24. The part of the brain between midbrain and medulla oblongata is
- 1) Pons varolii
 - 2) Thalamus
 - 3) Cerebral aqueduct
 - 4) Medulla oblongata
25. Match the following and select the correct one.
- | Column I | Column II |
|--------------------|-------------------------|
| a) Cerebral cortex | p) Memory centre |
| b) Hypothalamus | q) Fear centre |
| c) Hippocampus | r) Master clock |
| d) Amygdala | s) Voluntary functions. |
- 1) $\frac{abcd}{srpq}$ 2) $\frac{abcd}{sprq}$ 3) $\frac{abcd}{rsqp}$ 4) $\frac{abcd}{srqp}$
26. Visual area of brain, processing impulses from retina, is in the cortex of
- 1) Frontal lobe
 - 2) Parietal lobe
 - 3) Temporal lobe
 - 4) Occipital lobe
27. Frontal and parietal cortices are separated by
- 1) Longitudinal sulcus
 - 2) Central sulcus
 - 3) Lateral sulcus
 - 4) Parieto-occipital sulcus
28. Brain stem is formed of
- 1) Cerebrum, Thalamus and hypothalamus
 - 2) Cerebellum, Pons and medulla oblongata
 - 3) Midbrain, Pons and medulla oblongata
 - 4) Amygdala and hippocampus
29. Which of the following is a mismatch?
- 1) Cerebral cortex - controls voluntary function of the body
 - 2) Thalamus - Centre for sensory and motor signalling
 - 3) Limbic system - Regulates sexual behaviour, emotional reactions and motivations.
 - 4) Corpora quadrigemina - Controls body temperature, urge for eating and drinking.

30. Find the mismatch

- | | |
|-------------------------|------------------------------|
| 1) Corpora quadrigemina | – Audiovisual reflex centre |
| 2) Thalamus | – Respiratory centre |
| 3) Hypothalamus | – Thermostat |
| 4) Brain | – Command and control system |

31. Select the correct match

	Column I		Column II
1	Appetite centre	p.	Limbic lobe
2	Emotional brain	q.	Pons varolii
3	Equilibrium centre	r.	Hypothalamus
4	Pneumotaxic centre	s.	Cerebellar cortex

- | | | | |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| 1) $\frac{1\ 2\ 3\ 4}{r\ p\ q\ s}$ | 2) $\frac{1\ 2\ 3\ 4}{p\ q\ s\ r}$ | 3) $\frac{1\ 2\ 3\ 4}{r\ p\ s\ q}$ | 4) $\frac{1\ 2\ 3\ 4}{q\ r\ s\ p}$ |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|

32. The ventricle of thalamus and the ventricle of hind brain are connected by

- 1) Foramen of Monro 2) Cerebral aqueduct 3) Central canal 4) Neural canal

33. Mark the wrong statement regarding reflexes

- 1) Reflexes are involuntary
 2) Reflex impulses begin in receptors and end in effectors.
 3) CNS is the reflex centre
 4) Knee jerk reflex is conditioned reflex

34. In knee jerk reflex, the sensory neuron – motor neuron synapse is in

- 1) Tendons of calf muscle 2) Dorsal ganglion
 3) Spinal cord 4) Thigh muscle

35. Find the matching set.

	Column I		Column II
1	Cranial reflex	p.	I.P.Pavlov
2	Spinal reflex	q.	Winking of eyes
3	Unconditioned reflex	r.	Sneezing
4	Conitioned reflex	s.	Knee jerk reflex

- | | | | |
|------------------------|------------------------|------------------------|------------------------|
| 1) $\frac{1234}{spqr}$ | 2) $\frac{1234}{qsrp}$ | 3) $\frac{1234}{rspq}$ | 4) $\frac{1234}{qrsq}$ |
|------------------------|------------------------|------------------------|------------------------|

36. Find the mismatch in the following

- 1) Eye wall – Sclera, choroid and retina
- 2) Retina – Photoreceptor cells, bipolar cells and ganglion cells
- 3) Ear ossicles – Malleus, incus and stapes
- 4) Organ of corti – Sensory cells, Otoliths and tectorial membrane

37. The anterior transparent avascular part of sclera is

- 1) Iris
- 2) Pupil
- 3) Cornea
- 4) Conjunctiva

38. The cells of retina near to choroid are

- 1) Ganglion cells
- 2) Bipolar cells
- 3) Photoreceptor cells
- 4) Amacrine cells

39. Dim light breaks rhodopsin into retinal and

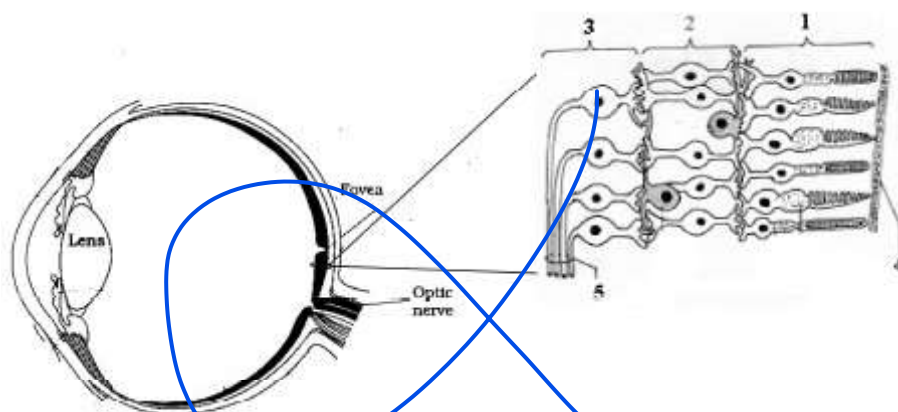
- 1) Iodopsin
- 2) Chloropsin
- 3) Scotopsin
- 4) Erythrospin

40. Match the following and select the correct option.

	Column I		Column II
1	Eye wall	p.	Photoreceptor layer, bipolar layer and ganglion cell layer
2	Retina	q.	Semicircular canals, utricle and saccule
3	Vestibular apparatus	r.	Malleus, incus and stapes
4	Ear ossicles	s.	Sclera, choroid and retina

- 1) $\frac{1234}{pqsr}$
- 2) $\frac{1234}{spqr}$
- 3) $\frac{1234}{qsrp}$
- 4) $\frac{1234}{sprq}$

41. Photosensitive pigments are stored in cells of layer labelled.



- 1) 1
- 2) 2
- 3) 3
- 4) 5

42. Match the following and find the correct option.

	Column I		Column II
1	Ciliary muscles contract	a.	Only cones are present.
2	Radial muscles of iris contract	b.	Due to blocking of canal of schlemm
3	Fovea centralis	c.	Dilation of pupil
4	Glaucoma	d.	Near vision

1) $\frac{1234}{bcad}$

2) $\frac{1234}{dcab}$

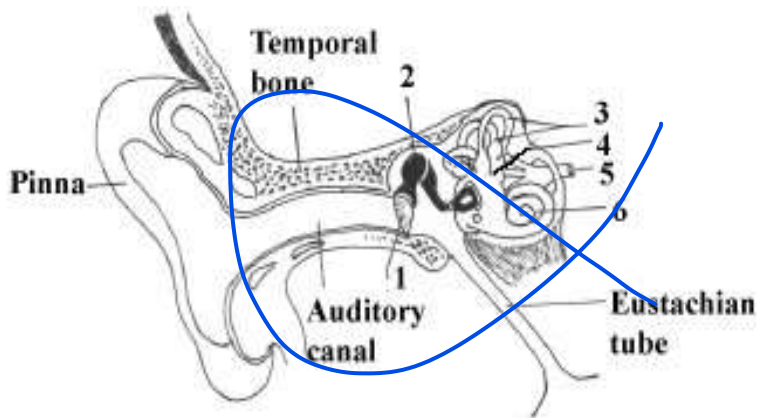
3) $\frac{1234}{cbad}$

4) $\frac{1234}{dcba}$

43. Which of the following statement is false?

- 1) Semicircular canals contain cristae for dynamic equilibrium
- 2) Cristae and maculae are sense organs for balance and posture
- 3) Organ of corti has hair cells on basilar membrane
- 4) Cochlear duct is filled with perilymph

44. Organ of corti, units of hearing are located in part labelled.



1) 1

2) 2

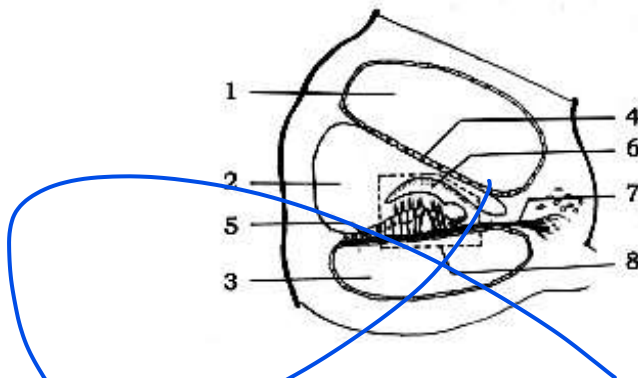
3) 4

4) 6

45. Mark the wrong statement

- 1) External ear consists of pinna, auditory canal and eardrum
- 2) Malleus, incus and stapes are the ear ossicles.
- 3) Cochlea contains scala vestibuli, scala media and scala tympani
- 4) Vestibular apparatus is composed of cochlea, utricle and saccule.

46. C. S of Cochlea



The membrane labelled 4 is

- | | |
|------------------------|--------------------------|
| 1) Tectorial membrane | 2) Basilar membrane |
| 3) Reissner's membrane | 4) Schneiderian membrane |

47. Find the correct statement

- 1) Cristae are receptors of static equilibrium
- 2) Basilar membrane is a non-sensory membrane
- 3) Olfactory bulb is the anterior part of limbic system
- 4) Bony labyrinth is filled with endolymph.

48. Which of the following is incorrect?

- 1) $\text{Photons} \rightarrow \text{photoreceptor cells} \rightarrow \text{bipolar cells} \rightarrow \text{Ganglion cells} \rightarrow \text{Optic nerve} \rightarrow \text{Visual cortex} \Rightarrow \text{Vision}$
- 2) $\text{Sound waves} \rightarrow \text{ear drum} \xrightarrow{\text{Vibrations}} \text{Organ of corti} \xrightarrow{\text{impulses}} \text{Auditory cortex} \Rightarrow \text{Hearing}$
- 3) $\text{Statoreceptors} \rightarrow \text{Cerebellar cortex} \rightarrow \text{Thalamus} \rightarrow \text{Motor area} \rightarrow \text{Skeletal muscles} \Rightarrow \text{Balance}$
- 4) $\text{Schneiderian membrane} \rightarrow \text{Olfactory cells} \rightarrow \text{Olfactory area} \rightarrow \text{Olfactory nerve} \rightarrow \text{Olfactory bulb} \Rightarrow \text{Olfaction}$

49. Find the mismatch

- | | |
|-------------------|--------------------------------------|
| 1) Amygdala | - Emotion centre of brain |
| 2) Hippocampus | - Memory and learning centre |
| 3) Reflex arc | - Impulse pathway in a reflex action |
| 4) Sympathetic NS | - Decreases heart rate |

50. Olfactory bulb is the anterior part of

- | | |
|---------------------|--------------------|
| 1) nasal epithelium | 2) Bowman's glands |
| 3) thalamus | 4) limbic lobe |

CHAPTER - 10
NEURAL CONTROL AND CO-ORDINATION

WORK BOOK

1.	3	11.	1	21.	2	31.	3	41.	1
2.	4	12.	3	22.	3	32.	2	42.	2
3.	4	13.	2	23.	4	33.	4	43.	4
4.	4	14.	2	24.	1	34.	3	44.	4
5.	3	15.	2	25.	1	35.	2	45.	4
6.	2	16.	4	26.	4	36.	4	46.	3
7.	2	17.	1	27.	2	37.	3	47.	3
8.	4	18.	3	28.	3	38.	3	48.	4
9.	2	19.	2	29.	4	39.	3	49.	4
10.	3	20.	2	30.	2	40.	2	50.	4