

Unit :- V**Chapter-24. Neural Control and Coordination in Animals****IMPORTANT POINTS**

Nervous system has evolved to maintain coordination and integration amongst different tissue,organs and system of body. So that body can work as one complete and an efficient unit. During course of evolution ,it has undergone many changes from simplest to the most complex. In all these forms neuron has remained structural and functional unit of the nervous system.

Neurons are consist of cyton (cell body) and processes.They are divided into three main types: unipolar,bipolar and multipolar.

The neuron remain freely scattered under body wall and are interconnected to make simplest and very first evolved nervous system in coelentrata (e.g Hydra), With increase in complexity and body organization (tissue,organ and organ system). It has developed in to a better and an effective structure. like ganglion and nerves (flat worms) ganglionated with nerve cord(Arthropoda,Annelida,Mollusca) and highly complex structures like brain, spinal cord (vertbrata).

Nervous sysem of human is divided in to CNS and PNS. CNS is comprised of brain and spinal cord, Cranial nerves,spinal nerves [somatic section] and sympathetic and para-sympathetic nervous system [autonomic nervous system] makes PNS.CNS and PNS are covered by three meninges, Dura mater, Arachnoid and Pia mater. Nervous system consist of two type of tissues white matter(meddullated nerve fibre and neurons with long processes) and grey matter (non-meddullated fibres and neurons with short processes).Brain is divided in to fore brain, mid-brain and hind brain, Fore brain consist of cerebrum, diencephalon (thalamus and hypothalamas) Corpus callosum and associated area are important regions of cerebrum. Association area of brain are linked with intersensory neuron association, memory and Communication. Limbic system is present in fore brain which include amygdala and hippocampus. Limbic system and hypothalamus together regulate sexual behaviour and emotional expressions.

Mid brain consist of corpora quadrigemina,which are concerned with vision and hearing.

Hind brain consist of three region Pons,Cerebellum and medulla oblongata.

Mid brain and hind brain together form brain stem Spinal cord is second major component which controls both voluntary and involuntary functions. Reflexes are regulated mainly by spinal cord, they are spontaneous and not under the control of will.

Autonomic (Autonomous) nervous system is divided in to two major section; Sympathetic and Parasympathetic nervous system. Both are complementary to each other and helps in normalizing body functions. they regulate function of various orgaus as under.

- | | |
|-----------------------|--|
| (i) Iris | (Sympathetic) – expand it.(Parasym) – contract it. |
| (ii) Alimentary Canal | (Sympathetic) – Slow down peristalsis (Parasym) – Speed up peristalsis |
| (iii) Blood Pressure | (Sympathetic) – Increases(Parasym) – decreases |
| (iv) Hair | (Sympathetic) – Erect(Parasym) – Normal/ oblique |
| (v) Urinary bladder | (Sympathetic) – Relaxation(Parasym) – Contraction. |
| (vi) Sweat Gland | (Sympathetic) – Increases activity(Parasym) – Decreases activity |

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Nerves of the PNS are divided into sensory, motor and mixed 12 pairs of nerves arising from brain are called cranial nerves. Some these are sensory, some are motor and some of these are mixed nerves cranial nerver are classified on the basis of that number, name, types, orgin, target, organs and function as under.

Number	I
Name	Olfactory
Type	Sensory
Origin	Olfactory lobe
Target Organ	Olfactory epithelium
Function	Carry impulse of smell
Number	II
Name	Optic
Type	Sensory
Origin	Diencephalon
Target Organ	Retina
Function	carry impulse of vision
Number	III
Name	Occulomotor
Type	Motor
Origin	Mid- Brain
Target Organ	Eye muscles (Inferior oblique, Inferior rectus, Superior rectus and median rectus) Pupil, Ciliary muscle.
Function	Movement of eye, Activity of pupil and Ciliary muscle
Number	IV
Name	Trochlear
Type	Motor
Origin	Mid- Brain
Target Organ	Eye muscles (Superiore oblique)
Function	Movement of eye ball
Number	V
Name	Trigeminal (Has three Branches) 1 Ophthalmic(Sensory) 2 Maxillary(Sensory) 3 Manibular(Mixed)
Type	Mix
Origin	Pons
Target Organ	Of Ophthalmic = Skin of forehead, Upper eyelids Of Maxillary = Upper Jaw, upper lips, cheeks , Of Mandibular = Lower Jaw Muscles, Tongue, Lower Jaw Skin Lower Lip.
Function	Of Ophthalmic and Maxillary are Tactile Of Mandibular is movement of tongue and jaw
Number	VI
Name	Abducens

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Type	Sensory	Motor
Origin		Pons
Target Organ		Lateral rectus muscles of eye
Function		Movement of eye muscle
Number		VII
Name		Facial
Type		Mixed(has two branches)
Origin		Pons
Target Organ		Face muscles, Neck muscles, Salivary glands, Lacrimal glands, Taste buds
Function		Movement of face muscles, secretion of lacrimal Gland and salivary glands.
Number		VIII
Name		Auditory
Type	Sensory	Sensory
Origin		pons
Target Organ		Vestibule and Cochlea
Function		Equilibrium and to carry auditory impulse.
Number		IX
Name		Glosso-pharangeal
Type	Sensory	Mixed
Origin		Side of medulla oblongata
Target Organ		Posterior region of tongue, Pharynx muscle, parotid glands
Function		Movement of tongue and pharynx muscles
Number		IX
Name		Glosso- pharangeal
Type	Sensory	Mixed
Origin		Side of medulla oblongata
Target Organ		Posterior region of tongue, Pharynx muscle, parotid glands
Function		Movement of tongue and pharynx muscles
Number		IX
Name		Vagus Pneumo-gastric
Type	Sensory	Mixed
Origin		Side of medulla oblongata
Target Organ		Larynx, Heart, Blod-vessls, Oesophagus, stomach, ntestine, Lungs etc.
Function		Movement of all target organ
Number		XI
Name		Spinal accessory
Type	Sensory	Motor
Origin		Side of medulla oblongata
Target Organ		Muscles of Neck and shoulder
Function		Movement of neck and shoulder muscles And relaxation of visceral organs

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Number	XII
Name	Hypo-Glossal
Type	Sensory
Origin	Motor
Target Organ	Side of medulla oblongata
Function	Tongue
	Movement of tongue

31 pairs of spinal nerves are arising from spinal cord. All these are mixed nerves.

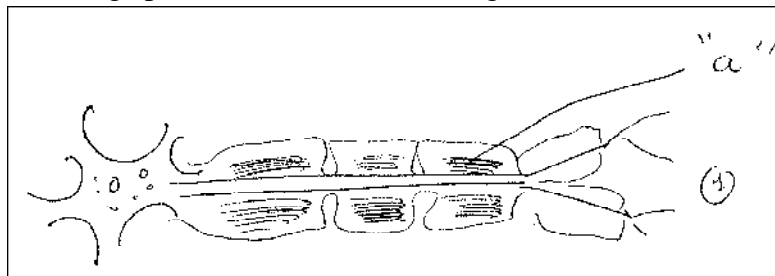
Sense organs enable us to receive and realize external as well as internal stimuli. Sense organs of human are of two types; in terms of their sensory cells, some are with very specialized structure, in which the sensitive sensory cells are localized (e.g. eye, ear, taste bud, olfactory epithelium). In some special structure. The other are general sense organs, cells of which are not present in specialized structures, but scattered under skin or in the wall of some organs.

In human a pair of eyes are located in deep sockets called orbit, in front side of the head. Human eyes possess eye-lids, eye-lashes. The structure of eye has three distinct regions; sclera, choroid and retina. Retina of eye possesses photo receptor cells like rod cells and cone cells, cone cells are photopic and rod cells are scotopic in nature.

Ear is sound sensory organ and also maintains balance. In human (mammals) it has three distinct regions. External ear (outer ear); middle ear and internal ear. External ear has ear pinna and auditory canal. Tympanic membrane and ear-ossicles (malleus, incus and stapes) are the regions of middle ear. Internal ear has two labyrinths; bony and membranous.

Perilymph surrounds membranous labyrinth on its outer side, whereas endolymph is present in lumen (cavity) of membranous labyrinth. Cochlea is main auditory organ in internal ear. The organ of Corti is present on basilar membrane of cochlear canal. It has sound sensory cells. It is main sound sensory organ.

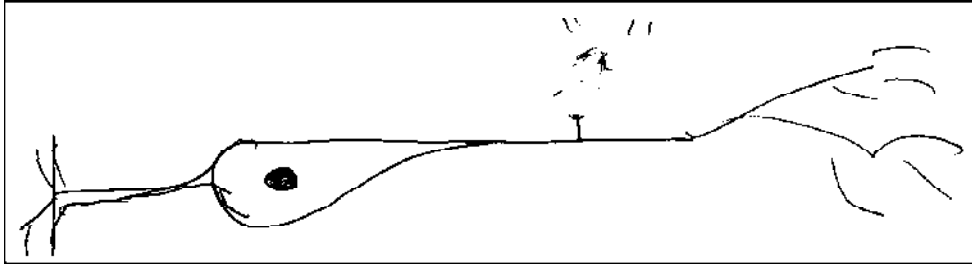
1. Which of the following options is not correct for the region labelled as "a" in the given diagram.



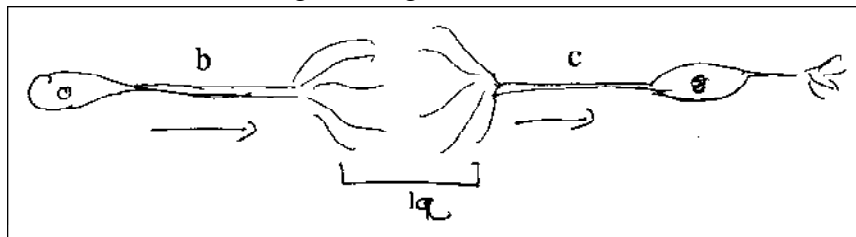
- (a) White and fatty compound
 (b) It is conductive
 (c) Region without it called node of Ranvier
 (d) It is responsible for saltatory conduction
2. Which of the given options is correct for autonomous nervous system?
- (a) In it medullary sheath is very well developed
 (b) Node of Ranvier is present in it.
 (c) It is part of CNS
 (d) Its nerve does not travel for longer distance in body

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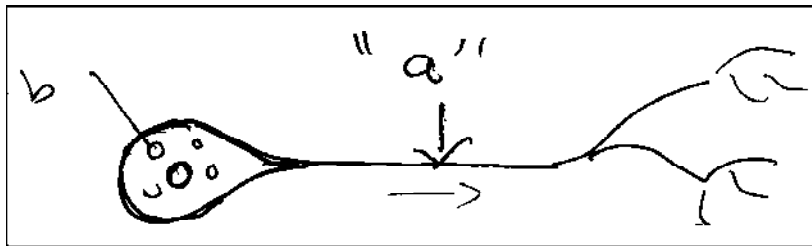
3. What does given diagram show ? where is it found ?



- (a) Unipolarneuron in spinal cord (b) Bipolar neuron ; in eye of human
(c) Unipolar neuron; In embryonic stage (d) Unipolar neuron in eye of human
4. What does a and b indicate in the given diagram ?



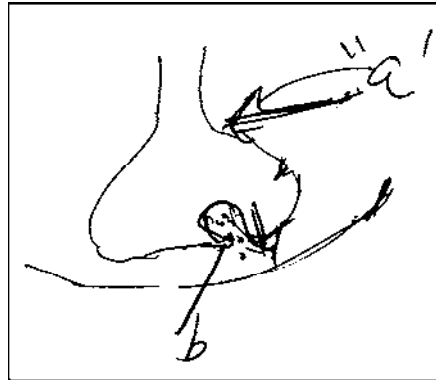
- (a) Synaptic cleft (b) Synase between axon
(c) Synapse between axon and dendron (d) Synapse - between two dendrite
5. What dose "a" and "b" indicate in the given diagram ?



- (a) a = Dendrite; b = Nissl's granules (b) a = Axon fibres ; b = Nucleus
(c) a = Axon fibres ; b = Mitochondria (d) None of the given
6. What does "b" and "c" indicate in the given diagram in question no 4?
- (a) b = Synapse; c = dendrites (b) c = Synapse; c = Axon fibres
(c) b = axon c = dendrit (d) b = Synaptic bulb; c = Motor nerve
7. What is correct in context with neuron ?
- (a) Nissl's granule present in it are acidic
(b) It's cytoplam is restricted to only cyton
(c) Each neuron has one axon and one dendron
(d) Cyton possesses large nucleus
8. In which animal nervous system is in the form of nerve-net ?
- (a) Leucosolania (b) Liver-Fluke (c) Planaria (d) Hydra
9. In which animal neverous system consist of brain, ganglion and nerve fiber ?
- (a) Tape-worm (b) Liver-Fluke (c) Ascaris (d) Allof the given

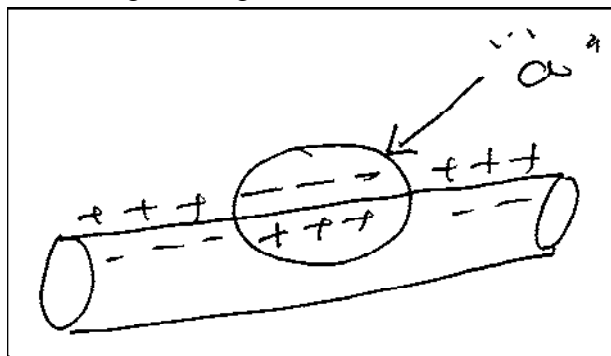
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18. What does "a" and "b" indicate in the given diagram ?



- (A) a = Synaptic bulb b = Phagocytosis
 (B) a = Presynaptic b = Phagocytosis
 (C) a = Synaptic gap b = Secretion of neurotransmitter
 (D) a = Presynaptic bulb b = Secretion neurotransmitter

19. What does "a" indicate in the given diagram



- (a) Repolarization (b) Depolarization
 (c) Resting potential (d) Activation of Na^+ and K^+ pump

20. In context with conduction of nerve impulse, what is the function of ion channels ?

- (a) Maintenance and change in electric potential
 (b) Transport of ions against diffusion gradient
 (c) Transport of Na^+ ion to the innerside of a the membrane
 (d) All of the given

21. When sodium and potassium pump is activated, for (a) Na^+ ion, (b) K^+ ion are exchanged ?

- (A) a = one , b= two
 (B) a = two, b= four
 (C) a = two , b= three
 (D) a = one, b= three

22. The transfer of ion through ion channel is (a) and (b)

- (a) a = Bidirectional, b = selectively permeable
 (b) a = Unidirectional, b = permeable

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- (c) a = Bidirectional, b = semi permeable
 (d) a = Unidirectional, b = selectively permeable
23. What is the swollen, structure present at terminal end of each branch of nerve cell called ?
 (a) Synaptic cleft
 (b) synaptic vesicle
 (c) synapse
 (d) synaptic knob
24. Which option is correct for the correctly matched groups for the column i; column ii and column
- | Column I | Column II | Column III |
|--------------------------------|--|---|
| (a) Resting membrane potential | (i) Na ⁺ Channel get open | (e) Na ⁺ and k ⁺ pumps are responsible for it |
| (b) Active potential | (ii) Na ⁺ Channel is closed | (f) Last for very short time |
| (c) Depolarization | (iii) Na ⁺ ions are more on outer side of membranes | (g) k ⁺ ions move on outside |
| (d) Repolarization | (iv) K ⁺ ions are more on outer side of membrane | (h) Positive charge of inner side of membrane |
- (A) (a-iv-f) (b-iii-e) (c-ii-h) (d-i-g) (B) (a-iv-e) (b-iii-f) (c-ii-g) (d-i-h)
 (C) (a-iii-e) (b-iv-f) (c-i-h) (d-ii-g) (D) (a-ii-h) (b-i-g) (c-iii-e) (d-iv-f)
25. Which of the following generally transmit nerve impulse only to the cyton ?
 (a) Axon (b) Dendrite (c) Synaptic knob (d) Node of Ranvier
26. What is correct in reference with nerve impulse ?
 (a) Self-induced and unidirectional
 (b) Self-induced and bidirectional
 (c) Electric potential in the nerve by region increase
 (d) Ion channel get closed in this region.
27. _____ is wrapped by cerebrum ?
 (a) Thalamus (b) Hypothalamus
 (c) Cerebellar hemisphere (d) Mid- brain
28. The weight of human brain is [a] and [b] neuron in it.
 (a) a = 1000 to 1100g (b) a = 1200 to 1400g
 b = 1000 billion b = 100 billion
 (c) a = 800 to 1000g (d) a = 1200 to 1400g
 b = 1000 million b = 100 million
29. Which of the following is a thin transparent nonvascular meninges around CNS ?
 (a) Dura mater (b) Pia mater (c) Arachnoid (d) Grey matter
30. Which of the following option indicates correct chronology of the meninges from cranium to CNS ?
 (a) Dura mater → Arachnoid → Pia mater (b) Pia mater → Arachnoid → Dura mater
 (c) Pia mater → Dura mater → Arachnoid (d) Arachnoid → Dura mater → Pia mater

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31. Which of the following option is the correct option for the inner most meninges of CNS ?
 (A) very Thick and tough (B) Thin and vascularized
 (C) Highly vascularized (D) Thin non vascularized
32. Which of the following is toughest ?
 (A) Piamater (B) Arachnoid (C) Dura mater (D) None of the given
33. Which of the following is adherent to brain ?
 (A) Arachnoid (B) Pia mater (C) Dura mater (D) None of the given
34. Which of the following does not have lumen ?
 (A) cerebrum (B) cerebellar hemisphere
 (D) Diencephalon (D) Medulla
35. Which of the following is not related to fore brain ?
 (A) lateral ventricle (B) Inferior Collicule
 (C) Corpus callosum (D) Voluntary locomotion
36. Which of the following have major co-ordinating centres for sensory and motor signal
 (A) Brain stem (B) Pons (C) mid brain (D) Thalamus
37. It has centres to regulate body temperature ?
 (A) Thalamus (B) Hypothalamus
 (C) Corpora quadrigemina (D) Pons
38. [a] and [b] are the regions of Limbic system
 (A) a = Thalamus b = Hypothalamus
 (B) a = Amygdala b = thalamus
 (C) a = Hippocampus b = Hypothalamus
 (D) a = Amygdala b = Hippocampus
39. Limbic system along with _____ regulates sexual behaviour ?
 (A) Hypothalamus (B) Thalamus (C) Cerebral cortex (D) cerebrum
40. Mid brain is located between [a] and [b] ?
 (A) a = cerebral hemisphere (B) a = Hypothalamas
 b = Diencephalan b = midbrain
 (C) a = Pons (D) a = Diencephalon
 b = Medulla oblongata b = Pons
41. Which option show correctly matched pairs for the column I and column II ?
- | column I | column II |
|-----------------------|---|
| (P) cerebrum | (i) 3 rd ventricle |
| (Q) Diencephalon | (ii) connect 3 rd ventricle with 4 th ventricle |
| (R) Medulla oblongata | (iii) 4 th ventricle |
| (S) Iter | (iv) 1 st and 2 nd ventricle |
| (T) Forman of Manro | (v) connects 1 st and 2 nd ventricle with 3 rd ventricle |

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- (A) (P - ii), (Q - i), (R - iv), (S - iii), (T - v) (B) (P - iii), (Q - i), (R - iv), (S - ii), (T - v)
 (C) (P - iv), (Q - i), (R - iii), (S - v), (T - ii) (D) None of the given
42. Cerebral aqueduct passes through [a] and it opens into [b] ?
 (A) a = mid brain (B) a = Diencephalon
 b = 4th ventricle b = 3rd ventricle
 (C) a = Medulla Oblongata (D) a = cerebrum
 b = 4th ventricle b = Diencephalon
43. On which side of the brain corpora quadrigemina is present ?
 (A) Dorsal (B) Ventral (C) Lateral (D) ventro lateral
44. What is the function of superior colliculi of mid brain ?
 (A) To control emotional reflex (B) To control Auditory reflex
 (C) To control visual reflex (D) To control Audio visual reflex
45. What is posterior choroid plexus ?
 (A) Non nervous epithelial folded roof (B) Non-nervous epithelial floor
 (C) Nervous, epithelial folded roof (D) Nervous, epithelial folded floor
46. Spot the odd (in terms of type of reflex)
 (A) Secretion of saliva on seeing tasty food (B) Antiperistalsis
 (C) Peristalsis (D) Heart - beat
47. Several examples of reflexes are given here, which of the given option indicates all correct examples of Conditioned reflex ?
 Examples
 (i) Prejudices (ii) Heart - beat (iii) Peristalsis (iv) dis-liking
 (v) Habits
 (A) (i), (ii), (iii) (B) (i), (iii) (C) (i), (iv) and (v) (D) (i) and (iii)
48. Which layer of an eye is transparent and thin
 (A) Outer sclera (B) middle - sclera (C) choroid (D) Retina
49. Which regions of eye consist of dense connective tissue ?
 (A) sclera (B) Sclera and cornea
 (C) Choroid and retina (D) Retina and ciliary body
50. Which of the following option is correct for mechanism of vision
 (A) Light - photosensitive cell - scotopsin - dissociate - signal to ganglion cell - transmission of signal to visual area
 (B) Light - Transmission of signals of ganglion cell - photoreceptive cell - transmission signals to visual area
 (C) Light - Transmission of signals to visual degradation of scotopsin - photosensitive cells
 (D) None of the given
51. What is the stiff edge of pinna called ?
 (A) Tympanum (B) Lobule (C) Fenestra roundata (D) Helix

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52. Which of the following option is correct for the correct matched pairs for Column I and II and Column III

Column - I

- (a) aqueous humor
(b) Vitreous humor
(c) Blind spot
(d) Fovea

Column II

- (i) Depression on retina
(ii) watery fluid
(iii) Absence of sensitive cells
(iv) thick fluid

Column III

- (f) origin of optic nerve
(g) secreted by retina
(h) presence of cone cell
(i) secreted by Ciliary body

- (A) (a - ii-i), (b - iv-g), (c - - ii- f) (d - i - h)
(B) (a - I - f), (b, II, i) (c, III - g) (d - IV - h)
(C) (a - I - i), (b - II- h), (C - II - f), (d - IV- g)
(D) None of the given

53. Permeability of which of the following increases during depolarization ?

- (A) Na^+ (B) K^+ (C) Mg^+ (D) Ag^+

54. Several statements are given here in reference to cone cells which of the following option indicates all correct statements for cone cells ?

Statements

- (i) cone cells are less sensitive than Rod cells
(ii) They are responsible for colour vision
(iii) Erythrolobe is photopigment which is sensitive to red colour light
(iv) They are absent in fovea of retina

- (A) (iii), (ii) and (i) (B) (ii) and (iii) (iv) (C) (iii) and (iv) (D) (i) and (ii) (iv)

55. Which of the following of are main divisions of autonomous nervous system

- (A) limbic system and Hippocampus (B) Sympathetic and limbic system
(C) Sympathetic and para sympathetic (D) Brain and spinal cord

56. Which of the following option indicates correct chronology of structures of the ear (from outside is inside) ?

- (A) cochlear duct - utricle - sacule (B) Saccule - utricle - cochlear duct
(C) utricle - saccule - cochlear duct (D) Utricular - cochlear duct - saccule

57. Few statements about tympanic membrane are given here which of the following option shows all correct statement for it ?

- (i) malleus bone join with it
(ii) it is oval membrane consist of unstriated muscle
(iii) It has cover of skin on its inner side and muscle layer on outside
(iv) It has upper aperture called fenestra roundata

- (A) (i) (B) (i) and (ii) (C) (ii) and (iii) (D) (i), (iv), (iii)

58. Which of the following option indicates correct chronology of middle ear ossicle (from Tympanum to internal ear)

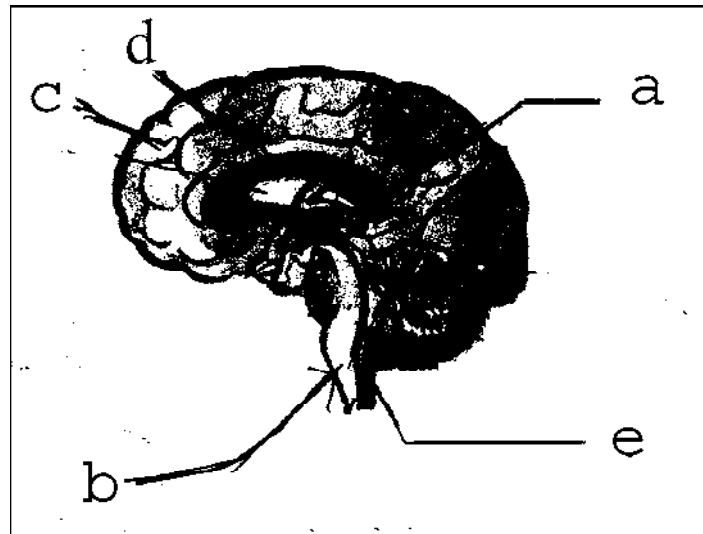
- (A) Incus - malleus - stapes (B) malleus - Incus - stapes
(C) stapes - malleus - Incus (D) malleus - stapes - Incus

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59. It is correct for the function of ear ossicle
 (A) To amplify sound 40 times (B) To amplify sound 20 times
 (B) To amplify sound 10 times (D) To reduce harmful effect of sound
60. Which of the following is filled with perilymph ?
 (A) Area around cochlear duct on outer side (B) In lumen of vestibule
 (C) In semicircular canal (D) In lumen of sacculus
61. Which of the following option shows correctly matched groups for the column I, column II and column III
- | column I | column II | column III |
|-------------------------|---|----------------------------------|
| (a) multiple sclerosis | (i) degeneration of intervertebral disc | (e) continuous pain in back |
| (b) Parkinson's disease | (ii) Myelin sheath around nerves is damaged | (f) Defect in speech |
| (c) sciatica | (iii) Deficiency of dopamine | (g) lack of spontaneous movement |
- (A) (a - i - g), (b - ii - f), (c - i - e) (B) (a - ii - f), (b - iii - g), (c - i - e)
 (C) (a - iii - e), (b - ii - f), (c - i - g) (D) (a - iii - f), (b - ii - e), (c - i - g)
62. What is ciliary body ?
 (A) Thick posterior part choroid (B) Thick anterior part of sclera
 (C) Thick posterior part of sclera (D) Thick anterior part of choroid
63. Iris is a continuation of _____
 (A) ciliary body (B) choroid (C) Retina (D) None of the given
64. Which type of muscle are present in ciliary body ?
 (A) Radial & oblique (B) Horizontal & oblique
 (C) Radial and longitudinal (D) All of the given
65. What is macula lutea ?
 (A) A yellow pigmented area with cone cell
 (B) fovea centralis of retina, with cone cells
 (C) A yellow pigmented area of Choroid with rod cell
 (D) Blind spot on retina
66. which basic Colour Photoreceptors are Present in human eye ?
 (A) Red Yellow Orange (B) Red green blue
 (C) Red green Orange (D) green yellow blue
67. which of the following has nerve centers for the urge of eating ?
 (A) Pons (B) Thalamus (C) Hypothalamus (D) mid - brain
68. Deficiency abnormality of which of the following is responsible for Alzheimer's disease?
 (A) cortisone (B) Acetyl choline (C) Adrenaline (D) nor - epinephrine
69. What is correct for the "number" of vagus Cranial nerve?
 (A) 6 (B) 5 (C) 10 (D) 12
70. At which of the following Structure Sensitivity of retina is highest?
 (A) Rod cells of Fovea centralis (B) Yellow spot
 (C) Blind Spot (D) None of the given

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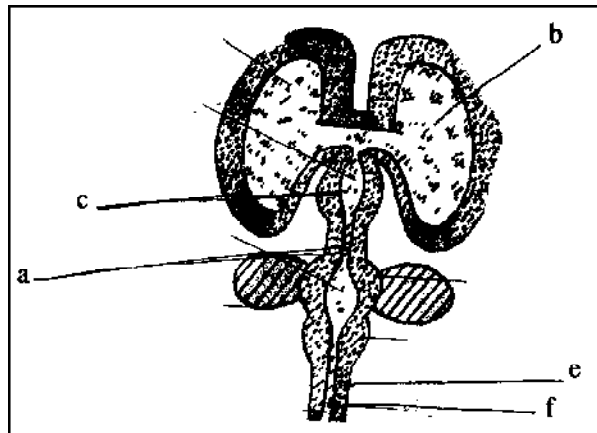
Diagram for question number 71 to 75.



71. What does “a” indicate in the given diagram?
 (A) Cerebral hemisphere (B) Optic Chiasmata
 (C) Olfactory bulb (D) Pineal gland
72. Which option is correct for the region labelled as “b”
 (A) medulla oblongata - Hind brain - Involuntary Function
 (B) Occipital lobe - Hind brain - Audio - Visual Centres
 (C) medulla oblongata - Hind brain - Site of intelligence
 (D) Pons Varolli - Mid brain - Axonal Fibre
73. What does “c” indicate in the given diagram?
 (A) Cerebellum (B) Occipital Lobe (C) Cerebrum (D) Parietal Lobe
74. Which option is correct for the region labelled as “d”?
 (A) Corpus callosum - Consist of large number of non - myelinated nerve fibre
 (B) Cerebral Cortex - With white mater
 (C) Cerebellar hemisphere - with white mater
 (D) Corpus Callosum - Consist of large number of myelinated Fibre
75. What is the function of region labelled as “e”?
 (A) Secrete growth hormone (B) Secrete melatonin
 (C) Releases nutrient for the brain (D) Carry impulse of Vision

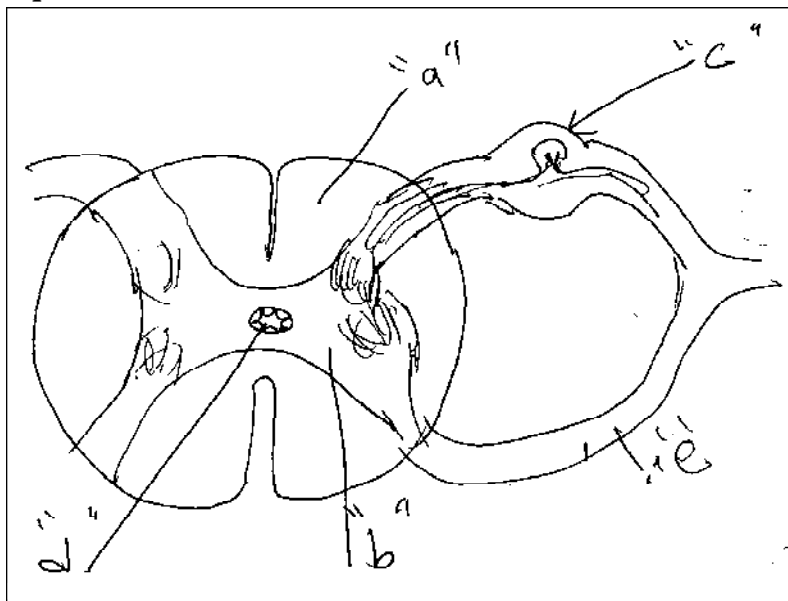
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Diagram for question number 76 to 79



76. What does "a" indicate on the given diagram.
 (A) Mid brain (B) Third Ventricle (C) Lateral Ventricle (D) cerebral aqueduct
77. What does "b" indicate in the given diagram?
 (A) - Iter (B) Lateral Ventricle (C) Central Canal (D) 4th Ventricle
78. Which option is Correct for the region labelled as "c"?
 (A) Central Canal (B) 3rd Ventricle (C) Medulla Oblongata (D) Spinal Cord
79. What does "e" and "f" indicates in the given diagram?
 (A) e = Third Ventricle (B) e = Spinal Cord
 f = Diencephalon f = Central Canal
 (C) e = Diencephalon (D) e = Third Ventricle
 f = fourth ventricle f = medulla Oblongata

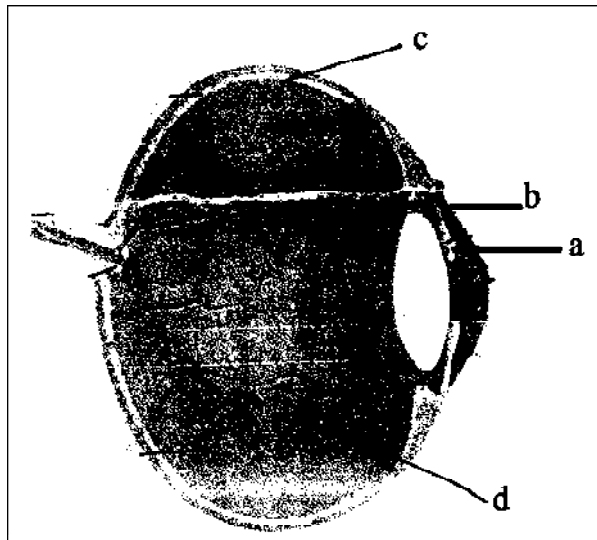
Diagram for question number 80 to 82



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80. Which of the following option is correct for the region labelled as "a" and b ?
 (A) a = origin of Sensory nerve (B) a = Origin of motor nerve
 b = Origin of motor nerve b = Origin of Sensory nerve
 (C) a = White matter b = gray matter (D) a = Grey matter b = white matter
81. Identify the region labelled as "C" and which of the following option is correct for the Significance of it?
 (A) Ventral root ganglion = only of the unipolar nerve are present
 (B) Dorsal root ganglion = only dendrites of the unipolar nerve are present
 (C) Ventral root ganglion = Cyton of bipolar neuron are present
 (D) Dorsal root ganglion; it has unipolar neurons Cell body
82. What does "d" and "e" represent in the given diagram?
 (A) d = Sensory cells, e = Central canal (B) d = Fourth ventricle, e = motor neuron
 (C) d = Motor neuron, e = Central canal (D) c = Central canal d = motor nerv

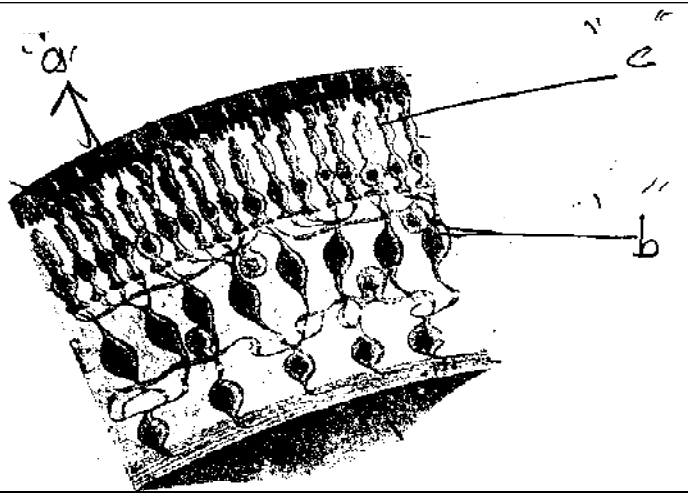
diagram for question number 83 to 86



83. What is the function of region Labelled as "a" in the given diagram?
 (A) dispersion of the light rays
 (B) Stop entry of u - v rays of light
 (C) Allow only red, green and yellow colour of enter in an eye
 (D) Regulate light rays entering in eye
84. what does "b" indicate in the given diagram?
 (A) Anterior chamber ↔ aqueous fluid (B) Posterior chamber ↔ thick fluid
 (C) Anterior chamber ↔ thick fluid (D) Posterior chamber ↔ aqueous fluid
85. What does "c" indicate in the given diagram?
 (A) Sclera (B) Retina (C) Choroid (D) Yellow Spot
86. What does "d" indicate in the given diagram?
 (A) Anterior chamber - aqueous fluid (B) Posterior chamber - Thick fluid
 (C) Anterior chamber - Thick fluid (D) posterior chamber - aqueous fluid

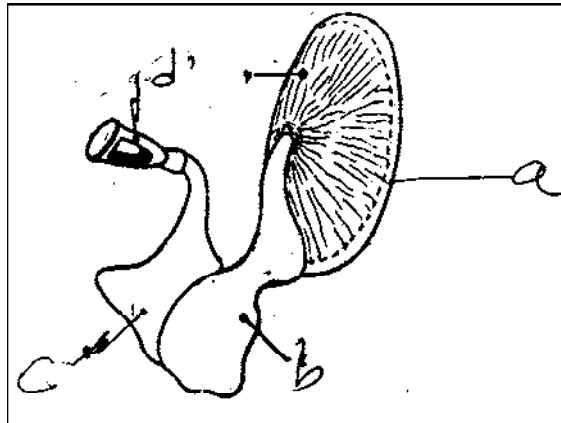
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Diagram for question number 87 to 89



87. What does "a" indicate in the given diagram?
 (A) Cone cell - Colour Vision (B) Cone cell - Intensity of light
 (C) Rod cell - Colour Vision (D) Rod cell - Intensity of light
88. What does "b" indicate in the given diagram?
 (A) Unipolar neurons of choroid (B) Bipolar neurons of retina
 (C) Bipolar neurons of sclera (D) Unipolar cell of retina
89. What "C" indicate in the given diagram?
 (A) Rod cell of sclera (B) Rod cells of choroid
 (C) Rod cell of retina (D) cone cell of sclera

Diagram for question number 90 to 94

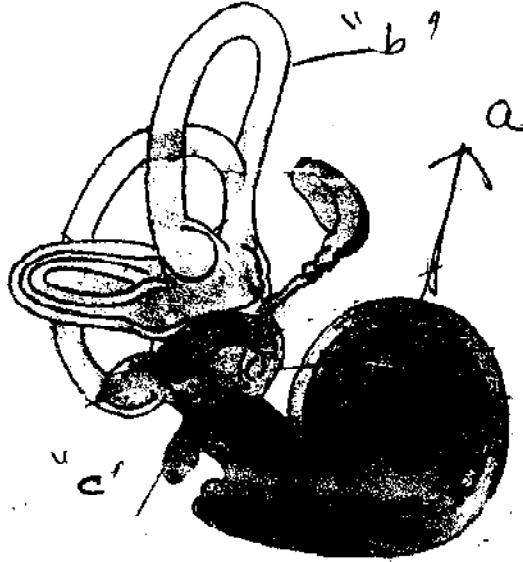


90. what does region labelled as "a" in the diagram indicate
 (A) Tympanum (B) Round window
 (C) Oval window (D) external auditory canal
91. what does "b" indicate in the given diagram?
 (A) Incus (B) Malleus (C) stapes (D) Window
92. What does "d" indicate in the given diagram?
 (A) Malleus (B) Incus (C) Round window (D) stapes

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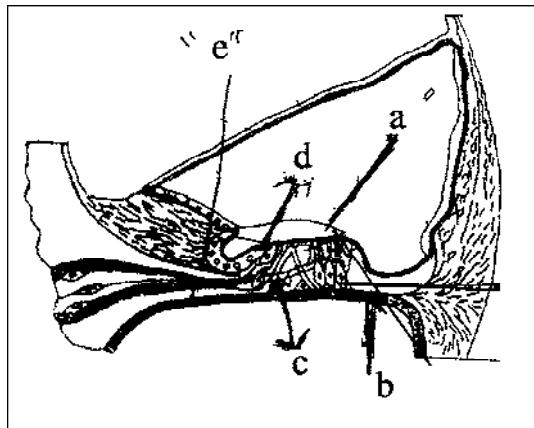
93. Which option is correct for the region labelled as c ?
 (A) Malleus (B) Stapes (C) Round window (D) Incus
94. Which tissue is present on the innerside of the region labelled as "a" in the given diagram ?
 (A) Muscle (B) Skeletal (C) Areolar connective (D) cartilage

Diagram for question number 95 , 96 , 97



95. Which option is correct for the structure and function of region labelled as "a"
 (A) Sacule (B) Utricle (C) Ampulla (D) Chochear canal
96. Which is correct for the struture and function of region labelled as "b"
 (A) Ampulla , equilibrium related (B) Semicircular canal equilibrium related
 (C) chochlear canal sensitive to equilibrium (D) Ampulla Auditory centres
97. What does region labelled as "C" indicate ?
 (A) ampulla (B) round Window (C) oval window (D) malleus bone

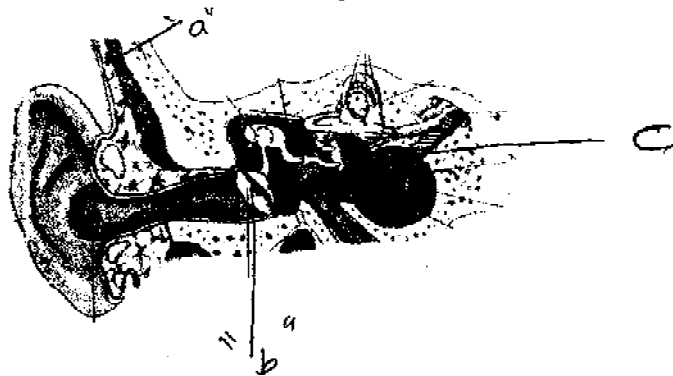
Diagram for question number 98 to 102



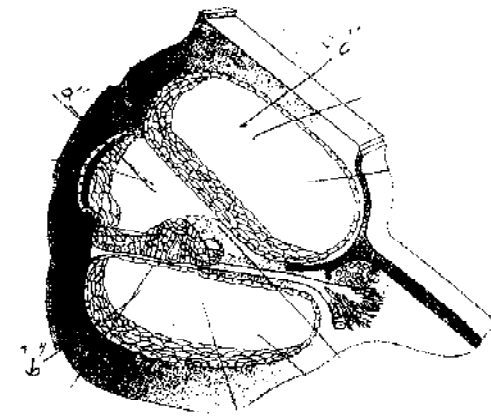
98. What does "a" indicate in the given diagram ?
 (A) Tectorial membrane (B) Innerhair cell (C) Basiliar membrane (D) Border cell

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99. What does "b" indicate in the given diagram ?
 (A) Basilar membrane (B) Hair cell (C) Bordercell (D) scala media
100. What does "d" indicate in the given diagram ?
 (A) tectorial membrane (B) Outer hair cell (C) Border cell (D) Inner hair cell
101. What does "e" indicate in the given diagram ?
 (A) Border hair cell (B) Inner hair cell (C) Inner phalangeal cells (D) Border cell
102. What does "c" indicate in the given diagram ?
 (A) Basilar membrane (B) Pillar cell (C) Border cells (D) Scala media

Diagram for question number 103 to 105

103. What does "a" represent in the given diagram
 (A) Palatine bone (B) Eustachian tube (C) Temporal bone (D) Tympanic membrane
104. Which option is correct for the function and location of region labelled as "b" in the given diagram ?
 (A) To equalize pressure on either side of eardrum between middle ear and pharynx
 (B) to equalize pressure on either side of eardrum between middle ear and oesophagus
 (C) to distribute sound wave evenly between tympanum and middle ear
 (D) None of the given
105. What does region labelled as "c" indicate ?
 (A) Vestibular nerve (B) Auditory nerve (C) cochlear artery (D) cochlear nerve
106. What does "a", "b" and "c" indicate in the given diagram ?



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- | | |
|--|--|
| (A) a = scala media
b = scala Tympani
c = scala vestibuli
(C) a = scale media
b = scale vestibuli
c = scale tympani | (B) a = scala tympani
b = scala media
c = scala vestibuli
(D) None of the given |
|--|--|

107. Which of the following option is correct for the statement X, Y, and Z ?

X- cerebral cortex is called association area

Y - It contains sensory area motor area and large region that neither clearly sensory nor motor in function

Z - This region is responsible for inter sensory association memory and communication

- (A) x, y and z are correct and y and z are correct for x
 (B) x, y and z are correct and y and z are not correct for x
 (C) x is correct and y and z are correct.
 (D) x and y are correct and z is wrong.

Few statements are given in question number for the given statement X and statement Y

option for question number 180 to 120

- (A) A and R both are correct and R is the correct explanation for A.
 (B) A and R both are correct and R is not correct explanation for A
 (C) A is correct and R is wrong
 (D) R is correct & A is wrong
108. Statement A : medulla is absent in nerves of autonomic nervous system
 Statement R : Nerve impulse has to travel less distance in autonomic nervous system
109. Statement A : Immediately after repolarization, ionic imbalance is created on sides of nerve fibre
 Statement R : During repolarization K ion channel open up and K ion moves on inner side of plasma membrane
110. Statement A : Injury to interior Colliculi can impair hearing
 Statement R : centre to control auditory sense are lying in it
111. Statement A : Injury to medulla can lead to the death of an individual
 Statement R : It has centres to regulate major involuntary functions of body
112. Statement A : cochlea can be called true organ of hearing
 Statement R : Organ of Corti is present in it
113. Statement A : The movement (vibration) of basilar membrane is necessary for hearing
 Statement R : movement of basilar membrane separates sensory hair from tectorial membrane
114. Statement A : Rod cells possess visual purple pigments
 Statement R : They are sensitive to purple pigment colour light
115. Statement A : Amygdala are present in superficial region of cerebral hemisphere
 Statement R : They make part of limbic system

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116. Statement A : synapse are of two types
Statement R : in electrical synapses pre and post synaptic membrane are in close proximity
117. Statement A : neurotransmitters are present in synaptic vesicles present in axon terminals
Statement R : On arrival of action potential neurotransmitter unites with receptors present on pre synaptic membrane
118. Statement A : corpus callosum join two cerebral hemispheres
Statement R : corpus callosum is formed of unipolar neurons
119. Statement A : optic nerve leave eye ball at little lower and posterior pole of the eye ball
Statement R : Photosensitive cells are not present at this place
120. Statement A : Na^+ and K^+ pumps are activated after repolarization
Statement R : By them ionic imbalance created due to repolarization is removed
121. Given below is a table comparing the effects of sympathetic and parasympathetic nervous system for four feature (1-4) which one feature is correctly described? **(A.I.I.M.S.2006)**
- | Feature | sympathetic nervous system | parasympathetic nervous system |
|----------------------------|----------------------------|--------------------------------|
| (A) Salivary gland | inhibit secretion | stimulate secretion |
| (B) pupil of the eye | dilate | constricts |
| (C) heart rate | decreases | increases |
| (D) intestinal peristalsis | stimulates | inhibits |
122. Cranial nerves supplying eyes muscles are:
(Pb.P.M.T.1997)
- (A) 4,5,6 (B) 3,4,5 (C) 4,6,7 (D) 3,4,6
123. A cranial nerve with maximum branches in the body is
(M.P.P.M.T.1997,A.P.M.E.E 1999,C.B.S.E 1999)
- (A) Auditory (B) Trigeminal (C) Vagus (D) Facial
124. Bowman's glands are located in **(C . B . S . E 2007)**
- (A) Olfactory epithelium of human nose (B) Female reproductive system of cockroach
(C) Anterior pituitary (D) Proximal end of uriniferous tubules
125. Which of the following disorder is not hereditary **(J.K.C.M.E.E 2005)**
- (A) sickle cell anaemia (B) haemophilia (C) colour blindness (D) cataract
126. Glands responsible for secreting tears are: **(H.P.P.M.T 2005)**
- (A) glands of moll (B) lacrimal glands (C) meibomian glands (D) glands of zeis
127. Which of the following cranial nerves are mixed: **(BHU 2007)**
1. glossopharyngeal 2. trigeminal 3. vagus 4. auditory
- (A) 1,2 and 3 are correct (B) 1 and 3 are correct
(C) 1 and 2 are correct (D) 2 and 4 are correct

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128. To What the respiratory centres of brain are sensitive?
 (A) High CO₂ Conc in blood (B) Blood supply to brain
 (C) High O₂ Conc in blood (D) More blood supply to lungs
129. Nasal epithelium is formed of: **(C.M.C 2003)**
 (A) columnar epithelium (B) keratinised epithelium
 (C) pseudostratified epithelium (D) glandular epithelium
130. Space between piamater and arachnoid is **(J.K.C.M.E.E 2003)**
 (A) subdural (B) supra archnoid(C) eqidural (D) subarachnoid
131. Which one is mixed nerve
 (A) oculomotor (B) trochler (C) hypoglossal (D) glossopharyngeal
132. Visual area is localised in **(A.I.E.E.E 2004)**
 (A) occipital lobe (B) parietal lobe (C) frontal lobe (D) temporal lobe
133. In hypothalamus are located various centres of **(J.I.P.M.E.R 2004)**
 (A) circulation (B) sleep (C) memory (D) body temprature
134. Which option is correct for the few statements are given for the function of cerebram, which of few following option is shows all correct statements.
 (i) to control the sensitivity,movement,memory,vocabulary etc. through the frontal lobe
 (ii) to control the vision and adaptation through the occipital and frontallobes
 (iii) to control the contraction of voluntary muscles through the frontal lobe
 (iv) to control the temperature,taste,touch,pain etc, through the parietal lobe
 (A) (i),(ii),(iii) (B) (iii),(iv),(i) (C) (i),(iii),(iv) (D) (i),(ii)
135. column I lists the part of the human brain and column II lists the functions. Match the two column and identify the correct choice from those given. **(K.C.E.T 2005)**
- | column I | column II |
|-----------------|-----------------------------------|
| a. cerebrum | p. controls the pituitary |
| b. cerebellum | q. control vision and hearing |
| c. hypothalamus | r. control the rate of heart beat |
| d. midbrain | s. seat of intelligence |
| | t. maintains body posture |
- (A) (a=s);(b=t);(c=p);(d=q) (B) (a=t);(b=s);(c=r);(d=q)
 (C) (a=t);(b=r);(c=p);(d=q) (D) (a=t);(b=s);(c=q);(d=p)
136. It control auditory reflex
 (A) pons (B) inferior colliculi (C) pineal body (D) superior colliculi
137. In the resting state of the neural membrane,diffusion due to concentration gradients,if allowed would drive: **(C.B.S.E 2004)**
 (A) Na⁺ out of the cell (B) k⁺ into the cell
 (C) Na⁺ into the cell (D) k⁺ and Na⁺ out of the cell

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138. Injury vagus nerve in humans is not likely to affect: **(C.B.S.E 2004)**
 (A) gastrointestinal movements (B) cardiac movement
 (C) tongue movement (D) pancreatic movement
139. unidirectional transmission of a nerve impulse through nerve fibre is due to the fact that:
 (A) sodium pump starts operating only at the cyton and then continues into the nerve fiber
 (B) nerve fiber is insulated by a medullary sheath
 (C) neurotransmitters are released by the axon endings
 (D) neurotransmitters are released by dendrites
140. Which of the following is not strictly considered a part of neuron? **(C.P.M.T 1998)**
 (A) dendrites (B) myelin sheath (C) axon (D) Nissle's bodies
141. Centres for sense of smell are located **(M.P.P.M.T 1999)**
 (A) cerebellum (B) midbrain (C) olfactory lobes (D) cerebrum
142. Nerve related to diaphragm is **(M.P.P.M.T 1999)**
 (A) trigeminal (B) vagus (C) glossopharyngeal (D) phrenic
143. Node of Ranvier is the place where **(C.B.S.E.P.M.T 2002)**
 (A) myelin sheath and neurilemma are discontinuous
 (B) axolemma is absent
 (C) axolemma is discontinuous
 (D) myelin sheath is discontinuous
144. which of the following cranial nerve controls the movement of eye ball? **(B.H.U 2002)**
 (A) trochlear (B) oculomotor (C) abducens (D) all of the given
145. Match the following human spinal nerves in column I with their respective number in column II and choose the correct option **(Kerala 2005)**
- | column I | column II |
|--------------------|------------------|
| P. cervical nerves | i. 5 pairs |
| Q. thoracic nerve | ii. 1 pair |
| R. lumbar nerve | iii. 12 pair |
| S. coccygeal nerve | iv. 8 pair |
- (A) (P-iv),(Q-iii),(R-i),(S-ii) (B) (P-iii), (Q-i), (R-ii), (S-iv)
 (C) (P-iv),(Q-i),(R-ii),(S-iii) (D) (P-ii), (Q-iv), (R-i), (S-iii)
146. How many pairs of spinal nerve are found in human? **(Guj C.E.T 2006)**
 (A) 33 (B) 32 (C) 31 (D) 30
147. What is Nissl's granule consist of? **(C.B.S.E 2007)**
 (A) DNA (B) RNA (C) protein (D) lipid

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148. Which of the following is correct for motor nerve? **(A.I.E.E.E 2004)**
(A) trochlear (B) hypoglossal (C) oculomotor (D) All the given
149. Four healthy people in their twenties got involved in injuries resulting in damage and death of a few cells of the following . Which of the cells are least likely to be replaced by new cells ? **(C.B.S.E 2005)**
(A) liver cells (B) osteocytes (C) neurons (D) malpighian layer of the skin
150. One of the examples of the action of the autonomous nervous system is : **(C.B.S.E 2005)**
(A) peristalsis of the intestines (B) knee-jerk response
(C) swallowing of food (D) pupillary reflex
151. Mouth becomes watery when we look at a delocious food due to
(A) optic response(B) olfactory response (C) Hormonal response (D) neural response
152. Which of the following cranial nerve is not a motor nerve.
(A) XII (B) IV (C) II (D) III

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Answer – Key

1	B	31	B	61	B	91	B	121	B
2	D	32	C	62	D	92	C	122	D
3	B	33	B	63	A	93	D	123	B
4	C	34	B	64	A	94	A	124	A
5	D	35	B	65	B	95	D	125	D
6	C	36	D	66	B	96	B	126	B
7	D	37	B	67	C	97	A	127	A
8	D	38	B	68	B	98	A	128	A
9	C	39	A	69	C	99	A	129	D
10	A	40	D	70	B	100	D	130	D
11	B	41	C	71	D	101	D	131	D
12	C	42	A	72	A	102	B	132	A
13	A	43	A	73	C	103	C	133	D
14	D	44	C	74	D	104	D	134	B
15	A	45	A	75	C	105	D	135	A
16	C	46	A	76	D	106	A	136	B
17	A	47	C	77	B	107	A	137	B
18	D	48	A	78	B	108	A	138	C
19	B	49	A	79	B	109	C	139	C
20	D	50	A	80	C	110	A	140	B
21	C	51	D	81	D	111	A	141	C
22	A	52	A	82	D	112	A	142	D
23	D	53	A	83	D	113	C	143	D
24	C	54	A	84	A	114	C	144	B
25	B	55	C	85	C	115	D	145	A
26	A	56	C	86	B	116	A	146	C
27	A	57	A	87	C	117	C	147	C
28	B	58	B	88	B	118	C	148	D
29	C	59	B	89	C	119	D	149	C
30	A	60	A	90	A	120	A	150	A
								151	A
								152	C