



BIOLOGY

BOOKS - KUMAR PRAKASHAN KENDRA

BIOLOGY (GUJRATI ENGLISH)

NEURAL CONTROL AND

COORDINATION

**Section A Exam Oriented Questions Answers
From Darapn**

1. How is regulation and coordination achieved in animals ?



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2. Give information of evolution of neural system in animals.



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3. Describe briefly types of neural system in human.



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4. Describe the structure of neuron with diagram.



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5. Based on processes, mention the types, location of neuron with examples.

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6. How is conduction of nerve impulse occur?

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7. What is resting potential ? How is conduction of nerve impulse takes place ?



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8. What is synapse ? How many types of synapses are found ? Discuss conduction of nerve impulse through synapse with diagram.



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9. Draw a neat and labelled diagram of human brain. Mention its various parts and functions.



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10. Write short note - Forebrain



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11. Give information regarding location and components of midbrain.



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12. Give information for hindbrain.





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13. What is reflex action ? How is reflex arc formed ?



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14. Which are the sensory organs for smell and taste ? Give brief information.



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15. Describe in detail structure of Eye, various parts and functions of it.



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16. Explain mechanism of vision in detail.



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17. Give information of various parts of human ear and its function.



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18. Describe mechanism of hearing briefly.



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Section B Difference Scientific Reasons

1. Give differences :

Invertebrate neural system and Vertebrate neural system



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2. Give differences :

Medullated nerve fibers and Non - medullated
nerve fibers



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3. Give differences :

Resting potential and Action potential



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4. Give differences :

Central Neural System and Peripheral Neural System



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5. Give differences :

Rod cells and Cone cells



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6. Give differences :

Yellow spot and Blind spot



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7. There is no connection between sequential neurons, but nerve impulse is conducted through it.



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8. Neuroplasm of neuron contains high K^+ concentration, during maintenance of action potential.



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9. In excited nerve fibre region, inside the plasma membrane $+ve$ charge is created.



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10. Invertebrate animals conduction of nerve impulse is saltatory.



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11. Reflex action plays significant role in animals.



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Section C Definition Explanation Terms Importance

1. Definitions/Explanation:

Synapse:



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2. Definitions/Explanation:

Node of Ranvier :



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3. Definitions/Explanation:

Nerve impulse :



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4. Definitions/Explanation:

Resting potential :



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5. Definitions/Explanation:

Reflex action :



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6. Distinguish :

Synapse and Neurotransmitters.



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7. Distinguish :

Myelinated nerve and Non-Myelinated nerve.



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8. Distinguish :

Sensory nerve and Motor nerve.



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9. Distinguish :

Corpus callosum and Ciliary body.



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10. Distinguish :

Receptor proteins and Receptor cells.



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11. Distinguish :

Aqueous humor and Vitreous humor.



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12. Distinguish :

Tectorial membrane and Rensselaer's membrane.



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13. Location and Function :

Nerve net :



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14. Location and Function :

Dendrites :



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15. Location and Function :

Synaptic Knob :



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16. Location and Function :

Bipolar nerve cell :



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17. Location and Function :

Epithalamus :



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18. Location and Function :

Rod cells :



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19. Location and Function :

Cone cells :



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20. Location and Function :

Ear ossicles :



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21. Location and Function :

Organ of Corti :



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Section D Textual Exercise

1. Compare the following:

(a) Central Neural System (CNS) and

Peripheral Neural System (PNS) :



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2. Compare the following:

(b) Resting potential and Action potential :



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3. Compare the following:

(C) Choroid and Retina :



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4. Explain the following processes.

Polarisation of the membrane of a nerve fibre



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5. Explain the following processes.

Depolarisation of the membrane of a nerve fibre.



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6. Write short notes on the following:

Neural coordination



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7. Write short notes on the following:

Forebrain



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8. Write short notes on the following:

Midbrain



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9. Write short notes on the following:

Hindbrain



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10. Write short notes on the following:

Retina



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11. Write short notes on the following:

Organ of Corti :



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12. Give a brief account of:

(b) Mechanism of vision



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13. Answer briefly :

How do you perceive the colour of an object ?



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14. Answer briefly :

(b) Which part of our body helps us in maintaining the body balance ?



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15. Answer briefly :

(c) How does the eye regulate the amount of light that falls on the retina ?



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16. Explain the following:

(a) Role of Nat in the generation of action potential.



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17. Explain the following:

(b) Mechanism of generation of light-induced impulse in the retina.



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18. Differentiate between :

(a) Myelinated and non-myelinated axons



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19. Differentiate between :

(b) Dendrites and axons



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20. Differentiate between :

(d) Thalamus and Hypothalamus:



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21. Differentiate between :

(e) Cerebrum and Cerebellum



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22. Answer the following:

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



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23. Answer the following:

Which part of the human brain is the most developed ?



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24. Answer the following:

Which part of our central neural system acts as a Master Clock ?



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25. 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 chiasmata



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26. Distinguish between :

Afferent neurons and Efferent neurons.



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27. Distinguish between :

Impulse conduction in a myelinated nerve fibre and non-myelinated nerve fibre.



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28. Distinguish between :

Aqueous humor and Vitreous humor



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29. Distinguish between :

Blind spot and Yellow spot



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30. Distinguish between :

Cranial nerves and Spinal nerves.



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**Section E Solution Of Ncerty Exemplar Multiple
Choice Questions Mcqs**

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

A. Hormone

B. Neurotransmitters

C. Cerebrospinal fluid

D. Lymph

Answer: B



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2. Potential difference across resting membrane is negatively charged. This is due to differential distribution of the following ions.

A. Na^+ and K^+ ions

B. CO_3^{2+} and Cl^- ions

C. Ca^{2+} and Mg^{2+} ions

D. Ca^{+4} and Cl^{-2} ions

Answer: A



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3. Resting membrane potential is maintained by

A. Hormones

B. Neurotransmitters

C. Ion pumps

D. None of the above

Answer: C



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4. The function of our visceral organ 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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5. 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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6. 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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7. Mark the vitamin present in Rhodopsin

A. Vitamin-A

B. Vitamin-B

C. Vitamin-C

D. Vitamin-D

Answer: A



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8. Human eyeball consists of three layers and it encloses

A. Lens, iris, optic nerves

B. Lens, aqueous humor, vitreous humor

C. Cornea, lens, iris

D. Cornea, lens, optic nerves

Answer: B



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9. Wax gland present in the ear canal is called

A. Sweat gland

B. Prostate gland

C. Cowper's gland

D. Sebaceous gland/Ceruminous glands

Answer: D



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10. The part of internal ear responsible for hearing is

A. Cochlea

B. Semicircular canal

C. Utriculus

D. Sacculus

Answer: A



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11. The organ of corti is a structure present in

.....

- A. External ear
- B. Middle ear
- C. Semi circular canal
- D. Cochlea

Answer: D



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Section E Solution Of Ncerty Exemplar Very Short Answer Type Questions Vsqs

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

(i) Synaptic knob

(ii) Dendrites

(iii) Cell body

(iv) Axon terminal

(v) Axon



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2. Comment upon the role of ear in maintaining the balance of the body and posture.



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3. Which cells of the retina enable us to see coloured objects around us ?



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4. 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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5. During resting potential, the axonal membrane is polarised, indicate the movement of $+ve$ and $-ve$ ions leading to polarisation diagrammatically.



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6. Name the structures involved in the protection of the brain.



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7. Our reaction like aggressive behaviour, use of abusive words, restlessness etc. are regulated by brain, name the parts involved.



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8. What do grey and white matter in the brain represent?



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9. Where is the hunger centre located in human brain ?



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10. Which sensory organ is involved in vertigo (sensation of one self or objects spinning around ?)



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11. While travelling at a higher altitude, a person complains of dizziness and vomiting sensation. Which part of the inner ear is disturbed during the journey ?



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12. Complete the statement by selecting appropriate match among the following.

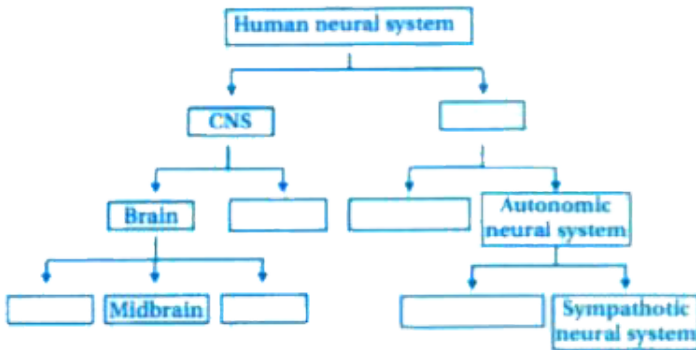
Column - I		Column - II	
(a)	Resting potential	(i)	Chemicals involved in the transmission of impulses at synapses.
(b)	Nerve impulse	(ii)	Gap between the presynaptic and post synaptic neurons.
(c)	Synaptic cleft	(iii)	Electrical potential difference across the resting neural membrane.
(d)	Neurotransmitters	(iv)	An electrical wave like response of a neuron to a stimulation.



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Section E Solution Of Ncert Exemplar Short Answer Type Questions

1. The major parts of the human neural system is depicted below. Fill in the empty boxes with appropriate words.



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2. What is the difference between electrical transmission and chemical transmission ?



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3. Neural system and computers share certain common features. Comment in five lines.

(Hint - CPU, Input - Output devices).



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4. If someone receives a blow on the back of neck, what would be the effect on person's CNS ?



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5. What is the function of Eustachian tube ?



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6. Label the following parts in the given diagrams using arrow.

(a) Aqueous chamber

(b) Cornea

(c) Lens

(d) Retina

(e) Vitreous chamber

(f) Blind spot.



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Section E Solution Of Ncerty Exemplar Long Answer Type Questions

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



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Questions From Module Important Mcq For Neet

1. Which vitamin is essential for structural component of Rhodopsin ?

A. Vit. - A

B. Vit. - B

C. Vit. - D

D. Vit. - C

Answer: A



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2. Ear stones/Ear ossicles are formed of which substances ?

- A. Sodium chloride
- B. Calcium sulphide
- C. Calcium carbonate
- D. Calcium phosphate

Answer: C



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3. Which of the following is the effect of parasympathetic nervous system?

A. Increase in blood pressure

B. Dilation of pupil

C. Decrease of blood pressure

D. Secretion of digestive juices

Answer: C



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4. In human which cranial nerve is having sensory and motor nerves ?

- A. Olfactory nerve
- B. Trigeminal nerve
- C. Optic nerve
- D. Auditory nerve

Answer: B



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5. Which is the largest part of human brain ?

- A. Cerebellum

B. Thalamus

C. Cerebrum

D. Medulla oblongata

Answer: C



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6. In brain, where does olfactory centres located ?

A. Olfactory

B. Cerebrum

C. Cerebellum

D. Mid. brain

Answer: A



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Objective Section Multiple Choice Questions

Mcqs

1. During action potential, the rapid repolarization of Axon membrane is caused by increased permeability to

A. K^+

B. Cl^+

C. Na^+

D. Ca^+

Answer: C



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2. Myelinated nerve fibre differ from nonmyelinated nerve fibres in

A. Lacking nodes of Ranvier

B. Being without Schwann cell

C. Showing saltatory conduct of nerve impulse

D. Slow conduction of nerve impulse

Answer: A



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3. Where are myelinated nerve fibres found ?

A. Spinal nerves

B. Cranial nerves

C. Both (A) and (B)

D. None of these

Answer: B



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4. The terminal end of axon is called as

A. Dendrite

B. Nissil's granule

C. Synaptic knob

D. Schwann's cell

Answer: C



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5. In a resting nerve, what is true ?

A. $3Na^+$ are pumped in and $2K^+$ pumped out

B. $3Na^+$ are pumped out for every $2K^+$ pumped in .

C. There are no $Na^+ - K^+$ pump

D. $Na^+ - K^+$ pump stops working

Answer: D



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6. Which meninge of Brain is non-vascular ?

A. outermost layer

B. innermost layer

C. middle layer

D. all of these

Answer: C



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7. The cerebral hemispheres are connected by a tract of nerve fibres called as

- A. Hypothalamus
- B. Corpus callosum
- C. Medulla
- D. Pons

Answer: B



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8. Which splitting of which chemical depolarizes rod cell and releases neurotransmitter.

A. Scotopsin

B. Rhodopsin

C. Iodopsin

D. Both (A) and (B)

Answer: B



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9. The purplish pigment of rod cells

A. Scotopsin

B. Rhodopsin

C. Iodopsin

D. Retinal

Answer: A



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10. Space between cornea and lens is

A. Aqueous chamber

B. Vitreous chamber

C. Fovea centralis

D. Cochlea

Answer: B



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11. Three layers in eye ball from inside to outside are

A. Retina, choroid, sclerotic

B. Choroid, retina, sclerotic

C. Sclerotic, Choroid, Retina

D. Sclerotic, Retina, Choroid

Answer: A



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12. The structure in internal ear which resemble "Snail Shell" is called.

A. Organ of corti

B. Membranous labyrinth

C. Cochlea

D. Ear ossicles

Answer: B



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13. In the internal ear the 'organ of corti'.

Which bears hair cells, is located in

A. Scala tympanii

B. Scala media

C. Scala vestibuli

D. Sacculus

Answer: C



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14. When the intensity of light is low during night the light is detected by

A. Rods

B. Cones

C. Lens

D. Both rods and cones

Answer: C



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15. Which of the following is the part of middle ear?

A. Cochlea

B. Utriculus

C. Sacculus

D. Malleus

Answer: A



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16. Projecting ridge in saccule and utricle

A. Hair cells

B. Maculla

C. Vestibular apparatus

D. Tactorial membrane

Answer: D



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17. Sexual behaviour and expression of emotional reactions is regulated by

A. Mid brain

B. Hind brain

C. Forebrain

D. Corpora quadrigeminal

Answer: C



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Objective Section Assertion Reasoning Type Questions

1. A : Surface of cerebrum is highly folded.

R: To Increase the area for having more neurons.

A. A and R both are correct and R is correct explanation of A.

B. A and R are correct but R is not explanation of A.

C. A is correct and R is false.

D. A and R are false

Answer: A



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2. A: Stimulus is interpreted by the brain and not by sense organs.

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

A. A and R both are correct and R is correct explanation of A.

B. A and R are correct but R is not explanation of A.

C. A is correct and R is false.

D. A and R are false

Answer: A



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3. A: Acetylcholine transmits the nerve impulse across a synapse.

R: Acetylcholine is secreted by adrenergic neurons.

A. A and R both are correct and R is correct explanation of A.

B. A and R are correct but R is not explanation of A.

C. A is correct and R is false.

D. A and R are false

Answer: C



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4. A: Tympanum separates external ear from middle ear

R : Tympanum transmits vibrations to internal ear via ear ossicles.

A. A and R both are correct and R is correct explanation of A.

B. A and R are correct but R is not explanation of A.

C. A is correct and R is false.

D. A and R are false

Answer: B



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5. A: Cornea causes maximum refraction of light rays. This place the image approximately

on retina.

R : Cornea has a flat surface.

A. A and R both are correct and R is correct explanation of A.

B. A and R are correct but R is not explanation of A.

C. A is correct and R is false.

D. A and R are false

Answer: C



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Objective Section Analogy Type Questions

1. Dendrites : Bring impulse to cyton :: axon :



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2. Outer ear : collect sound :: eustachiantube :

.....



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3. Fovea : cones :: blind spot :



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4. Photopic vision : conecells :: scotopic vision :

.....



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5. Malleus : Typanum :: stapes :



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6. upper : scala vestibuli :: lower :



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Objective Section True Or False

1. Brain is protected by two meninges



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2. Impulses can flow in any direction in reflex arc.



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3. Cerebrum maintains equilibrium of the body.



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4. The visual pigment rhodopsin occurs in rod cells.



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5. Endolymph fills membranous labyrinth.



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6. Organ of Corti consists of phonoreceptors and supporting cells.



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7. Ear performs only 1 function.



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8. The space between cornea and lens is vitreous chamber.



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9. The reflex pathway comprises atleast 2 afferent neurons.



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10. The efferent neuron carries signals from effector to CNS.



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11. The inner part of brain consists of non medullary fibres.



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12. Electrical synapses are very common in our system.



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Objective Section Pick Up The Correct Option

1. The rise in the stimulus - induced permeability to Na^+ is short lived/long lived



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2. Dendrites transmits impulses away/towards the cell body.



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3. Neurons are excitable cells because their membranes are in depolarised/polarised state.



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4. The myelinated nerve fibres are enveloped by Node of Ranvier/Schwan's cell



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5. The inner layer of eye contains ganglion cells, bipolar cells and photoreceptor cells from inside to outside/outside to inside.



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6. The Ear ossicles malleus, incus and stapes are attached in circular/chain like fashion.



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7. Semicircular canal lies in single/different plane at right angles to each other.



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Objective Section Fill In The Blanks

1. Neural organisation of Hydra is composed of of neurons



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2. The myelinated nerve fibres are enveloped by



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3. To maintain ionic gradient across resting potential, outwards and into cells are transported.



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4. There are two types of synapses and
.....



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5. The four round swellings in the midbrain are
called as quadrigemina.



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6. Cerebellum has a surface in order to provide additional space for many neurons.



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7. The external layer of eye is made up of



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8. Malleus is attached



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9. Fovea out portion of the retina where are densely packed.



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10. The membranous layer is filled with



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11. and of vestibular apparatus are responsible for maintenance of body balance and posture.



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12. Central pit in macula lutea is



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