



BIOLOGY

BOOKS - PRADEEP BIOLOGY (HINGLISH)

NEURAL CONTROL AND CORRINATION

Curiosity Questions

1. Why is the surface in the cerebrum highly folded and grey matter external to white matter ?

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2. What is cauda equina and where is it located ?

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3. Why is the conditioned reflex likely to be lost with time ?

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4. What is non-decremental phenomenon in nerve impulse conduction ?

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5. How does a synapse act as a one-way valve ?

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6. Why do the albinos have pink eyes ?

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7. Why are the ears called mechanoreceptors ?



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8. Why and how is the the force of vibrations increased in the middle ear ?



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Notable Question

1. How does milk induce sleep ?



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2. How does aspirin inhibit pain ?



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3. What enables our eyes to see a motion picture ?



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Ncert Exercise

1. Briefly describe the structure of the following :

(a) Brain

(b) Eye

(c) Ear



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2. Compare the following :

(a) Central neural system (CNS) and Peripheral neural system (PNS).

(b) Resting potential and actions potential .

(c) Choroid and retina.



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3. Explain the following processes:

- (a) Polarisation of the membrane of a nerve fibre.
- (b) Depolarisation of the membrane of a nerve fibre.
- (c) Conduction of nerve impulse along a nerve fibre.
- (d) Transmission of a nerve impulse across a chemical synapse.



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4. Draw labelled diagrams of the following :

- (a) Neuron
- (b) Brain
- (c) Eye
- (d) Ear



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5. Write short notes on the following :

- (a) Neural coordination
- (b) Forebrain
- (c) Midbrain
- (d) Hindbrain
- (e) Retina
- (f) Ear ossicles
- (g) Cochlea
- (h) Organ of Corti
- (i) Synapse



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6. Give a brief account of :

- (a) Mechanism of synaptic transmission
- (b) Mechanism of vision
- (c) Mechanism of hearing



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7. Answer briefly :

- (a) How do you perceive the colour of an object ?
- (b) Which part of our body helps us in maintaining the body balance ?
- (c) How does the eye regulate the amount of light that falls on the retina.



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8. Explain the following :

- (a) Role of Na^+ in the generation of action potential.
- (b) Mechanism of generation of light- induced impulse in the retina .
- (c) Mechanism through which a sound produces a nerve impulse in the inner ear .



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9. Differentiate between :

- (a) Myelinated and non-myelinated axons
- (b) Dendrites and axons

(c) Rods and cones (d) Thalamus and Hypothalamus

(e) Cerebrum and Cerebellum

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10. Answer the following :

(a) Which part of the ear determines the pitch of a sound ?

(b) Which part of the human brain is the most developed ?

(c) Which part of our central neural system acts as a master clock ?

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11. The region of the vertebrate eye, where the optic nerve passes out of the retina, is called the

(a) fovea

(b) iris

(c) blind spot

(d) optic chaisma

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12. Distinguish between :

- (a) afferent neurons and efferent neurons
- (b) impulse conduction in an myelinated nerve fibre and unmyelinated nerve fibre
- (c) aqueous humour and vitreous humor
- (d) blind spot and yellow spot
- (f) cranial nerves and spinal nerves .



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Additional Question Very Short Answer Question

1. The all-or-none principle states that :

- A. the properties of an action potential are independent of the strength of the depolarising stimulus.

- B. all stimuli will produce action potentials.
- C. all graded potentials will generate action potential.
- D. any cell membrane can generate and propagate an action potential if stimulated to threshold.

Answer: A

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2. The loss of positive ions from the interior of a neuron produces:

- A. depolarisation
- B. threshold
- C. hyperpolarisation
- D. action potential

Answer: D

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3. Which of the following describe the largest amount of the human cerebral cortex ?

- A. the primary somatosensory cortex
- B. the temporal cortex
- C. association cortex
- D. the occipital cortex

Answer: B



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4. Which statement about the autonomic nervous system is true ?

- A. The sympathetic division is afferent, and the parasympathetic division is efferent.

- B. Each pathway in the autonomic nervous system includes the neurons , and the neurotransmitter of the first neuron is acetylcholine.
- C. The cell bodies of many sympathetic preganglionic neuron are in the brain stem.
- D. The cell bodies of most parasympathetic post ganglionic neurons are in or near the thoracic and lumber spinal cord.

Answer: B



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5. Which statatement is not true ?

- A. In the spinal cord, the white matter contains the axons conducting information up and down the spinal cord.

B. The limbic system is involved in basic physiological drives, instincts and emotions.

C. The vast majority of the nerve cell bodies in the human nervous system are contained within the limbic system.

D. In human a part of limbic system is necessary for the transfer of short-term memory to long-term memory.

Answer: D

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6. Name the parts of the brain function as endocrine glands.

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7. What is arbor vitae ?

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8. Give the term used for the lower pointed end of the spinal cord.



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9. How many spinal nerves occurs in man ?



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10. Which roots of the spinal nerves bear ganglia ?



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11. Name the mixed cranial nerve that controls swallowing .



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12. Name the chemical released by parasympathetic nervous system.



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13. What is the nature of nerve impulse ?



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14. Name the part of the brain which is concerned with (a) intelligence and memory and (b) posture, equilibrium and muscle tone.



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15. Which part of the brain controls the heart ?



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16. What is the nature of spinal nerves ?



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17. Name the band of nerve fibres that joins the cerebral hemispheres.



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18. Name the Xth cranial nerve.



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19. What is a mixed nerve ?



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20. Which statement about olfaction is not true?

- A. Dogs are unusual among mammals, in that they depend more on olfaction than on vision, as their dominant sensory modality.
- B. olfactory stimuli are recognised by the intersection between the stimulus and a specific macromolecule on olfactory hairs.
- C. The greater the number of action potentials generated by an olfactory receptor the greater the intensity of the perceived smell.
- D. The perception of different smells results from the activation of different combination of olfactory receptors.

Answer: B



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21. The membrane that gives us the ability to discriminate different pitches of sound is the

A. round window

B. tympanic membrane

C. tectorial membrane

D. basilar membrane

Answer: D



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22. The region of the vertebrate eye, where the optic nerve passes out of the retina, is called the

(a) fovea

(b) iris

(c) blind spot

(d) optic chaisma

A. Fovea

B. iris

C. blind

D. spot

Answer: C



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23. The colour in vision results from

- A. different absorption of wavelengths of light by different classes of rods.
- B. ability of each cone to absorb all wavelengths of light equally.
- C. lens of the eye acting like a prism and separating the different wavelenghts of light.
- D. three different isomers of opsin in different classes of cone cells.

Answer: D



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24. During accommodation for near vision

- A. images from the distant objects are focussed behind the retina
- B. the focussing power of the lens is increased
- C. the sympathetic nerves to the eye are activated
- D. the pupil does not constrict

Answer: B



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25. Name the exposed, transparent part of the eyeball.



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26. What is the coloured part of the eye called ?



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27. Through which aperture light enters the eye ?

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28. Name the two chambers of the eyeball.

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29. Name the material that fills the larger chamber of the eye.

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30. Which pigment enables us to see in the dark ?

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31. Give the position of conjunctiva .



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32. Of which tissue is conjunctiva formed ?



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33. Name the two kinds of ciliary muscles.



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34. Which part of the retina has only cones ?



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35. What is the cause of nyctopia ?



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36. Give the name of the passage between middle ear and pharynx.

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37. Name the bones which help in hearing.

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38. What is the organ of Corti meant for ?

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39. Give the function of maculae.

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40. What is the role of cristae ?



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41. Which muscles control the size of pupil ?



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42. Name two animals having monocular vision.



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43. Why does the ear has a pinna ?



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44. How do the eyebrows protect the eyes ?



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45. How do rods and cones differ chemically and functionally ?

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46. Rearrange the following in the correct order of involvement in electrical impulse movement :

Synaptic knob, dendrites, cell body, axon terminal, axon.

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47. Which cell of retina enable us to see coloured objects around us ?

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48. Arrange the following in the order of reception and transmission of sound wave from the ear drum. Cochlear nerve, external auditory canal, ear drum, stapes, incus, malleus, cochlea.



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Additional Question Short Answer Question

1. What is the primary function of the neuroglia cells ? What special structure is produced by Schwann cells ?

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2. Which parts of the nervous system participate in the maintenance of balance and coordinated body movements?

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3. Which nerve tract connects the right and left hemispheres of the cerebrum ? Into what four lobes is each hemisphere divided?

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4. What is blood-brain barrier ?



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5. How is the excess cerebrospinal fluid sent into the blood ?



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6. Give the location and function of it.



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7. Where is the reticular activating system found in the brain ? Mention its role.



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8. Give the structure and function of choroid plexus.

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9. What is a synapse ?

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10. What happens when the membrane of a nerve cell carries out sodium pump ?

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11. Differentiate between nucleus, column and ganglion.

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12. Name the structural and functional units of muscular, excretory and nervous systems.

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13. What neurotransmitters are secreted by sympathetic and parasympathetic nerve fibres . Name the enzymes that neutralize them.

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14. The membrane of a resting nerve fibre is said to be in a polarized state. What is meant by this statement ?

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15. Explain only two functions of cererbrosppinal fluid in humans.

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16. There are 3 grades of sensory receptors regarding structural complexity. Name these and give one example of each.

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17. The receptors act as biological transducers. What is meant by this ?

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18. What is sensory adaptation ?

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19. Name the 3 types of receptors regarding their position.

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20. Name the extrinsic eye muscles that move the eye in the orbit.



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21. Where are the ear ossicles located ? Name and describe them.



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22. Give the position of maculae, cristae and organ of Corti. Mention their role too.



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23. Name the fluids associated with sense organs.



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24. Give the functional difference between taste cells and olfactory cells.

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25. Explain the structural and functional significance of fovea in the human eye.

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26. Name the muscles found inside the middle ear. What type of muscles they are ?

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27. Name the ear ossicles in the order of arrangement in humans. What role do they play in hearing ?

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28. Describe the location and the role of ciliary body in human eye.



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29. Name the structure involved in the protection of the brain.



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30. Complete the statement by choosing appropriate match among the following :

- | | | |
|-----------------------|-------|---|
| (a) Resting potential | (i) | chemicals involved in the transmission of |
| (b) Nerve impulse | (ii) | gap between the pre-synaptic and post-synaptic |
| (c) Synaptic cleft | (iii) | electrical potential difference across the membrane |
| (d) Neurotransmitters | (iv) | an electrical wave like response of a neuron |



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31. How does a wave of depolarisation spread along a nerve fibre ?



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32. What is synapse ? How does the nerve impulse cross the synapse ?



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33. What is the action potential of a neuron ? Do all neurons possess the same action potential ?



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34. Why is the mode of conduction of electrical impulse along the myelinated neuron advantageous to a non-myelinated neuron ? What is this type of conduction called ?



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35. Write down the general function of the nervous system.

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36. What are nerves ? Name their three kinds . Give the role of each.

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37. Make a list of the main parts of the nervous system or brain.

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38. Describe the meanings of the brain.

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39. Give the role of the various parts of the forbrain.



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40. Write down the functions of the various parts of the midbrain and hindbrain.



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41. Explain the transmission of nerve impulse along a nerve fibre.



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42. Draw a diagram of transverse section of the spinal cord showing reflect are and label the following parts : (i) Afferent nerve fibres, (ii) Motor nerve fibre, and (iii) Grey matter.



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43. Draw a diagram to show the structure of a neuron with myelinated axon and label any six parts in it .

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44. Draw a diagram to show the path followed by the nerve impulse from the receptor to the effector in a spinal reflex arc. Label any six parts.

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45. Are rods and cones evenly distributed over the entire surface of the retina ? Why or why not? At which point on the retina is a point to point image found ?

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46. Blind spot in the eye is devoid of the ability of vision ? Why is it so ?





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47. Distinguish between : (a) Rods and cones (b) Blind spot and yellow spot.



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48. Write down the basic structure and mode of working of a receptor.



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49. What parts of the eye form the focussing apparatus ? How do they achieve their functions ?



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50. What is the power of accommodation of the eye ? Describe the apparatus meant for this. How is it brought about ?



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51. Give the exact location and function of the following

Iris , Aqueous humour, Vitreous human ,Lacrimal gland, Fovea centralis.



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52. (a) Why do we see better through the corner of our eye in darkness?

(b) How can you show that the olfactory receptors are quickly fatigued?



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53. Draw a labelled diagram of a portion of sectional view of retina showing its basic structure .



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54. Draw a vertical section of the human eye and label any six of those parts only through which the light rays pass and fall on the retina.



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55. Mention where the following are located in the human brain, and give one function of the each :

(a) Temporal lobe, (b) Cerebellum, (c) Corpus callosum.



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56. Match the items given column I with appropriate items (one or more) in column II.

Column I

- (i) Cerebral hemispheres
- (ii) Medulla oblongata
- (iii) Spinal cord
- (iv) Mid brain
- (v) Spinal nerves

Column II

- (a) Fourth ventricle
- (b) Central canal
- (c) Lateral ventricles
- (d) Mixed
- (e) Thirty one pairs
- (f) Iter
- (g) Cardiac centre

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57. Match the items given in column I with appropriate items(one or more)of column II.

Column I

- (i) Myopia
- (ii) Rhodopsin
- (iii) Iodopsin
- (iv) Hypermetropia
- (v) Endolymph

Column II

- (a) Rod cells
- (b) Convex lenses
- (c) Concave lenses
- (d) Farsightedness
- (e) Cone cells
- (f) Membranous labyrinth
- (g) Nearsightedness

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58. Read the following five statements (i) to (v) regarding left cerebral hemisphere and select the option that correctly states the true (T) and false (F) statements.

(i) It receives most modalities of sensory information from the right side of the body.

(ii) It is usually larger than the right cerebral hemisphere.

(iii) It is the dominant cerebral hemisphere in most individuals.

(iv) It is connected to the right cerebral hemisphere by the corpus callosum.

(v) It contains the main areas for the understanding and production of speech in most individuals.



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59. What are the functions described for the Eustachian tube?



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Additional Question Long Answer Question

1. Distinguish between :

(a) afferent neurons and efferent neurons

(b) impulse conduction in an myelinated nerve fibre and unmyelinated nerve fibre

(c) aqueous humour and vitreous humor

(d) blind spot and yellow spot

(f) cranial nerves and spinal nerves .



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2. What is reflex ? What units of the nervous systems are involved with a typical vertebrate reflex arc ?



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3. Briefly describe the morphology of human brain.



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4. Describe the structure of forebrain of humans.



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5. Give an account of the spinal cord or spinal nerves.



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6. Describe the cranial nerves of man.



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7. What is a nerve impulse ? How is it set up and transmitted ?



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8. Give a brief account of reflex action.

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9. Write a note on conditioned reflex.

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10. Describe the reflex action with the help of a labelled diagram.

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11. Describe the structure and function of the forebrain of a human being and add a note on functional areas of the cerebrum.

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12. Name the meninges of brain and give their function. Define reflex action.

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13. (a) Make a clearly labelled diagram of the inner ear of a human being.
(b) Describe how each of the following is achieved in us : (i) hearing ,(ii) balance.

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14. Describe the protective devices for the eyes .

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15. Give an account of the structure of human eye.

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16. Explain the functioning of eye.



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17. Describe the internal ear of man with the help of a labelled diagram .



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18. What are the functions of ear ? How are these performed ?



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19. Draw a labelled figure of the V.S. of human eye.



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20. Describe the structure of cochlea . Explain the mechanism of hearing.



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21. Explain the following :

- (a) How does the middle ear help in hearing ?
- (b) Why does vitamin A deficiency produce night-blindness ?
- (c) What is the role of lacrimal gland ?
- (d) How does the iris adjust the size of the pupil ?



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22. Draw a labelled diagram of T.S. cochlea of human ear.



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23. Give scientific reasons of the following statement :



24. Fill in the blanks :

(i) The nervous control is and flexible while hormonal control is usually and its effect is diffuse.

(ii) Nervous tissue consists of, nerve fibres, nerves, packing cells called neuroglia, ependymal cells and

(iii) Each nerve fibre is covered by a layer of connective tissue called Similarly, each nerve is surrounded by a dense layer of connective tissue called

(iv) The surface of the cerebrum is greatly folded to increase the area for accommodating more nerve cells.

The folds are called and the depressions between them are termed

(v) Anterior choroid plexus is found in while dural mater is the meninx of the brain .

(vi) Pia mater is the meninx of the brain while dural mater is the meninx of the brain.

(vii) In spinal cord, grey matter is and white matter is

..... in position and is divided into three columns.

(viii) In amniotes there are cranial nerves while in anamniotes there are cranial nerves.

(ix) Spinal nerves are always in nature . In man, there are pairs of the spinal nerves.

(x) Cerebellum consists of a pair of and a median



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25. Study the figure carefully and answer the following question :



(i) Label the parts marked as (a), (b), (c) , (d) and (e) .

(ii) Give one major function of each of the part.



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26. Fill in the blanks :

(i) End bulbs of Kruse and Ruffini's endings are termed

..... and respectively.

(ii) Receptors for sweet taste occur on the of the tongue and for salty taste of the tongue.

(iii) Maculae are located in the and cristae are located in the

(iv) Sphincter muscles of iris on contraction make the pupil and dilator muscles of iris on contraction make the pupil.

(v) Myopia refers to and hypermetropia refers to

(vi) Myopia can be corrected by using lenses while hypermetropia can be corrected by using lenses.

(vii) Endolymph is present in and perilymph is present in

(viii) Otoliths are present in and are absent in

(ix) The floor of scala media is called..... and its roof is called

(x) Tympanic cavity has in its inner wall two membrane bound apertures :
upper and lower

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27. Explain the process of the transport and release of a neurotransmitter with the help of a labelled diagram showing a complete neuron, axon terminal and synapse.

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28. Name the parts of human forebrain indicating their respective functions.

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29. Explain the structure of middle ear and internal ear with the help of diagrams.



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Analytical Question With Answer

1. (i) What is the audible range for human beings ?

(ii) What is the harmful effect of loud music on our hearing system ?



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2. The term 'eye donation' and 'eye bank' refer to what ?



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3. How can infection in the ear affect equilibrium of the body ?



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4. Why do albinos have pink eyes ? Explain.



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5. Why are the ears called mechanoreceptors ?



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6. Why is the force of vibration increased in the middle ear ?



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7. Why can some people not able to see in the dark ? Explain .



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8. Study the given figure carefully and answer the following question :



(i) Label the parts marked as (a), (b), (c) and (d) and (e).

(ii) Give one major function of each.

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9. At which locations are the taste buds located in humans ? Name the nerves that supply the buds ?

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10. What is synaptic fatigue ?

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11. What are meanings ? Name them.



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12. What is synapse ? Why does it act as a one-way valve ?



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13. Why are cornea transplants successful ?



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14. (a) What is monocular vision and binocular vision ? Name the animals where such vision is there.

(b) What is colour vision ?



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15. What is macula lutea or yellow spot ? What kind of cells are present in its centre ?



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16. (a) What is blind spot ? Can image be formed on it ?

(b) Why we see better in dimlight by looking out of the corner of the eye ?



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17. (a) What are the parts of eye which constitute its focussing part?

(b) What causes maximum refraction ?

(c) What is the function of lens of eye ?



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18. What is power of accommodation of eye ? Name the structure which help in changing the convexity of the lens.

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19. (a) Name the photoreceptors of eye. Also name the pigments they contain.

(b) What causes movements of the eye in the orbit ?

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20. Where are the following structures located ?

(i) Macula

(ii) Crista

(iii) Basilar membrane

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Practive Question Multiple Choice Questions

1. A person is wearing spectacles with concave lenses for correcting vision. While not using the glasses the image of a distant object in his case will be formed .

- A. On the blind spot
- B. Behind the retina
- C. In front of the retina
- D. On the yellow spot

Answer: C

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2. In the resting state of the neutral membrane, diffusion due to concentration gradients, if allowed would drive.

- A. Na^+ into the cell

B. Na^+ out of the cell

C. K^+ into the cell

D. K^+ and Na^+ out of the cell

Answer: A



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3. Unidirectional transmission of a nerve impulse through nerve fibre is due to the fact that

A. nerve fibre is insulated by a medullary sheath

B. sodium pump starts operating only at the cyton and then continues into the nerve fibre

C. neurotransmitters are released by dendrites and not by axon endings

D. neurotransmitters are released by the axon endings and not by dendrites.

Answer: D

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4. Parkinson's disease (Characterized by tremors and progressive rigidity of limbs) is caused by degeneration of brain neurons that are involved in movement control and make use of neurotransmitter

- A. acetylcholine
- B. norepinephrine
- C. dopamine
- D. GABA

Answer: C

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5. In a man, abducens nerve is injured. Which one of the following functions will be affected ?

- A. movement of the eyeball
- B. movement of the tongue
- C. swallowing
- D. movement of the neck

Answer: A



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6. Four healthy people in their twenties got involved in injuries resulting in damage and death of few cells of the following. Which of the cells are least likely to be replaced by new cells

- A. liver cells

B. neurons

C. malpighian layer of the skin

D. osteocytes

Answer: B



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7. One of the example of the action of the autonomous nervous system is

A. swallowing of food

B. pupillary reflex

C. peristalsis of the intestines

D. knee-jerk response

Answer: C



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8. Nerve cell do not divide because they do not have

- A. nucleus
- B. centrosome
- C. Golgi body
- D. mitochondria

Answer: B



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9. In parasympathetic nervous system which of the following is released

- A. epinephrine
- B. nor-epinephrine
- C. serotonin
- D. acetylcholine

Answer: D



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10. Tree of life is

- A. arbor vitae
- B. pons varolii
- C. organ of Corti
- D. diencephalon

Answer: A



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11. Rods and cones of eye are modified

- A. multipolar neuron

B. unipolar neuron

C. bipolar neuron

D. none of these

Answer: C



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12. Internal ear is filled with

A. perilymph

B. endolymph

C. lymph

D. both (a) and (b)

Answer: D



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13. Sense of smell is perceived by

- A. pituitary
- B. hypothalamus
- C. olfactory lobe
- D. cerebrum

Answer: C



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14. Human ear ossicles are

- A. incus and stapes
- B. stapes
- C. incus, malleus and stapes
- D. incus and malleus

Answer: C



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15. Which one of the following does not act as a neurotransmitter ?

- A. cortisone
- B. acetylcholine
- C. acetylcholine
- D. epinephrine

Answer: A



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16. Fifth cranial nerve of frog is called

- A. optic nerve

B. vagus

C. trigeminal

D. ophthalmic

Answer: C



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17. Given below is a table comparing the effect of sympathetic and parasympathetic nervous system for four features (a-d). Which one feature is correctly described

| | Feature | Sympathetic Nervous system | Parasympathetic Nervous System |
|-----|------------------------|-----------------------------------|---------------------------------------|
| (a) | Salivary gland | Stimulates secretion | Inhibits secretion |
| (b) | Pupil of the eye | Dilate | Constricts |
| (c) | Heart rate | Decreases | Increases |
| (d) | Intestinal peristalsis | Stimulates | Inhibits |

A. Salivary glands, stimulate secretion, inhibits secretion

B. pupil of the eye, dilates, constricts

C. heart rate, decreases, increases

D. intestinal peristalsis, stimulates, inhibits

Answer: B



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18. During the transmission of nerve impulse through a nerve fibre, the potential on the inner side of the plasma membrane has which type of electric charge ?

A. first positive, then negative and continue to be negative

B. first negative, then positive and continue to be positive

C. first positive, then negative and again back to positive

D. first negative, then positive and again back to negative

Answer: D



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19. Which one of the following pairs of structures distinguishes a nerve cell from other types of cell

- A. vacuoles and fibre
- B. flagellum and medullary sheath
- C. nucleus and mitochondria
- D. perikaryon and dendrites

Answer: D



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20. In mammals, the brain centre , which regulates body temperature is situated in

- A. cerebellum

B. cerebral lobe

C. hypothalamus

D. medulla oblongata

Answer: C



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21. The 3rd, 6th and 11th cranial nerves are

A. optic, facial and spinal nerves

B. oculomotor, trigeminal and spinal

C. trigeminal, abducens and vagus

D. oculomotor, abducens and spinal

Answer: D



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22. The junction between the axon of one neuron and the dendrite of the next is called

- A. a joint
- B. synapse
- C. constant bridge
- D. junction point

Answer: B



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23. Which of the following is a motor nerve?

- A. auditory
- B. abducens
- C. optic nerve
- D. trigeminal

Answer: B



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24. Nissl's granules are absent in

- A. axon
- B. cyton
- C. dendron
- D. Schwann cells

Answer: A



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25. Which one of the following is an inhibitory neurotransmitter ?

- A. GABA

B. adrenaline

C. epinephrine

D. acetylcholine

Answer: A



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26. Myelin sheath is derived from

A. neuroglial cells

B. Schwann cells

C. nerve cells

D. all of these

Answer: B



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27. A 22 years student goes to his ophthalmologist. He has problem in reading books because he is not able to contract his

- A. suspensory ligament
- B. pupil
- C. iris
- D. ciliary muscles

Answer: D



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28. Pneumotoxic centre is present on

- A. cerebrum
- B. cerebellum
- C. medulla oblongata
- D. pons varolii

Answer: D



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29. Acetylcholinesterase helps in breaking

- A. Synapse
- B. acetylcholine
- C. dendrites
- D. axon

Answer: B



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30. Chemical transmission of nerve impulses from one neuron to another, or from a neuron to a muscle is carried out by

A. cholecystokinin

B. acetylcholine

C. cholesterol

D. all of these

Answer: B

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31. Mammalian brain differs from an amphibian brain in possessing

A. cerebellum

B. corpus callosum

C. olfactory lobes

D. hypothalamus

Answer: B

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32. Which one of the following is the correct difference between Rod Cells and cone cells of our retina

| | Rod Cells | Cone Cells |
|------------------------------|---------------------------------------|---|
| (a) Overall function | Vision in poor light | Colour vision and detailed vision in bright light |
| (b) Distribution | More concentrated in centre of retina | Evenly distributed all Over retina |
| (c) Visual acuity | High | Low |
| (d) Visual pigment contained | Iodopsin | Rhodopsin |

A.

| | Rod cell | Cone cells |
|------------------|----------------------|-------------------------------|
| overall function | vision in poor light | colour vision and detailed vi |

B.

| | Rod cell | Cone cells |
|--------------|---------------------------------------|-----------------|
| distribution | more concentrated in centre of retina | evenly distribi |

C.

| | Rod cell | Cone cells |
|---------------|----------|------------|
| visual acuity | high | low |

D.

| | Rod cell | Cone cells |
|--------------------------|----------|------------|
| visual pigment contained | iodopsin | rhodopsin |

Answer: A



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33. During the propagation of a nerve impulse, the action potential results from the movement of

- A. K^+ ions from intracellular fluid to extracellular fluid
- B. Na^+ ions from extracellular fluid to intracellular fluid
- C. K^+ ions from extracellular fluid to extracellular fluid
- D. Na^+ ions from intracellular fluid to extracellular fluid

Answer: B



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34. Which part of the human brain is largest

- A. cerebellum
- B. thalamus

C. cerebrum

D. medulla

Answer: C



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35. Myelin sheath is produced by

or

Myelin of the nerve fibres of the central nervous system is produced and maintained by

A. Oligodendrocytes

B. Astrocytes

C. Microglia

D. Schwann cells

Answer: D



36. All sensory pathways to the correct cortex synapse at the

- A. pons
- B. hypothalamus
- C. thalamus
- D. Cerebellum

Answer: A



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37. High frequency sound waves vibrate the basilar membrane

- A. near the oval window
- B. near the helicotrema
- C. in the middle of cochlea

D. from oval window to helicotrema

Answer: A



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38. Pons, cerebellum and medulla together constitute

A. hind brain

B. mid brain

C. fore brain

D. telencephalon

Answer: A



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39. Tiny lesions of multiple sclerosis on brain and spinal tissue can be observed by

- A. Magnetic resonance imaging
- B. Positron emission tomography
- C. X-ray radiography
- D. Digital subtraction angiography

Answer: A



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40. Cells of Schwann are associated with

- A. Nervous tissue
- B. Skelton muscle
- C. Cardiac muscle
- D. Connective tissue

Answer: A



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41. A man is admitted to a hospital. He is suffering from an abnormally low body temperature, loss of appetite and extreme thirst. His brain scan would probably show a tumor in

- A. cerebellum
- B. hypothalamus
- C. medulla oblongata
- D. Pons

Answer: B



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42. The function of the vagus nerve innervating the heart is to

- A. Initiate the heart beat
- B. Reduce the heart beat
- C. Accelerate the heart beat
- D. Maintain constant heart beat

Answer: B

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43. The size of pupil is controlled by the

- A. Ciliary muscles
- B. Suspensory ligaments
- C. Cornea
- D. Iris muscles

Answer: B

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44. Vomiting centre is located in the

- A. Stomach and sometimes in duodenum
- B. Gastrointestinal track
- C. Hypothalamus
- D. Pons varoli

Answer: C



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45. The neurotransmitter product at the synapse and neuromuscular junction is

- A. GTP
- B. ATP
- C. acetylcholine

D. Phosphokinase

Answer: C



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46. Primitive nervous system is formed in

A. Sponge

B. Cnidaria

C. Echinodermata

D. Annelida

Answer: B



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47. The chemical causing the transmission of nerve impulse across synapses is

or

The neurotransmitter which communicates between two neurons or between a neuron and a muscle a

A. Cholinesterase

B. acetylcholine

C. Choline

D. Adrenaline

Answer: B



[Watch Video Solution](#)

48. Satiety centres of brain is present on

A. Cerebral hemisphere

B. hypothalamus

C. Cerebellum

D. Medulla oblongata

Answer: B



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49. Themoregulatory centre in the body of bomeothermal animal and man is found in

A. Hypothalamus

B. Cerebellum

C. Cerebrum

D. medulla oblongata

Answer: A



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50. Areas where the myelin sheath is absent in the nerve fibre is called

- A. Schwann cells
- B. Schwann nodes
- C. Nissl's granules
- D. Node of Ranvier

Answer: D



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51. Which part of human brain is concerned with the regulation of body temperature ?

- A. Hypothalamus
- B. Medulla oblongata
- C. Cerebellum

D. cerebrum

Answer: A



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52. Chemicals which are released at the synaptic junction are called

A. Hormones

B. Neurotransmitters

C. Cerebrospinal fluid

D. Lymph

Answer: B



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53. Potential difference across resting membrane is negatively charged.

This is due to differential distribution of the following ions.

- A. Na^+ and K^+ ions
- B. Ca^{3++} and Cl^- ions
- C. Ca^{++} and Mg^{++} ions
- D. Ca^{+4} and Cl^- ions

Answer: A



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54. Resting membrane potential is maintained by

- A. Hormones
- B. Neurotransmitters
- C. Ions pumps
- D. None of the above

Answer: C



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55. The function of our visceral organs is controlled by

- A. Sympathetic and somatic neural system
- B. Sympathetic and parasympathetic neural system
- C. Central and somatic nervous system
- D. None of the above

Answer: B



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56. Which of the following is not involved in knee-jerk reflex ?

- A. Muscle spindle

B. Motor neuron

C. Brain

D. Inter neurons

Answer: C



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57. An area in the brain which is associated with strong emotion is

A. Cerebral cortex

B. Cerebellum

C. Limbic system

D. Medulla

Answer: C



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58. Mark the vitamin present in rhodopsin

A. Vit A

B. Vit B

C. Vit C

D. Vit D

Answer: A



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59. Human eye ball consists of three layers and it encloses

A. Lens, iris , optic nerve

B. Lens, aqueous humor and vitreous humor

C. Cornea, lens, iris

D. Cornea, lens, optic nerve

Answer: B



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60. Wax gland present in the ear canal is called

- A. Sweat gland
- B. Prostate gland
- C. Cowper's gland
- D. Sebaceous gland/ceruminous gland

Answer: D



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61. The part of internal ear responsible for hearing is

- A. Cochlea

B. Semicircular canal

C. Utriculus

D. Sacculus

Answer: A



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62. The organ of Corti is a structure present in

A. External ear

B. Middle ear

C. Semi circular canal

D. Cochlea

Answer: C



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63. The nerve centres which control the body temperature and the urge for eating are contained in

- A. Thalamus
- B. Hypothalamus
- C. Pons
- D. Cerebellum

Answer: B



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64. Select the answer with correct matching of the structure, its location and function

| | Structure | Location | Function |
|-----|------------------|---|---|
| (a) | Eustachian tube | Anterior part of internal ear | Equalizes air pressure on either sides of tympanic membrane |
| (b) | Cerebellum | Mid brain | Controls respiration and gastric secretions |
| (c) | Hypothalamus | Fore brain | Controls body temperature, urge for eating and drinking |
| (d) | Blind spot | Near the place where optic nerve leaves the eye | Rods and cones are present but inactive here |

A.

| Structure | Location | Function |
|-----------------|-------------------------------|------------------------|
| Eustachian tube | Anterior part of internal ear | Equalizes air pressure |

B.

| Structure | Location | Function |
|------------|-----------|--|
| Cerebellum | Mid brain | Control respiration and gastric secretions |

C.

| Structure | Location | Function |
|--------------|------------|--|
| Hypothalamus | Fore brain | Controls body temperature, brings urge |

D.

| Structure | Location | Function |
|------------|---|--|
| Blind spot | Near the place where optic nerve leaves the eye | Rods and cones are present but inactive here |

Answer: C



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65. Which of the following is not related to the autonomic nervous system ?

- A. Peristalsis
- B. Digestion
- C. Excretion
- D. Memory and learning

Answer: D



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66. Comprehension of spoken and written words take place in the region of

- A. association area

B. motor area

C. Wernicke's area

D. Broca's area

Answer: C



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67. Which one of the following cranial nerves is carrying the nerve fibres originating from the Edinger-Westphal nucleus

A. Oculomotor

B. Trochlear

C. Abducens

D. Vagus

Answer: A



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68. How many laminae are present in the grey matter of spinal cord.

A. Four

B. Six

C. Eight

D. Ten

Answer: D



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69. Colour blindness is due to defect in

A. cones

B. rods

C. rods and cones

D. rhodopsin

Answer: A



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70. Organ of Corti helps in

- A. maintaining equilibrium
- B. hearing
- C. formation of wax
- D. all of these

Answer: B



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71. Pigment Iodopsin is contained in

- A. rods cells

B. cone cells

C. amacrine cells

D. horizontal cells

Answer: B



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72. The third ventricle of the brain is situated in the

A. base of telencephalon

B. roof of metencephalon

C. roof of diencephalon

D. base of myelencephalon

Answer: C



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73. The optic lobes in humans are represented by the corpora

- A. bigemina
- B. arenacea
- C. striata
- D. quadrigemina

Answer: D



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74. Which of the following is not an effect of the sympathetic nervous system

- A. dilation of pupil
- B. inhibition of peristalsis
- C. elevation of blood pressure
- D. stimulation for saliva secretion

Answer: D

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75. The direction of light striking the retina will be

A. photosensory cells → bipolar neurons → ganglionic cells →
sensory nerves

B. sensory nerves → bipolar neurons → ganalionic cells →
photosensory cells

C. sensory nerves → ganglionic cells → bipolar cells →
photosensory cells

D. photosensory cells → ganglionic cells → bipolar neurons →
sensory nerves

Answer: C

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76. Colour perception in man is due to

- A. rhodopsin pigment in rod cells
- B. iodopsin pigment in cone cells
- C. iodopsin pigment in rod cells
- D. rhodopsin pigment in cone cells

Answer: B



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77. When a neuron is in resting state i.e. not conducting any impulse, the axonal membrane is

- A. comparatively more permeable to Na^+ ions and nearly impermeable to K^+ ions
- B. equally permeable to both Na^+ and K^+ ions

C. impermeable to both Na^+ and K^+ ions

D. comparatively more permeable to K^+ ions and nearly impermeable to Na^+ ions

Answer: D



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78. The purplish red pigment rhodopsin contained in the rods type of photoreceptor cells of the human eye, is a derivative of

A. vitamin B_1

B. vitamin C

C. vitamin D

D. vitamin A

Answer: D



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79. Dark adaption in human eye involves

- A. conversion of 11 cis retinene to trans retinene
- B. conversion of trans retinene into 11 cis retinene
- C. decomposition of rhodopsin into retinene
- D. decomposition of rhodopsin to scotopsin.

Answer: B



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80. The optic lobes in humans are represented by the corpora

- A. bigemina
- B. arenacea
- C. allata
- D. quadrigemina

Answer: D



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81. The human hind brain comprises three parts, one of which is

- A. Spinal cord
- B. corpus callosum
- C. Cerebellum
- D. hypothalamus

Answer: C



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82. Which part of the human ear plays no role in hearing as such but is otherwise very much required ?

- A. Eustachian tube
- B. Organ of corti
- C. Vestibular apparatus
- D. Ear ossicles

Answer: C

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83. A person entering an empty room suddenly finds a snake right in front on opening the door. Which one of the following is likely to happen in his neuro-hormonal control system

- A. Sympathetic nervous system is activated releasing epinephrine and norepinephrine from adrenal medulla.
- B. Neurotransmitters diffuse rapidly across the cleft and transmit a nerve impulse.
- C. Hypothalamus activated the parasympathetic division of brain

D. Sympathetic nervous system is activated releasing epinephrine and norepinephrine from adrenal cortex.

Answer: A

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84. Which one of the following statements is not correct ?

- A. Retinal is the light absorbing portion of visual photo pigments.
- B. In retina the rods have the photopigments rhodopsin while cones have three different photopigments.
- C. Retinal is a derivative of Vitamin C.
- D. Rhodopsin is the purplish red protein present in rods only.

Answer: C

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85. Which of the following part of human brain is also called emotional brain?

- A. Corpus callosum
- B. Limbic system
- C. Epithalamus
- D. Broca's area

Answer: B



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86. In mammalian eye, the 'fovea' is the centre of the visual field, where

- A. More rods than cones are found.
- B. High density of cones occur, but has no rods
- C. The optic nerve leaves the eye
- D. Only rods are present.

Answer: B

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87. Destruction of the anterior horn cells of the spinal cord would result in loss of

- A. Intergrating impluses
- B. Sensory impulses
- C. Voluntary motor impluses
- D. Commissural impulses

Answer: C

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88. Photosensitive compound in human eye is made up of

- A. Opsin and Retinal
- B. Opsin and Retinal
- C. Transducin and Retinene
- D. Guanosine and Retinol

Answer: A

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89. Choose the correct statement

- A. Nociceptors respond to change in pressure.
- B. Meissner's corpuscles are thermoreceptors.
- C. photoreceptors in the human eye are depolarized during darkness and become hyperpolarized in response to the light stimulus.
- D. Receptors do not produce graded potentials.

Answer: C



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90. Receptor sites for neurotransmitters are present on

- A. Pre-synaptic membrane
- B. tips of axons
- C. post-synaptic membrane
- D. membrane of synaptic vesicles

Answer: C



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91. Good vision depends on adequate intake of carotene rich food

Select the best option from the following statements

- (A) Vitamin A derivatives are formed from carotene
- (B) The photopigments are embedded in the membrane discs of the inner segment

(C) Retinal is a derivative of Vitamin A

(D) Retinal is a light absorbing part of all the visual photopigments

A. (1),(3) and (4)

B. (1) and(3)

C. (2),(3) and (4)

D. (1) and (2)

Answer: B



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92. Which of the following structures or regions is incorrectly paired with function ?

A. Medulla oblongata : Controls respiration and cardiovascular reflexes

B. Limbic system : Consists of fibre tracts that interconnect different regions of brain controls movement

C. Hypothalamus : Production of releasing hormones and regulation of temperature, hunger and thirst

D. Corpus callosum : Band of fibres connecting left and right cerebral hemispheres

Answer: B



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93. The transparent lens in the human eye is held in its place by

A. ligments attached to the cilimary body

B. ligamens attached to the iris

C. smooth muscles attached to the iris

D. smooth muscles attached to the ciliary body

Answer: A

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Practive Question Assertion Reason Type Question

1. Assertion. Acetylcholine transmits the nerve impulse across a synpase .

Reason. Acetylcholine is secreted by adrenergic neurons.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: A::C

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2. Assertion. Transmission of a nerve impulse across a synapse is brought about by a neurotransmitter.

Reason. A neurotransmitter is necessary to transmit a nerve impulse across a synapse because there is a small gap, the synaptic cleft, between the two neurons at the synapse.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: A



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3. Assertion. Stimulus is interpreted by the brain and not by sense organs.

Reason. Sense organs act as transducers, transforming the stimulus energy into impulse energy.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: A

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4. Assertion. Synaptic vesicles fuse with the presynaptic membrane (axolemma) and release neurotransmitter by exocytosis.

Reason. Neurotransmitters cross the synapse and bind to receptors on the postsynaptic (dendrite) membrane, this opens ionic channels that allow Na^+ to enter and K^+ to leave the dendrite, thereby depolarizing the postsynaptic membrane.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: B



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5. Assertion. SNS slows down peristalsis.

Reason. Parasympathetic nervous system does the same.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: C



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6. Assertion. All the spinal nerves are mixed.

Reason. All spinal have sensory and motor fibres in appromixately equal numbers.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: A



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7. Assertion. Cerebrospinal fluid (CSF) is secreted into the brain cavities by the choroid plexuses but it occurs in the central canal of spinal cord also.

Reason. The enendyma lining the central canal also secretes CSF.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: C



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8. Assertion. The choroid plexuses have little significance as nervous centres.

Reason. The choroid plexuses are composed of pia mater (connective tissue) lined by the cuboidal epithelium secretory nature.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: A



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9. Assertion. Conditional reflex is not lost with time.

Reason. Conditional reflex is inborn (hereditary).

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: D



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10. Assertion. Cerebellum is large, lobed and convoluted in active animals.

Reason. Cerebellum coordinates voluntary movements and helps maintain posture and equilibrium

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: A



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11. Assertion. Motor nerve fibres that supply striped muscle and parasympathetic nerve fibres which innervate smooth muscle are cholinergic .

Reason. On stimulation, they secrete acetylcholine from their ends into the synaptic cleft.

- A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: A



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12. Assertion : hearing aids help the hearing impaired to hear.

Reason : They make sound travel through skull bones.

A. If both A and R are true and R is the correct explanation of A.

B. If both A and R are true and R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: D



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13. Assertion. Rabies is an acute infectious disease of warm blooded mammals characterized by involvement of CNS resulting in paralysis and finally death.

Reason. This is caused due to neurotropic filterable bacteria in saliva of rabid animals.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: C



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14. Read the assertion and reason carefully to mark the correct option out of the options given below:

Assertion : The imbalance in concentration of Na^+ , K^+ and proteins generates resting potential.

Reason : To maintain the unequal distribution of Na^+ & K^+ , the neurons use electrical energy.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: D



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15. Assertion. Tympanic membrane separates the external ear from the middle ear.

Reason. Tympanic membrane transmits vibrations (pressure waves in air) to the internal ear via ear ossicles of middle ear.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: B

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16. Assertion : Owls can move freely during night.

Reason : They have large number of rods on their retina.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: B

17. Read the assertion and reason carefully to mark the correct option out of the options given below:

Assertion : After hearing a sound, nerve impulse passes from neurons to the brain.

Reason: The neurons which pass nerve impulses from the body organ to the brain is called afferent neuron.

- A. If both A and R are true and R is the correct explanation of A.
- B. If both A and R are true and R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: B