

Neural Control and Coordination

21.2 Human Neural System

1. 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 (2005)
2. Injury to vagus nerve in humans is not likely to affect
(a) tongue movements
(b) gastrointestinal movements
(c) pancreatic secretion
(d) cardiac movements. (2004)
3. Which cranial nerve has the highest number of branches?
(a) Vagus nerve (b) Trigeminal nerve
(c) Facial nerve (d) None of these (1999)
4. Sympathetic nervous system induces
(a) secretion of digestive juices
(b) heart beat
(c) secretion of saliva
(d) all of these. (1999)
5. The vagus nerve is the cranial nerve numbering
(a) 7 (b) 5
(c) 10 (d) 9. (1997)
6. By which nervous system and of what type, the blood is supplied into visceral organs?
(a) Both SNS and PNS, involuntary
(b) Para-sympathetic nervous system involuntary
(c) Sympathetic nervous system, involuntary
(d) Sympathetic nervous system, voluntary (1996)
7. The sympathetic nerves, in mammals, arise from
(a) sacral nerves
(b) 3rd, 7th, 9th and 10th cranial nerves
(c) thoraco-lumbar nerves
(d) cervical nerves. (1995)
8. Afferent nerve fibres carry impulses from
(a) effector organs to CNS

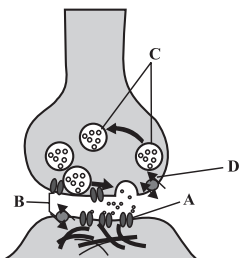
- (b) receptors to CNS
- (c) CNS to receptors
- (d) CNS to muscles. (1992)

9. Vagus nerve is
(a) X (b) IX
(c) VII (d) V. (1992)
10. One function of parasympathetic nervous system is
(a) contraction of hair muscles
(b) stimulation of sweat glands
(c) acceleration of heart beat
(d) constriction of pupil. (1990)
11. Which of the following cranial nerves can regulate heart beat?
(a) X (b) IX
(c) VIII (d) VII (1989)

21.3 Neuron as Structural and Functional Unit of Neural System

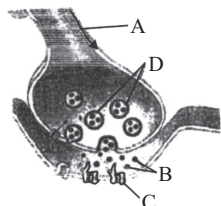
12. Nissl's bodies are mainly composed of
(a) proteins and lipids
(b) DNA and RNA
(c) nucleic acids and SER
(d) free ribosomes and RER. (NEET 2018)
13. Myelin sheath is produced by
(a) astrocytes and Schwann cells
(b) oligodendrocytes and osteoclasts
(c) osteoclasts and astrocytes
(d) Schwann cells and oligodendrocytes. (NEET 2017)
14. Receptor sites for neurotransmitters are present on
(a) pre-synaptic membrane
(b) tips of axons
(c) post-synaptic membrane
(d) membranes of synaptic vesicles. (NEET 2017)
15. The most abundant intracellular cation is
(a) H⁺ (b) K⁺
(c) Na⁺ (d) Ca⁺⁺. (NEET 2013)

16. A diagram showing axon terminal and synapse is given. Identify correctly at least two of A - D.



- (a) A - Neurotransmitter, B - Synaptic cleft
 (b) C - Neurotransmitter, D - Ca^{++}
 (c) A - Receptor, C - Synaptic vesicles
 (d) B - Synaptic connection, D - K^+ (NEET 2013)

17. The figure shows an axon terminal and synapse. Select the option giving correct identification of labels A-D.



- (a) A-Action potential, C-Neurotransmitter
 (b) B-Neurotransmitter, D- Receptor capsules
 (c) C-Receptor, D-Synaptic vesicles
 (d) A-Axon terminal, B- Serotonin complex (Karnataka NEET 2013)

18. 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. (2011)

19. Alzheimer's disease in humans is associated with the deficiency of

- (a) glutamic acid (b) acetylcholine
 (c) gamma aminobutyric acid (GABA)
 (d) dopamine. (2009)

20. 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 intracellular fluid
 (d) Na^+ ions from intracellular fluid to extracellular fluid. (2008)

21. 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. (2007)

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

- (a) Cortisone (b) Acetylcholine
 (c) Epinephrine (d) Norepinephrine (2006)

23. 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. (2005)

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

- (a) K^+ into the cell
 (b) K^+ and Na^+ out of the cell
 (c) Na^+ into the cell
 (d) Na^+ out of the cell. (2004)

25. What used to be described as Nissl's granules in a nerve cell are now identified as

- (a) cell metabolites (b) fat granules
 (c) ribosomes (d) mitochondria. (2003)

26. Which of the following statement is correct for node of Ranvier of nerve?

- (a) Neurilemma is discontinuous.
 (b) Myelin sheath is discontinuous.
 (c) Both neurilemma and myelin sheath are discontinuous.
 (d) Covered by myelin sheath. (2002)

27. Depolarization of axolemma during nerve conduction takes place because of

- (a) equal amount of Na^+ and K^+ move out across axolemma
 (b) Na^+ move inside and K^+ move more outside
 (c) more Na^+ outside
 (d) none of these. (2000)

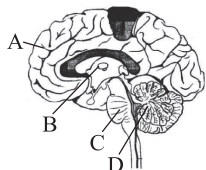
28. The junction between the axon of one neuron and the dendrite of the next is called

- (a) constant bridge (b) junction point
 (c) a joint (d) a synapse. (1999)

29. Which of the following is regarded as a unit of nervous tissue?
 (a) Neurons (b) Myelin sheath
 (c) Axons (d) Dendrites (1999)
30. The Nissl's granules of nerves cell are made up of
 (a) DNA (b) RNA
 (c) ribosome (d) protein. (1997)

21.4 Central Neural System

31. Which part of the brain is responsible for thermoregulation?
 (a) Medulla oblongata (b) Cerebrum
 (c) Hypothalamus (d) Corpus callosum (NEET 2019)
32. Which of the following structures or regions is incorrectly paired with its functions?
 (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 fibers connecting left and right cerebral hemispheres (NEET 2018)
33. Which of the following regions of the brain is incorrectly paired with its function?
 (a) Corpus callosum - communication between the left and right cerebral cortices
 (b) Cerebrum - calculation and contemplation
 (c) Medulla oblongata - homeostatic control
 (d) Cerebellum - language comprehension (2015 Cancelled)
34. Injury localized to the hypothalamus would most likely disrupt
 (a) short - term memory
 (b) co-ordination during locomotion
 (c) executive functions, such as decision making
 (d) regulation of body temperature. (2014)
35. A sagittal section of human brain is shown here. Identify at least two labels from A-D.



- (a) C-Midbrain, D-Cerebellum
 (b) A-Cerebrum, C-Pons

- (c) B-Corpus callosum, D-Medulla
 (d) A-Cerebral hemispheres, B-Cerebellum (Karnataka NEET 2013)

36. The human hind brain comprises three parts, one of which is
 (a) spinal cord (b) corpus callosum
 (c) cerebellum (d) hypothalamus. (2012)
37. The nerve centres which control the body temperature and the urge for eating are contained in
 (a) hypothalamus (b) pons
 (c) cerebellum (d) thalamus. (2010)
38. Which part of human brain is concerned with the regulation of body temperature?
 (a) Cerebellum (b) Cerebrum
 (c) Hypothalamus (d) Medulla oblongata (2009)
39. Third ventricle of brain is also known as
 (a) metacoel (b) rhinocoel
 (c) paracoel (d) diacoel. (1990)

21.5 Reflex Action and Reflex Arc

40. Destruction of the anterior horn cells of the spinal cord would result in loss of
 (a) commissural impulses
 (b) integrating impulses
 (c) sensory impulses
 (d) voluntary motor impulses. (2015)
41. Which one of the following is the example of the action of the autonomous nervous system?
 (a) Swallowing of food
 (b) Pupillary reflex
 (c) Peristalsis of the intestine
 (d) Knee-jerk response (2005)
42. Ivan Pavlov performed experiments on
 (a) simple reflexes (b) conditioned reflexes
 (c) cardiac reflexes (d) origin of life. (1993)

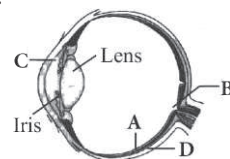
21.6 Sensory Reception and Processing

43. Match the following columns and select the correct option.

Column-I	Column-II
(A) Organ of Corti	(i) Connects middle ear and pharynx
(B) Cochlea	(ii) Coiled part of the labyrinth
(C) Eustachian tube	(iii) Attached to the oval window
(D) Stapes	(iv) Located on the basilar membrane

- (A) (B) (C) (D)
- (a) (ii) (iii) (i) (iv)
- (b) (iii) (i) (iv) (ii)
- (c) (iv) (ii) (i) (iii)
- (d) (i) (ii) (iv) (iii) (NEET 2020)
44. Which of the following statements is correct?
- (a) Cornea consists of dense matrix of collagen and is the most sensitive portion of the eye.
- (b) Cornea is an external, transparent and protective proteinacious covering of the eye-ball.
- (c) Cornea consists of dense connective tissue of elastin and can repair itself.
- (d) Cornea is convex, transparent layer which is highly vascularised. (NEET 2019)
45. Which of the following statements is not correct?
- (a) An action potential in an axon does not move backward because the segment behind is in a refractory phase.
- (b) Depolarisation of hair cells of cochlea results in the opening of the mechanically gated potassium-ion channels.
- (c) Rods are very sensitive and contribute to daylight vision.
- (d) In the knee-jerk reflex, stimulus is the stretching of muscle and response is its contraction. (Odisha NEET 2019)
46. Which of the following receptors are specifically responsible for maintenance of balance of body and posture?
- (a) Basilar membrane and otoliths
- (b) Hair cells and organ of corti
- (c) Tectorial membrane and macula
- (d) Crista ampullaris and macula (Odisha NEET 2019)
47. The transparent lens in the human eye is held in its place by
- (a) ligaments attached to the ciliary body
- (b) ligaments attached to the iris
- (c) smooth muscles attached to the iris
- (d) smooth muscles attached to the ciliary body. (NEET 2018)
48. Good vision depends on adequate intake of carotene rich food.
- Select the best option from the following statements.
- (1) Vitamin A derivatives are formed from carotene.
- (2) The photopigments are embedded in the membrane discs of the inner segment.
- (3) Retinal is a derivative of vitamin A.
- (4) 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) (NEET 2017)

49. Choose the correct statement.
- (a) Nociceptors respond to changes in pressure.
- (b) Meissner's corpuscles are thermoreceptors.
- (c) Photoreceptors in the human eye are depolarised during darkness and become hyperpolarised in response to the light stimulus.
- (d) Receptors do not produce graded potentials. (NEET-II 2016)
50. Photosensitive compound in human eye is made up of
- (a) opsin and retinol
- (b) transducin and retinene
- (c) guanosine and retinol
- (d) opsin and retinal. (NEET-I 2016)
51. In mammalian eye, the 'fovea' is the center of the visual field, where
- (a) only rods are present
- (b) more rods than cones are found
- (c) high density of cones occur, but has no rods
- (d) the optic nerve leaves the eye. (2015)
52. A gymnast is able to balance his body upside down even in the total darkness because of
- (a) tectorial membrane
- (b) organ of corti
- (c) cochlea
- (d) vestibular apparatus. (2015 Cancelled)
53. Which one of the following statements is not correct?
- (a) Retinal is the light absorbing portion of visual photopigments.
- (b) In retina the rods have the photopigment 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. (2014)
54. Parts A, B, C and D of the human eye are shown in the diagram. Select the option which gives correct identification along with its functions characteristics.



- (a) C-Aqueous chamber-Reflects the light which does not pass through the lens.
- (b) D - Choroid - Its anterior part forms ciliary body.
- (c) A - Retina - Contains photoreceptors, i.e., rods and cones.
- (d) B - Blind spot-Has only a few rods and cones. (NEET 2013)

55. 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 (2012)

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

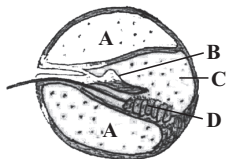
Structure	Location	Function
(a) Eustachian tube	Anterior part of internal ear	Equalizes air pressure on either sides of tympanic membrane
(b) Cerebellum	Midbrain	Controls respiration and gastric secretions
(c) Hypothalamus	Forebrain	Controls body temperature, urge for eating and drinking
(d) Blind spot	Near the place where optic nerve leaves the eye	Rods and cones are present but inactive here (Mains 2010)

57. Which one of the following pairs of structures is correctly matched with their corrected description?

Structures	Description
(a) Tibia and fibula	Both form parts of knee joint
(b) Cartilage and cornea	No blood supply but do require oxygen for respiratory need
(c) Shoulder joint and elbow joint	Ball and socket type of joint
(d) Premolars and molars	20 in all and 3 rooted (Mains 2010)

58. Cornea transplant in humans is almost never rejected. This is because
 (a) it is composed of enucleated cells
 (b) it is a non-living layer
 (c) its cells are least penetrable by bacteria
 (d) it has no blood supply. (2008)

59. Given below is a diagrammatic cross section of a single loop of human cochlea.



Which one of the following options correctly represents the names of three different parts?

- (a) D : Sensory hair cells, A : Endolymph, B : Tectorial membrane

- (b) A : Perilymph, B : Tectorial membrane, C: Endolymph
 (c) B : Tectorial membrane, C : Perilymph, D: Secretory cells
 (d) C : Endolymph, D : Sensory hair cells, A : Serum (2008)

60. 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 (2008)

61. Bowman's glands are located in the
 (a) anterior pituitary
 (b) female reproductive system of cockroach
 (c) olfactory epithelium of our nose
 (d) proximal end of uriniferous tubules. (2007)

62. Bowman's glands are found in
 (a) juxtamedullary nephrons
 (b) olfactory epithelium
 (c) external auditory canal
 (d) cortical nephrons only. (2006)

63. When we migrate from dark to light, we fail to see for sometime but after a time visibility becomes normal. It is example of
 (a) accomodation (b) adaptation
 (c) mutation (d) photoperiodism. (2001)

64. Which of the following statements is the characteristics of human cornea?
 (a) It is secreted by conjunctiva and glandular layer.
 (b) It is a lacrimal gland which secrete tears.
 (c) Blood circulation is absent in cornea.
 (d) In old age it becomes the cause of cataract. (2001)

65. In the chemistry of vision in mammals, the photosensitive substance is called
 (a) rhodopsin (b) melanin
 (c) sclerotin (d) retinol. (1997)

66. Light rays entering the eye is controlled by
 (a) pupil (b) iris
 (c) cornea (d) lens. (1993)

67. Retina is most sensitive at
 (a) optic disc (b) periphery
 (c) macula lutea (d) fovea centralis. (1993)

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|---|---------------|---|---------------|
| <p>68. Function of iris is to
 (a) move lens forward and backward
 (b) refract light rays
 (c) bring about movements of eye lids
 (d) alter the size of pupil.</p> | <p>(1993)</p> | <p>(b) choroid
 (c) choroid and retina
 (d) sclerotic and choroid.</p> | <p>(1993)</p> |
| <p>69. Iris is part of
 (a) sclerotic</p> | <p>(1993)</p> | <p>70. Sensitive pigmented layer of eye is
 (a) cornea (b) retina
 (c) sclerotic (d) iris.</p> | <p>(1989)</p> |

ANSWER KEY

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|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. (a) | 2. (a) | 3. (b) | 4. (b) | 5. (c) | 6. (a) | 7. (c) | 8. (b) | 9. (a) | 10. (d) |
| 11. (a) | 12. (d) | 13. (d) | 14. (c) | 15. (b) | 16. (c) | 17. (c) | 18. (d) | 19. (b) | 20. (b) |
| 21. (d) | 22. (a) | 23. (c) | 24. (c) | 25. (c) | 26. (b) | 27. (b) | 28. (d) | 29. (a) | 30. (c) |
| 31. (c) | 32. (b) | 33. (d) | 34. (d) | 35. (b) | 36. (c) | 37. (a) | 38. (c) | 39. (d) | 40. (d) |
| 41. (c) | 42. (b) | 43. (c) | 44. (a) | 45. (c) | 46. (d) | 47. (a) | 48. (b) | 49. (c) | 50. (d) |
| 51. (c) | 52. (d) | 53. (c) | 54. (c) | 55. (c) | 56. (c) | 57. (b) | 58. (d) | 59. (b) | 60. (a) |
| 61. (c) | 62. (b) | 63. (b) | 64. (c) | 65. (a) | 66. (a) | 67. (d) | 68. (d) | 69. (d) | 70. (b) |