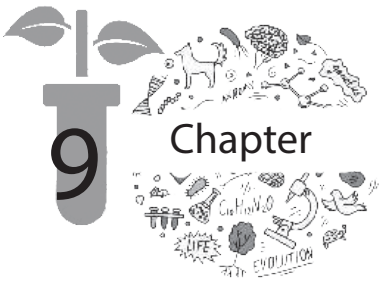


Chapter 9

Neural Control and Coordination

MULTIPLE CHOICE QUESTIONS

Topic 1	Introduction

1. Assertion: Nervous system and endocrine system jointly coordinate and integrate activities of organs.
Reason: Endocrine system regulate all the activities of nervous system.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

2. Assertion: Neural organisation become complex in vertebrates as compared to invertebrates.
Reason: In insects , a brain is present along with a number of ganglia and neural tissues..
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

3. Coordination is considered as an important process in an animal body because
(a) it helps to maintain homeostasis.
(b) it enables different organs to interact and function efficiently.
(c) it ensures the normal functioning of vital organs.
(d) all of these

4. Neurons are the specialised cells of nervous system in
(a) humans only
(b) all vertebrates only
(c) mostly all animals including vertebrates and invertebrates
(d) both (a) and (b)

5. The neurons in all animals are capable of
i. detecting various stimuli in environment
ii. receiving and transmitting stimuli to CNS
iii. processing various internal and external stimuli
Select the most appropriate option.
(a) I, II and III are correct
(b) Only II is correct
(c) II and III are correct
(d) I and II are correct

6. The nervous system of *Hydra* is composed of
(a) brain and peripheral nerves
(b) network of neurons
(c) ganglia and plexuses
(d) brain and nerve nets

7. Why is nervous system of insects considered better organised as compared to *Hydra* and *Planaria*?
(a) Insects possess brain, ganglia and neural tissues.

(b) *Hydra* and Planaria do not possess nervous system at all.
(c) *Hydra* possess the least developed nerve cord while insects contain highly developed ventral nerve cord.
(d) *Planaria* do not possess brain while a rudimentary brain is found in insects.

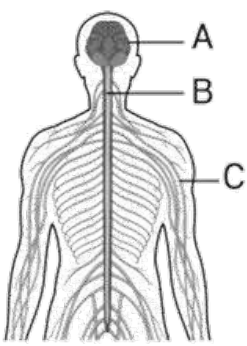
Topic 2 Human Neural System

8. The two major divisions of human neural system are:
(a) CNS and brain
(b) ANS and PNS
(c) CNS and PNS
(d) Brain and spinal cord

9. Consider the following statements.
(a) Central nervous system is the major site of information processing.
(b) Central nervous system is composed of brain and cranial nerves.
Select the correct option.
(a) A is true, B is false.
(b) A is false, B is true.
(c) Both A and B are true.
(d) Both A and B are false.

10. The major structural component of peripheral nervous system is-
(a) spinal cord (b) nerves
(c) visceral organs (d) all of these

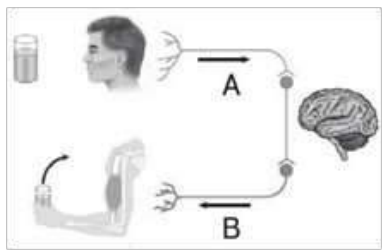
11. Refer to the given diagram and choose the correct option accordingly.



(a) C is the major site of information processing.
(b) A, B and C constitute central nervous system.
(c) C represents neurons.
(d) B is a component of CNS while 'C' constitutes PNS.

12. The nerve fibres of PNS are-
(a) afferent
(b) efferent
(c) both afferent and efferent
(d) only motor

13. Refer to the diagram representing the transmission of impulse through PNS.



Which of the following option is most pertinent?
(a) A and B are afferent nerves.
(b) A is afferent nerve while B is efferent nerve
(c) A is efferent nerve while A is afferent nerve.
(d) Both A and B are efferent nerves.

14. Consider the following statements.
I. Two major division of CNS are somatic neural system and autonomic neural system.
II. Both somatic and autonomic neural system are antagonistic in their functions.
Select the correct option.
(a) I is true, II is false.
(b) Both I and II are true.
(c) I is false, II is true.
(d) Both I and II are false.

15. Select the correct statement.
(a) Somatic neural system consists of both afferent and efferent nerves.
(b) Autonomic neural system consists of only afferent fibres.

(c) Only efferent nerves are found in somatic and autonomic neural system.
(d) Both afferent and efferent fibres are found in somatic and autonomic neural system.

16. The two divisions of autonomic nervous system are
(a) antagonistic to each other
(b) complementary to each other
(c) highly reduced and non-functional in humans
(d) functional as a single system in humans

17. Visceral nervous system within human body
(1) is the division of peripheral nervous system.
(2) is the division of central nervous system.
(3) consists of nerve fibres, ganglia and plexuses.
(4) carry impulses from one visceral organ to another.
Which of the following option is the most appropriate?
(a) 1 and 3 are correct
(b) 2 and 4 are correct
(c) 1, 3 and 4 are correct
(d) 2, 3, 4 are correct

18. Which component of neural system would control the functioning of heart and stomach?
(a) Somatic neural system.
(b) Only sympathetic nervous system.
(c) Only parasympathetic nervous system.
(d) Both sympathetic and parasympathetic nervous system.

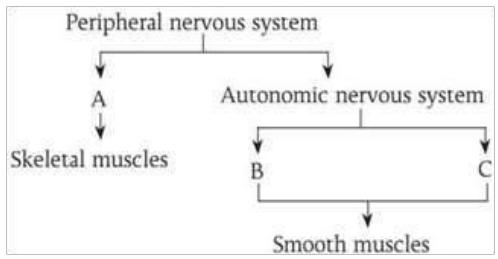
19. Match the following columns:

	Column-I		Column-II
(A)	Afferent fibres	(1)	Involuntarily controll muscles
(B)	Somatic neural system	(2)	Carry impulses away from the CNS
(C)	Autonomic neural system	(3)	Voluntarily controll skeletal muscles
(D)	Efferent fibres	(4)	Carry impulses towards the CNS

Which of the following is the correct option?

	A	B	C	D
(a)	2	1	3	4
(b)	2	3	1	4
(c)	4	3	1	2
(d)	4	1	3	2

20. Identify A-C.



Select the correct option.

	A	B	C
(a)	Spinal cord	Afferent nerves	Efferent nerves
(b)	Somatic nervous system	Parasympathetic nervous system	Afferent and efferent nerves
(c)	Sympathetic nervous system	Efferent nerves	Afferent nerves
(d)	Somatic neural system	Sympathetic nervous system	Parasympathetic nervous system

21. Assertion: A person would not be able to perceive hot or cold sensation if afferent fibres of PNS are degenerated in him.
Reason: All the afferent nerve fibres are motor nerves.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

22. Assertion: Autonomic nervous system controls Involuntary activities.
Reason: All the muscular activities are inhibited by sympathetic nervous system.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

Topic 3 | Functional Unit Of Neural System

23. The basic structural components of a neuron are
(a) cell body and axon
(b) cell body and dendrites
(c) axon and dendrites
(d) cell body, axon and dendrites

24. Identify the incorrectly matched pair of cell organelle found in neuron and its function.
(a) Nucleus – Contain DNA
(b) Mitochondria – Energy production
(c) Golgi apparatus – Proteins and lipid modification
(d) Lysosomes – Scavengers of neurons

25. Neurons differ from a typical cell because of the presence of
(a) nucleolus
(b) Nissl's granules
(c) protein synthesizing machinery
(d) microfilaments

26. Nissl bodies are mainly composed of
(a) proteins and lipids
(b) DNA and RNA
(c) nucleic acids and SER
(d) free ribosomes and RER

27. The dendrites of a neuron are
(a) long, unbranched processes associated with cell body and axon
(b) short, highly branched processes of cell body
(c) long and branched processes of cell body
(d) short, unbranched processes of cell body and axon

28. Which of the following characteristic is correct about dendrites?
(a) non-functional, degenerating axons
(b) involved in carrying impulses away from the cell body
(c) involved in transmitting impulses towards the cell body
(d) involved in transmitting impulses towards and away from the cell body

29. The only similarity between the cell body and dendrites is the presence of
(a) Golgi bodies
(b) Nissl's granules
(c) nucleus
(d) mitochondria

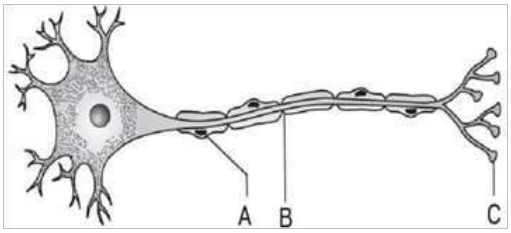
30. While studying the structural details of a neuron, how would you distinguish an axon from a dendrite?
(a) Axon is a long process whose distal end is branched.
(b) Dendrites are branched irregularly while the axon gives off long branches alternatively.
(c) Axon contains Nissl's granules while dendrites do not.
(d) Axons are numerous while each neuron contain only two dendrites.

31. Synaptic knob
(1) is terminal bulb-like structure of dendrites and axons.
(2) contains neurotransmitter – filled vesicles.
(3) is a protoplasmic extension of cell body.
Which of the following option is most appropriate?
(a) 1 and 2 are correct

(b) Only 3 is correct
(c) Only 2 is correct
(d) 1 and 3 are correct

32. Consider the following statements.
(a) Axons carry impulse away from the cell body.
(b) The synaptic knob of axons are found in contact with neuro-muscular junctions.
Select the correct option.
(a) A is true, B is false.
(b) Both A and B are false.
(c) Both A and B are true.
(d) A is false, B is true.

33. Refer to the given diagram of the structure of a neuron and identify A, B and C.



Select the correct option.

	A	B	C
(a)	Nissl's granule	Axon	Schwann cell
(b)	Schwann cell	Nodes of Ranvier	Synaptic knob
(c)	Synaptic knob	Dendrite	Synaptic knob
(d)	Nucleus	Myelin sheath	Nissl's granule

34. Match the following columns.

	Column-I		Column-II
(A)	Neurotransmitters	(1)	Ribosomal granules
(B)	Nissl's granules	(2)	Short and branched
(C)	Dendrites	(3)	Contained in synaptic knob
(D)	Axon	(4)	Carry impulse away from cell body

Select the correct option.

	A	B	C	D
(a)	1	3	2	4
(b)	3	1	4	2
(c)	3	1	2	4
(d)	1	3	4	2

35. On what basis, neurons are classified as unipolar, bipolar or multipolar?
(a) Transmission of impulse
(b) Number of axons and dendrites
(c) Sensory or motor nature
(d) Number of nucleus within cell body

36. A neuron with one axon and one dendrite is known
(a) unipolar (b) bipolar
(c) nonpolar (d) multipolar

37. A multipolar neuron contains multiple
(a) dendrites
(b) axons
(c) axons and dendrites
(d) synaptic bulbs

38. Select the correct statement regarding unipolar neuron.
(a) It contains cell body only.
(b) It contains one dendrite and one axon.
(c) It contains one dendrite and one cell body only.
(d) It contains one axon only.

39. Match the following columns.

	Column-I (Types of Neurons)		**Column-II (Location)**
(A)	Multipolar neuron	(1)	Embryonic stages
(B)	Bipolar neuron	(2)	Retina of eyes
(C)	Unipolar neuron	(3)	Cerebral cortex

Select the correct option.

	A	B	C
(a)	3	2	1
(b)	2	1	3
(c)	1	3	2
(d)	2	3	1

40. Consider the following statements.
(a) Myelinated and non-myelinated axons are differentiated on the basis of presence or absence of myelin sheath. presence or absence of myelin sheath..
(b) Humans contain only myelinated neurons.

Select the correct option.
(a) A is true, B is false.
(b) A is false, B is true.
(c) Both A and B are true.
(d) Both A and B are false.

41. The myelin sheath around the axons is formed by
(a) osteocytes and astrocytes
(b) astrocytes and Schwann cells
(c) Schwann cells and oligodendrocytes
(d) oligodendrocytes and osteoclasts

42. Nodes of Ranvier are
(a) granulated bodies in cytoplasm
(b) gaps between adjacent myelin sheath on axons
(c) modulated bodies at the ends of dendrites
(d) vesicles at the terminal ends of axons

43. The myelinated neurons are found in
(a) cranial nerves
(b) spinal nerves
(c) nerves of ANS
(d) cranial and spinal nerves

44. Consider the following statements.
(a) Unmyelinated nerve fibres are commonly found in the cranial nerves.
(b) Unmyelinated nerve fibres transmit impulse at slower rate.

Select the correct option.
(a) Both A and B are true.
(b) A is true, B is false.
(c) Both A and B are false.
(d) A is false, B is true.

45. Assertion: The axons of neurons can receive signals from other neurons.
Reason: A multipolar neuron contains numerous axons.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

46. Assertion: The speed of nerve impulse along axon would slowdown in the absence of myelin sheath..
Reason: Schwann cells are abundantly found in cells body of neurons.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

Topic 4 Generation, Conduction and Transmission of Nerve Impulses

47. Select the incorrect statement.
(a) Neurons possess the excitability due to their polarised membranes.
(b) Neural membrane contains different types of ion channels.
(c) A resting neuron is not permeable to any ion.
(d) During polarised state, conduction of nerve impulse does not occur along axonal membrane.

48. The potential difference across an axonal membrane during rest is maintained by
(a) Na^+ and Cl^- ions
(b) Na^+ and K^+ ions
(c) K^+ and Cl^- ions
(d) Na^+ and HCO^{3-} ions

49. The resting axonal membrane is
(1) permeable to K^+ ions.
(2) permeable to Na^+ ions.
(3) impermeable to negatively charged proteins of axoplasm.
Select the correct option.
(a) 1 and 2 are correct.
(b) 1, 2 and 3 are correct.
(c) 2 and 3 are correct.
(d) 1 and 3 are correct.

50. Consider the following statements.
(a) At rest, the axoplasm inside the axon contain low concentration of K^+ ions.
(b) The concentration gradient across axonal membrane is generated due to the different concentration of Na^+ and K^+ ions across it.
Select the correct option.
(a) A is true, B is false.
(b) Both A and B are false.
(c) A is false, B is true.
(d) Both A and B are true.

51. When a neuron is not conducting any impulse i.e. resting, the axonal membrane is –
(a) Comparatively more permeable to K^+ and nearly impermeable to Na^+
(b) Impermeable to negatively charged proteins present in the axoplasm
(c) Both (a) and (b)
(d) More permeable to Na^+ ions than K^+ ion.

52. In a resting axonal membrane
(a) both outside and inside axonal membrane is positively charged.
(b) both outside and inside the axonal membrane is negatively charged.
(c) outside the axonal membrane is positively charged while inside is negatively charged.
(d) inside the axonal membrane is positively charged while outside is negatively charged.

53. Match the following columns.

	Column-I		Column-II
(A)	Na^+ ions during resting stage	(1)	More inside, less outside
(B)	K^+ ions during resting stage	(2)	More outside, less inside
(C)	Action potential	(3)	Depolarised Membrane
(D)	Resting potential	(4)	Polarised membrane

Select the correct option.

	A	B	C	D
(a)	2	1	4	3
(b)	2	1	3	4
(c)	1	2	3	4
(d)	1	2	4	3

54. What change would you find in a polarised membrane after a stimulus is applied at a particular point (P)?
(a) The whole membrane becomes impermeable to Na^+ ions.
(b) At point P, the membrane allows movement of Na^+ and K^+ equally.
(c) At point P, the membrane becomes freely permeable to Na^+ ions.
(d) At point P, the membrane becomes impermeable to both Na^+ and K^+ ions.

55. A depolarised axonal membrane contains
(a) equal amount of Na^+ and K^+ ions on outside and inside.
(b) positive charge inside and negative charge outside.
(c) positive charge outside and negative charge inside.
(d) negative charge on both outside and inside.

56. In a resting nerve fibre the $Na^+ - K^+$ pump
I. Needs energy (ATP) to work

II. Expels 3 Na^+ for every $2K^+$ ions imported
III. Works against a concentration gradient
IV. Maintains resting potential
(a) All are correct
(b) Only II and III are correct
(c) Only I and III are correct
(d) None is correct

57. Consider the following statements.
(a) The stimulus-induced increased permeability of Na^+ ions helps in the conduction of action potential.
(b) Increased permeability of K^+ ions helps to restore the resting potential of the membrane.
Select the correct option.
(a) A is true, B is false.
(b) Both A and B are true.
(c) A is false, B is true.
(d) Both A and B are false.

58. Match the following columns.

	Column-I		Column-II
(A)	Synaptic vesicles	(1)	Bind to neurotransmitters
(B)	Receptors of postsynaptic membrane	(2)	Contain neurotransmitters
(C)	Electrical synapse	(3)	Rare in human system
(D)	Chemical synapse	(4)	Slow conduction of nerve impulse

Select the correct option.

	A	B	C	D
(a)	2	1	3	4
(b)	2	1	4	3
(c)	1	2	3	4
(d)	1	2	4	3

59. Which of the following set of structures constitutes a synapse?
(a) Axon terminal, synaptic vesicles, receptors.
(b) Pre-synaptic and post-synaptic membranes.
(c) Synaptic cleft, receptors, post-synaptic membrane.
(d) Pre-synaptic membrane, synaptic cleft, post-synaptic membrane.

60. During an action potential
(1) impulse is conducted along the axons
(2) Na+ ions move outwards
(3) permeability of membrane to K+ ions decreases
Select the most appropriate option.
(a) 1, 2, 3 are correct.
(b) 1 and 2 are correct.
(c) 1 and 3 are correct.
(d) Only 1 is correct.

Topic 5 Transmission of impulses

61. Synapse is a junction between
(a) two neurons
(b) CNS and PNS
(c) spinal cord and nerves
(d) cell body and axon

62. Select the incorrect statement
(a) Synaptic cleft is not necessarily found between all the neurons.
(b) At synapse, the impulse travels along the single direction, i.e., from presynaptic to post synaptic membrane.
(c) Electrical synapses are rare in human body.
(d) Chemical synapses are faster than the electrical synapses.

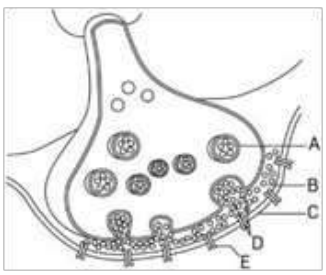
63. The chemicals found in the synaptic cleft are known as
(a) prohormones
(b) hormones
(c) neurotransmitters
(d) proenzymes

64. Consider the following statements.
(A) The neurotransmitters help in the transmission of impulses at chemical synapses.

(B) Neurotransmitters have no role in electrical synapses. Select the correct statement.
(a) A is true, B is false.
(b) A is false, B is true.
(c) Both A and B are false.
(d) Both A and B are true.

65. The neurotransmitter-filled synaptic vesicles are found in
(a) post synaptic membranes
(b) receptor sites of post-synaptic vesicles
(c) axon-terminal
(d) tips of dendrites

66. From the following diagram of axon terminal and synapse, identify at least two correctly labelled structures.



(a) B – Receptor, C – Neurotransmitter
(b) A – Synaptic Vesicles, E – Receptor
(c) C – Post synaptic membrane, D – K^+ ions
(d) D – Na^+ ions, A – Neurotransmitters

67. To release the neurotransmitters, synaptic vesicles
(1) get burst open
(2) require stimulation through action potential
(3) get digested by the lysosomes at axon terminals
Which of the following option is most appropriate?
(a) 1 and 2 are correct.
(b) 2 is correct.
(c) 2 and 3 are correct.
(d) 1 is correct.

68. Receptor sites for neurotransmitters are present on
(a) membranes of synaptic vesicles
(b) pre-synaptic membrane
(c) tips of axons
(d) post-synaptic membranes

69. The opening of ion-channels on postsynaptic membrane generates
(a) excitatory potential
(b) inhibitory potential
(c) either (a) or (b)
(d) no action potential

70. Assertion: Neurons are excitable cells.
Reason: The membrane of neurons remain in polarised state.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

71. Assertion: The resting axonal membrane possess positive charge outside.
Reason: The concentration of K+ ions is higher outside the axonal membrane at rest.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

72. Assertion: Synaptic cleft is the point of fusion of pre-synaptic and post synaptic membrane at synapse.
Reason: Impulse transmission across chemical synapse is slower than that across an electrical synapse.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true

Topic 6 Central Nervous System

73. Consider the following statements.
(A) Brain is the central control system of human body.
(B) Brain can control both voluntary movements and functioning of vital involuntary organs.
Select the correct option.
(a) A is true, B is false.
(b) Both A and B are false.
(c) A is false, B is true.
(d) Both A and B are true.

74. Select the incorrect statement.
(a) Brain is protected by the skull.
(b) Human brain can regulate thermoregulation and circadian rhythm of body.
(c) Inside the skull, humans possess two cranial meninges.
(d) Processing of vision and speech occur in human brain.

75. The cranial meninges from outer to inner region of brain are
(a) dura mater, arachnoid, pia mater
(b) pia mater, dura mater, arachnoid
(c) arachnoid, pia mater, dura mater
(d) arachnoid, dura mater, pia mater

76. Which cranial meninges is in contact with brain tissue?
(a) Dura mater and arachnoid
(b) Arachnoid and pia mater
(c) Pia mater
(d) Dura mater

77. All the given structures are included in forebrain except
(a) cerebrum (b) hypothalamus
(c) pons (d) thalamus

78. Match the following columns.

	Column-I		Column-II
(A)	Cerebrum	(1)	Grey matter of brain
(B)	Cerebral cortex	(2)	Major part of human brain
(C)	Corpus callosum	(3)	Tract of nerve fibres
(D)	Association areas	(4)	Neither sensory nor motor in function

Which of the following is the correct option?

	A	B	C	D
(a)	4	3	2	1
(b)	2	1	3	4
(c)	1	4	1	2
(d)	3	2	4	1

79. The two longitudinal cerebral hemispheres are connected by
(a) cerebral cortex (b) association area
(c) corpus callosum (d) corpus albicans

80. Cerebral cortex is
(a) outer folded layer of cerebrum
(b) non-functional area of cerebrum
(c) inner white layer of cerebrum and cerebellum
(d) only functional area of cerebrum

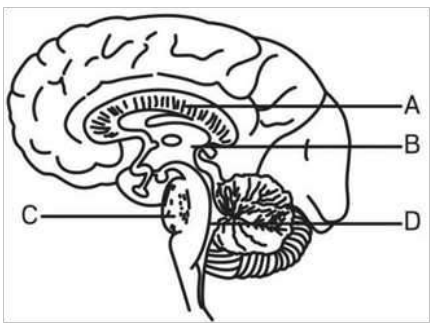
81. Select the correct statement regarding cerebral cortex.
(a) It is white in appearance due to the presence of axons in it.
(b) It is white in appearance due to the presence of cell bodies of neurons.
(c) It is grey in appearance due to the presence of cell bodies of neurons.
(d) It is grey in appearance due to the presence of axons in it.

82. The cerebral cortex contains
(a) motor areas
(b) sensory areas

(c) motor and sensory areas
(d) motor, sensory and association areas

83. The inner region of cerebral hemisphere
(a) is grey in appearance
(b) contain axonal fibres covered by myelin sheath
(c) contain cell bodies of the neurons
(d) both (b) and (c)

84. Refer to the diagram showing sagittal section of human brain.



Identify the parts labelled as A–D.

	A	B	C	D
(a)	Cerebrum	Medulla	Cerebellum	Medulla
(b)	Hypotha-lamus	Cere-bellum	Medulla	Pons
(c)	Corpus callosum	Thalamus	Pons	Cerebral aqueduct
(d)	Thalamus	Corpus callosum	Medulla	Cerebell-um

85. Thalamus in human brain
(1) is surrounded by cerebrum.
(2) acts as a major coordinating centre for sensory and motor signalling.
(3) is under the direct control of hypothalamus.

Which of the following option is most appropriate?
(a) 1 and 2 are correct.
(b) 2 and 3 are correct.
(c) only 3 is correct.
(d) 1, 2 and 3 are correct.

86. The structure found at the base of thalamus
(a) is vestigial organ.
(b) controls urge of eating and drinking.
(c) involved in thermoregulation.
(d) both (b) and (c).

87. Hypothalamic hormones are secreted by
(a) glial cells (b) Schwann cells
(c) oligodendrocytes (d) neurosecretory cells

88. Which part of the brain is responsible for thermoregulation?
(a) Hypothalamus
(b) Corpus callosum
(c) Medulla oblongata
(d) Cerebrum

89. Which of the following structure or region is incorrectly paired with its 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.

90. Limbic system within human brain is found
(a) at the base of brain stem
(b) inner portion of cerebral hemispheres
(c) adjacent to cerebellum
(d) above the cerebral cortex

91. All the listed structures are the parts of limbic system except
(a) Hippocampus (b) amygdala
(c) medulla (d) hypothalamus

92. Consider the following statements.
(a) Limbic system regulates endocrine activities along with hypothalamus.
(b) Limbic system helps to regulate excitement, pleasure, rage and fear.

Select the correct option.
(a) A is true, B is false.
(b) Both A and B are true.
(c) A is false, B is true.
(d) Both A and B are false.

93. Match the following columns.

Column-I		Column-II	
(A)	Hypothalamus	(1)	Inner part of cerebral cortex
(B)	White matter	(2)	Neurosecretory cells
(C)	Amygdala	(3)	Between thalamus and pons
(D)	Midbrain	(4)	Part of limbic system

Select the correct option.

	A	B	C	D
(a)	3	2	1	4
(b)	2	1	4	3
(c)	1	3	2	4
(d)	4	2	3	1

94. Cerebral aqueduct is found in
(a) forebrain
(b) midbrain
(c) hindbrain
(d) in between forebrain and midbrain

95. Corpora quadrigemina are
(a) four rounded swellings at dorsal portion of midbrain.
(b) two plate-like structures which separate forebrain and midbrain.
(c) circular hollow brain ventricles containing cerebrospinal fluid.
(d) elongated, cylindrical canals which connect midbrain to brain stem.

96. Which of the following structures is not found in hindbrain?
(a) Pons (b) Cerebellum
(c) Medulla (d) Hippocampus

97. What is the function of pons?
(a) It conveys information from midbrain to target organs.
(b) It controls involuntary smooth muscles and voluntary skeletal muscles.
(c) It interconnects different regions of the brain.
(d) All of these.

98.How can cerebellum be differentiated from the pons of hindbrain?
(a) Cerebellum has white matter outside while pons contain grey matter outside.
(b) Cerebellum has highly convoluted surface while pons contain fibre tracts.
(c) Cerebellum is smaller in size as compared to pons.
(d) All of these.

99.Consider the following statements.
(a) Cerebellum is a part of hindbrain.
(b) Cerebellum helps to maintain body posture and equilibrium.

Select the correct option.
(a) A is true, B is false.
(b) Both A and B are false.
(c) Both A and B are true.
(d) A is false, B is true.

100. The medulla oblongata
(1) is a part of hindbrain.
(2) control autonomic functions like breathing, heart rate, etc
(3) relay motor and sensory signals between spinal cord and higher brain regions.

Select the most appropriate option.
(a) 1, 2 and 3 are correct.
(b) 1 and 2 are correct.
(c) Only 1 is correct.
(d) Only 2 is correct.

101. The brain stem is formed by
(a) forebrain, midbrain, hindbrain
(b) midbrain, hindbrain
(c) cerebrum, cerebellum, spinal cord
(d) midbrain, pons, medulla oblongata

102. Assertion: Cerebral cortex appear grey in colour.

Reason: It contains the cell bodies of the neurons.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

103. Assertion: Association areas can carry out complex functions like communication and memory.

Reason: These areas are completely motor in nature.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

104. Assertion: Damage of limbic system would affect the emotional behaviour of a person.

Reason: The amygdala is the emotion centre of the brain.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

Topic 7 Reflex Actions and Reflex arc

105. Reflex action is
(a) voluntarily controlled response of CNS.
(b) involuntary response to peripheral nervous stimulation.
(c) involuntary response to environmental stimulus which does not involve CNS.
(d) Both (b) and (c)

106. The reflex actions are controlled by
(a) CNS (b) PNS
(c) ANS (d) Both (b) and (c)

107. The reflex pathway is composed of
(a) afferent neurons only
(b) efferent neurons only
(c) motor neurons only
(d) Both (a) and (b)

108. Consider the following statements.
(a) Afferent neurons are found close to the sensory organs.
(b) The efferent neurons carry signals from CNS to the effectors.

Select the correct option.
(a) (a) is true, (b) is false.
(b) Both (a) and (b) are false.
(c) (a) is false, (b) is true.
(d) Both (a) and (b) are true.

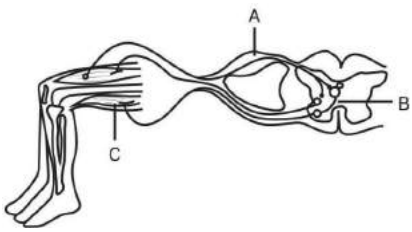
109. Which of the following option represents the correct sequence of nerve impulse transmission in a reflex arc?
(a) Interneuron →Dorsal root ganglion→ Sensory organ
(b) CNS → Efferent neuron → Interneuron
(c) Sensory organ → Afferent neuron → Dorsal root ganglion
(d) Efferent neuron → CNS → Afferent neuron

110. In a reflex arc, what is the role of an interneuron?
(a) It relays impulse to effector at motor end plate.

(b) It transmits impulse from the white matter to grey matter of spinal cord.
(c) It receives impulse from afferent neuron and transmits it to motor neuron.
(d) It connects two dorsal root ganglions.

111. Among the following listed structures, knee-jerk doesn't involve-
(a) motor neuron (b) spinal cord
(c) interneuron (d) brain

112. In the given diagram of reflex action, identify A, B and C.



Select the correct option.

	A	B	C
(a)	White matter	Afferent nerve	Efferent nerve
(b)	Dorsal root ganglion	Interneuron	Motor endplate
(c)	Grey Matter	White matter	Interneuron
(d)	Motor neuron	Grey matter	receptor

113. Assertion: All autonomic actions of body are reflex action.

Reason: Reflex actions do not require CNS.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

114. Assertion: Sneezing in response to an allergen is a reflex action.

Reason: It is an involuntary action.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

115. Assertion: In a reflex arc, efferent neuron receives signal from sensory organ.

Reason: The afferent neuron relays impulses to PNS in a reflex arc.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

Topic 8 Sense Organs: Nose and Tongue

116. Consider the following statements.
(a) The olfactory receptors help us to receive the sense of smell.
(b) The olfactory receptors are coated by mucus.

Select the correct option.
(a) A is true, B is false.
(b) Both A and B are false.
(c) A is false, B is true.
(d) Both (a) and (b) are true.

117. The olfactory epithelium is made up of
(a) sensory cells
(b) basal cells
(c) solfactory receptor cells, Supporting cells and basal cells
(d) sustentacular and sensory cells

118. The olfactory epithelium neurons transmit the signals from
(a) environment to olfactory bulb

(b) one olfactory bulb to another
(c) olfactory bulb to PNS
(d) environment to CNS

119. Olfactory bulb is connected to which region of brain?
(a) Cerebrum
(b) Limbic system
(c) Cerebral aqueduct
(d) Corpus callosum

120. Gustation and olfaction are achieved through
(a) proprioceptors (b) mechanoreceptors
(c) baroreceptors (d) chemoreceptors

121. Consider the following statements.
(a) The gustatory receptors are found at the base of tongue.
(b) The tongue detects taste through taste buds.

Select the correct option.
(a) (a) is true, (b) is false.
(b) Both (a) and (b) are false.
(c) (a) is false, (b) is true.
(d) Both (a) and (b) are true.

122. Assertion: The sense of olfaction is concerned with limbic system.

Reason: Olfactory bulb is a part of cerebrum.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

123. Assertion: Gustatory cells gets directly activated after being exposed to dissolved chemicals.

Reason: Three cranial nerves carry taste stimulus to brain.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

Topic 9 Eye

124. Select the incorrect statement.
(a) The sockets of skull containing eyes are orbits.
(b) The wall of eyes is made up of two layers.
(c) Retina is the innermost layer of eye ball.
(d) None of these.

125. The outermost, middle and innermost layers of eyeball are
(a) sclera, choroid, retina
(b) retina, cornea, iris
(c) iris, sclera, cornea
(d) choroid, cornea, retina

126. Consider the following statements.
(a) Cornea is the anterior portion of sclera.
(b) Cornea helps to refract the light entering the eyes.

Select the correct option.
(a) (a) is true, (b) is false.
(b) Both (a) and (b) are false.
(c) (a) is false, (b) is true.
(d) Both (a) and (b) are true.

127. Which of the following statement is correct?
(a) Cornea consists of dense connective tissue of elastin and can repair itself.
(b) Cornea is convex, transparent layer which is highly vascularised.
(c) Cornea consists of dense matrix of collagen and is the most sensitive portion of the eye.
(d) Cornea is an external, transparent and protective proteinaceous covering of the eyeball.

128. Match the following columns.

	Column I		**Column II**
(A)	Retina	(1)	Contains blood vessels
(B)	Sclera	(2)	Neural cells
(C)	Choroid	(3)	Dense connective tissue

Select the correct option.

	A	B	C
(a)	1	2	3
(b)	3	1	2
(c)	1	3	2
(d)	2	3	1

129. Which of the following statement is correct regarding choroid?
(a) It contains numerous blood vessels.
(b) It has no role in vision.
(c) It is the major component of the lens of eyes.
(d) It secretes aqueous humor.

130. The ciliary body is the anterior part of
(a) sclera (b) retina
(c) cornea (d) choroid

131. What is the correct description about iris?
(a) Non-vascular, opaque portion of eye
(b) Pigmented, opaque and vascular structure of eye.
(c) Non-vascular, visible coloured portion of eye.
(d) Vascular, non-pigmented posterior most portion of eye.

132. The transparent lens in the human eye is held in its place by
(a) ligament attached to ciliary body
(b) ligaments attached to the iris
(c) smooth muscles attached to the iris
(d) smooth muscles attached to the ciliary body

133. An aperture in front of lens is called
(a) fovea (b) blind spot
(c) pupil (d) iris

134. The diameter of pupil is regulated by
(a) aqueous humor (b) retina
(c) rods (d) iris

135. How many layers of neural cells are found in retina?
(a) Two (b) Five
(c) Three (d) Four

136. The arrangement of neural cells in retina from inside to outside is:
(a) ganglion cells, bipolar cells, photoreceptors cells.
(b) photoreceptor cells, ganglion cells, bipolar cells.
(c) bipolar cells, ganglion cells, photoreceptor cells.
(d) bipolar cells, photoreceptor cells, ganglion cells.

137. Within retina, the rods and cones are the type of-
(a) bipolar and photoreceptor cells, respectively
(b) ganglion cells
(c) photoreceptor cells
(d) photoreceptor and ganglion cells

138. Consider the following statements.
(a) Photopigments are light sensitive proteins in rods and cones.
(b) Rods contain rhodopsin while cones contain three different type of photopigments.

Select the correct option.
(a) (a) is true, (b) is false.
(b) Both A and (b) are true.
(c) (a) is false, (b) is true.
(d) Both (a) and (b) are false.

139. Match the following columns.

	Column I		**Column II**
(A)	Iris	(1)	Secrete aqueous humor
(B)	Ciliary body	(2)	Photosensitive layer of eye
(C)	Retina	(3)	Devoid of receptor cells
(D)	Blind spot	(4)	Regulate the amount of light entering into eyes

Select the correct option.

	A	B	C	D
(a)	2	3	4	1
(b)	4	1	2	3
(c)	1	2	3	4
(d)	3	4	1	2

140. The cone cells of retina provide
(a) photopic vision
(b) colour vision
(c) photopic and colour vision
(d) scotopic vision

141. Which of the following statements is not correct?
(a) In the knee-jerk reflex, stimulus is the stretching of muscle and response is its contraction.
(b) An action potential in an axon does not move backward because the segment behind is in a refractory phase.
(c) Depolarisation of hair cells of cochlea results in the opening of the mechanically gated potassium-ion channels.
(d) Rods are very sensitive and contribute to daylight vision.

142. Rhodopsin in the rod cells of retina
(1) is purplish-red protein.
(2) contains opsin protein.
(3) contains retinene which is an aldehyde of vitamin D.

Select the most appropriate option.
(a) 1 and 2 are correct.
(b) 1 and 3 are correct.
(c) Only 2 is correct.
(d) 1, 2 and 3 are correct.

143. 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 derivative of Vitamin A.
(d) Retinal is a light absorbing part of all the visual photopigments.

Options:
(a) B, C, A (b) A, B
(c) A, C, D (d) A, C

144. Which of the following options is wrong?
(a) Eye muscles are attached with sclera
(b) Visual purple 1s concerned with dim light, while visual violet is concerned with bright light
(c) The colour differentiation is done by cones
(d) None

145. What would happen if the three photopigments of cone cells are stimulated equally?
(a) No colour vision and daylight vision would be produced.
(b) Sensation of black light would be produced
(c) Sensation of white light would be produced.
(d) Mosaic vision of different colours would be produced.

146. Photosensitive compound in human eye is made up of
(a) opsin and retinal
(b) opsin and retinol
(c) transducin and retinene
(d) guanosine and retinol

147. Consider the following statements.
(a) The optic nerves leave the eye and the retinal and blood vessels enter the eyes through blind spot.
(b) Blind spot contains abundant rod cells but no cone cells.
Select the correct option.
(a) (a) is true, (b) is false.
(b) Both (a) and (b) are false.
(c) (a) is false, (b) is true.
(d) Both (a) and (b) are true.

148. Select the correct statement.
(a) Macula lutea is a red coloured spot at the entrance of optic nerves.
(b) Fovea is the central portion of macula lutea, containing abundant cone cells.
(c) Macula lutea is the only structure of retina which contain rod and cone cells.
(d) No true image is formed at fovea due to the overlapping of photoreceptor cells.

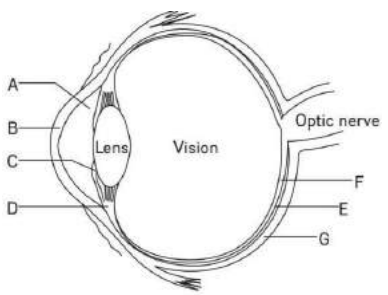
149. The point of greatest visual acuity in human eye is
(a) fovea (b) blind spot
(c) iris (d) pupil

150. Consider the following statements.
(a) Aqueous chamber containing aqueous humor is found in the space between lens and retina.

(b) Vitreous chamber containing vitreous humor is found in the space between lens and cornea.

Select the correct option.
(a) (a) is true, (b) is false.
(b) Both (a) and (b) are false.
(c) (a) is false, (b) is true.
(d) Both (a) and (b) are true.

151. In the given structure of human eye, identify the location of fovea, cornea, choroid and sclera.



	Fovea	Cornea	Choroid	Sclera
(a)	B	C	A	D
(b)	G	B	D	A
(c)	F	B	E	G
(d)	D	A	B	C

152. The light rays of visible wavelength are focused on
(a) retina through cornea
(b) lens through pupil
(c) pupil through iris
(d) retina through iris

153. How does the potential differences generated in photoreceptor cells generate impulse when light of suitable wavelength enters the human eye?
(a) Light cause chemical modification of rhodopsin and iodopsin so that they form a new compound.
(b) Light causes the conversion of opsin to retinal.
(c) Light causes dissociation of opsin and retinal so as to cause structural changes of opsin.
(d) Light causes destruction of opsin and retinal so that iodopsin can change membrane potential.

154. The route of transmission of action potential by optic nerves to visual cortex of brain is
(a) Photoreceptor cells » Bipolar cells » Ganglion cells.
(b) Ganglion cells » Bipolar cells » Photoreceptor cells
(c) Bipolar cells » Photoreceptor cells » Ganglion cells
(d) Bipolar cells » Ganglion cells » Photoreceptor cells

155. Assertion: Sclera and cornea form the fibrous coat of human eye.

Reason: Sclera and cornea contain abundant blood vessels.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

156. Assertion: The posterior region of the eyeball possesses the points of no vision and maximum visual resolution.

Reason: Fovea contain abundant rod cells but lack cone cells.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

157. Assertion: Neural impulses are analysed by the visual cortex of the brain.

Reason: Image formed on retina is recognised based on earlier memory and experience.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true. Ear

158. The structural component of external ear is
(a) pinna
(b) pinna and auditory meatus
(c) pinna, auditory meatus and eardrum
(d) auditory meatus and tympanic membrane

159. Consider the following statements.
(a) Fine hairs and wax secreting glands are found in the skin of pinna and auditory meatus.
(b) Pinna and auditory meatus are vestigial organs of human ear.

Select the correct option.
(a) (a) is true, (b) is false.
(b) Both (a) and (b) are false.
(c) (a) is false, (b) is true.
(d) Both (a) and (b) are true.

160. The wax-secreting glands in auditory meatus is
(a) Weber's glands
(b) Ebner's glands
(c) Ceruminous glands
(d) Krause's glands

161. The membrane found between the outer and middle ear is
(a) basilar membrane
(b) Reissner's membrane
(c) tympanic membrane
(d) tectorial membrane

162. The outer and inner surface of tympanic membrane is composed of
(a) connective tissues
(b) mucus membrane
(c) mucus membrane outside and connective tissue inside
(d) connective tissue outside and mucus membrane inside

163. The middle ear consists of
(a) ear ossicles
(b) cochlea and labyrinth
(c) auditory meatus and tympanic membrane
(d) ear ossicles and cochlea

164. Match the following columns.

	Column I		**Column II**
(A)	Auditory meatus	(1)	Receive sound vibrations from environment
(B)	Pinna	(2)	Conduct vibrations to tympanic membrane
(C)	Ear ossicles	(3)	Conduct vibrations to inner ear

Select the correct option.

	A	B	C
(a)	1	3	2
(b)	3	1	2
(c)	2	1	3
(d)	1	2	3

165 The arrangement of ear ossicles from outer to inner ear is
(a) stapes, malleus, incus
(b) incus, stapes, malleus
(c) malleus, stapes, incus
(d) malleus, incus, stapes

166. Select the incorrect statement.
(a) The stapes is found attached to the oval window of cochlea.
(b) Ear ossicles increase the efficiency of sound wave transmission to the inner ear.
(c) Eustachian tube connects inner ear to the pharynx.

(d) Eustachian tube helps in equalising the pressure on either side of tympanic membrane.

167. Consider the following statements.

(a) The fluid-filled inner ear has two parts - bony labyrinth and membranous labyrinth.

(b) The membranous labyrinth surrounds the bony labyrinth in inner ear.

Select the correct option.

(a) (a) is true, (b) is false.
(b) (a) is false, (b) is true.
(c) Both (a) and (b) are false.
(d) Both (a) and (b) are true.

168. Match the following columns.

	Column I		**Column II**
(A)	Labyrinth	(1)	Ear drum
(B)	Tympanic membrane	(2)	Filled with perilymph
(C)	Bony labyrinth	(3)	Inner ear
(D)	Membranous labyrinth	(4)	Filled with endolymph

Choose the most appropriate match.

	A	B	C	D
(a)	3	1	4	2
(b)	3	1	2	4
(c)	1	3	2	4
(d)	1	3	4	2

169. Identify the incorrectly matched pair.

(a) Membranous labyrinth-Surrounded by perilymph
(b) Scala vestibuli-Coiled portion of labyrinth
(c) Cochlea-Responsible for hearing
(d) Scala media-Filled with endolymph

170. Within the bony labyrinth, the three chambers (upper to lower) are

(a) scala vestibuli, scala media, scala tympani
(b) scala tympani, scala corti, scala media
(c) scala utricle, scala media, scala vestibule
(d) scala corti, scala media, scala vestibuli

171. Match the following columns.

	Column I		**Column II**
(A)	Reissner's membrane	(1)	In between outer and middle ear
(B)	Basilar membrane	(2)	A component of organ of corti
(C)	Tympanic membrane	(3)	In between scala vestibuli and scala media
(D)	Tectorial membrane	(4)	In between scala media and scala tympani

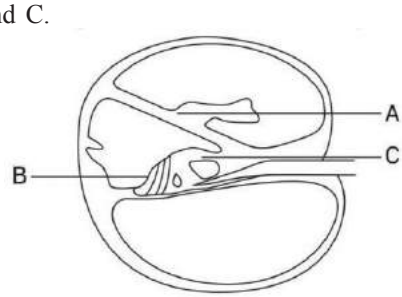
Select the most appropriate option.

	A	B	C	D
(a)	4	2	1	3
(b)	2	3	4	1
(c)	4	3	1	2
(d)	3	4	1	2

172. The scala vestibuli and scala tympani terminates at

(a) oval window of cochlea.
(b) round window of middle ear.
(c) oval window and round window, respectively.
(d) round window and oval window, respectively.

173. In the given diagram of cochlea, identify A, B and C.



Select the correct option.

	A	B	C
(a)	Reissner's membrane	Organ of corti	Tectorial membrane
(b)	Tectorial membrane	Utricule	Basilar membrane
(c)	Basilar membrane	Tectorial membrane	Reissner's membrane

(d)	Basilar membrane	Macula	Organ of Corti

174. The organ of Corti within cochlea can be located on
(a) tectorial membrane
(b) basilar membrane
(c) Reissner's membrane
(d) tympanic membrane

175. Select the incorrect statement regarding the structure of organ of Corti.
(a) It contains hair cells that acts as auditory receptors.
(b) The hair cells are found on the inner side, arranged in rows.
(c) The basal end of hair cells is closely associated with the afferent nerve fibres.
(d) In between ends of hair cells and afferent nerves, tectorial membrane is present.

176. What is the location of vestibular apparatus in human ear?
(a) Adjacent to malleus of middle ear.
(b) Above the cochlea of inner ear.
(c) At the junction of round window and Eustachian tube.
(d) Within the Eustachian tube.

177. Vestibular apparatus consists of
(a) otoliths and organ of corti
(b) organ of corti only
(c) semicircular canals only
(d) semicircular canals and otolith

178. Consider the following statements.
(a) The three semicircular canals of inner ear are found in different planes at right angle to each other.
(b) The two semicircular canals play major role in hearing while the third canal is vestigial.

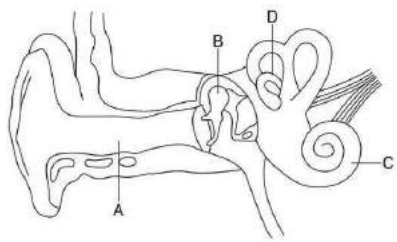
Select the correct option.
(a) (a) is true, (b) is false.
(b) (a) is false, (b) is true.
(c) Both (a) and (b) are false.
(d) Both (a) and (b) are true.

179. The sensory part of otoliths is
(a) utricle (b) saccule
(c) macula (d) Both (a) and (b)

180. Crista ampullaris containing hair cells is found
(a) within otoliths.
(b) at the base of semicircular canals.
(c) within the semicircular canals.
(d) at the tip of semicircular canals and otoliths.

181. Which of the following receptors are specifically responsible for maintenance of balance of body and posture?
(a) Crista ampullaris and macula
(b) Basilar membrane and otoliths
(c) Hair cells and organ of Corti
(d) Tectorial membrane and macula

182. Refer to the given diagram and identify the correct function of the labeled structures.



(a) B – Stapes – Vibration of oval window
(b) A – Auditory meatus – Transmit neural signals to auditory cortex
(c) D – Semicircular canals – Amplification of auditory signals
(d) C – Cochlea – Main hearing organ

183. Refer to the following events which occur during hearing.
(I) Rippling in basilar membrane
(II) Waves in the lymph of cochlea
(III) Vibration of ear drum
(IV) Pressing of hair cells against the tectorial membrane
Select the correct order in which the following events occur.
(a) II, III, I, IV (b) I, IV, II, III

(c) III, II, I, IV (d) II, IV, I, III

184. How does the nerve impulses in ear are generated?
(a) Due to the bending of hair cells towards tectorial membrane.
(b) Due to the vibrations in utricle and otoliths.
(c) Due to the streaming of perilymph in semicircular canals.
(d) Due to the contact between crista ampularis and macula.

185. Assertion: Stapes is found attached to the tympanic membrane.

Reason: Stapes is the largest ear bone.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

186. Assertion: The hair cells of organ of corti acts as auditory receptors.

Reason: The base of hair cells is in close contact with afferent fibres of auditory nerves.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

187. Assertion: Vestibular apparatus has no role in hearing.

Reason: Crista and macula helps in maintaining body posture and balance.
(a) Both Assertion and Reason are true and Reason is correct explanation of Assertion.
(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true, but Reason is false.
(d) Assertion is false, but Reason is true.

ANSWER KEY

1. (c)	2. (b)	3. (d)	4. (c)	5. (a)	6. (d)	7. (a)	8. (c)	9. (a)	10. (b)
11. (d)	12. (c)	13. (b)	14. (d)	15. (d)	16. (a)	17. (a)	18. (d)	19. (c)	20. (d)
21. (c)	22. (c)	23. (d)	24. (d)	25. (b)	26. (d)	27. (b)	28. (c)	29. (b)	30. (a)
31. (b)	32. (c)	33. (b)	34. (c)	35. (b)	36. (b)	37. (a)	38. (d)	39. (a)	40. (a)
41. (c)	42. (b)	43. (d)	44. (d)	45. (d)	46. (c)	47. (c)	48. (b)	49. (d)	50. (c)
51. (c)	52. (c)	53. (b)	54. (c)	55. (b)	56. (a)	57. (b)	58. (a)	59. (d)	60. (c)
61. (a)	62. (d)	63. (c)	64. (d)	65. (c)	66. (b)	67. (b)	68. (d)	69. (c)	70. (a)
71. (c)	72. (d)	73. (d)	74. (c)	75. (a)	76. (c)	77. (c)	78. (b)	79. (c)	80. (a)
81. (c)	82. (d)	83. (b)	84. (c)	85. (a)	86. (d)	87. (d)	88. (a)	89. (b)	90. (b)
91. (c)	92. (b)	93. (b)	94. (b)	95. (a)	96. (d)	97. (c)	98. (b)	99. (c)	100. (a)
101. (d)	102. (a)	103. (c)	104. (a)	105. (b)	106. (a)	107. (d)	108. (d)	109. (c)	110. (c)
111. (d)	112. (b)	113. (d)	114. (b)	115. (d)	116. (d)	117. (c)	118. (a)	119. (b)	120. (d)
121. (c)	122. (c)	123. (b)	124. (b)	125. (a)	126. (d)	127. (c)	128. (d)	129. (a)	130. (d)
131. (b)	132. (a)	133. (c)	134. (d)	135. (c)	136. (a)	137. (c)	138. (b)	139. (b)	140. (c)
141. (d)	142. (a)	143. (c)	144. (b)	145. (c)	146. (a)	147. (a)	148. (b)	149. (a)	150. (b)
151. (c)	152. (a)	153. (c)	154. (a)	155. (c)	156. (c)	157. (b)	158. (b)	159. (a)	160. (c)
161. (c)	162. (d)	163. (a)	164. (c)	165. (d)	166. (c)	167. (a)	168. (b)	169. (b)	170. (a)
171. (d)	172. (c)	173. (a)	174. (b)	175. (d)	176. (b)	177. (d)	178. (a)	179. (c)	180. (b)
181. (a)	182. (d)	183. (c)	184. (a)	185. (d)	186. (a)	187. (b)			