

A Guided Study of the Brain

(Reference text, photos, and videos for answers.)

1. What is the largest structure in the brain responsible for higher forms of thinking?
 - a) Hippocampus
 - b) Cerebrum & Cerebral Cortex
 - c) Epithalamus
 - d) Cingulate gyrus
2. Name the lobe at the front of the brain used for planning the future, scheduling, and short-term memory.
 - a) Frontal
 - b) Temporal
 - c) Parietal
 - d) Occipital
3. Name the sensory lobe that is responsible for taste, smell, temperature, and texture. It is located above the corpus callosum, in front of occipital lobe, and behind frontal lobe.
 - a) Occipital
 - b) Temporal
 - c) Frontal
 - d) Parietal
4. Which lobe is located in the back of brain above cerebellum? It is responsible for vision.
 - a) Temporal
 - b) Occipital
 - c) Frontal
 - d) Parietal
5. Name the lobe responsible for hearing and long-term memory. It is located on the temples beneath the frontal lobe.
 - a) Parietal
 - b) Temporal
 - c) Occipital
 - d) Frontal

6. The cingulate gyrus is the large band in the inner part of the brain that connects the right and left hemispheres and carries messages between them.

T/F **False. Corpus Callosum**

7. The limbic system of loosely interconnected structures is involved with emotions and long and short-term memory.

T/F **True**

8. The cingulate gyrus is the region of the limbic system responsible for cognitive thinking, reasoning, and decision-making ("Do I go with it or am I stuck?").

T/F **True**

9. The amygdala is the two bulbs of the brain that determine what sensory information is important and which experiences the brain should store. They are associated with being sociable.

T/F **True**

10. The pons is the region of the brain, in the limbic system, that allows memory formation and storage by abridging memories into long-term memories for memory recall.

T/F **False. Hippocampus**

11. Name the inter-region of the brain that includes the thalamus, hypothalamus, and epithalamus.

- a) Midbrain
- b) Diencephalon**
- c) Cerebral Cortex
- d) Limbic System

12. What part of the brain is known as the switchboard operator? It acts as the principal relay station for sensory impulses entering the brain and voluntary motor impulses traveling out of the brain. (See page 15)

- a) Epithalamus
- b) Hypothalamus
- c) Thalamus**
- d) Amygdala

13. This area of the brain controls the endocrine activity, body temperature, and food and water intake through the autonomic nervous system. (See page 15)

- a) Medulla Oblongata
- b) Epithalamus
- c) Thalamus
- d) Hypothalamus

14. When melatonin is needed, the pineal gland receives direction to secrete melatonin from which part of the brain? (See page 16)

- a) Midbrain
- b) Thalamus
- c) Medulla Oblongata
- d) Epithalamus

15. The cerebrum is known as the small brain located in the back of the big brain, below the occipital lobe. It controls balance equilibrium. (See page 18)

T/F False. Cerebellum

16. The diencephalon produces cerebral spinal fluid, bathing and cushioning the brain and spinal cord for protection. (See page 19)

T/F False. Ventricle System, or Ventricles

17. The first, second, third, and fourth ventricles are areas of the brain with choroid plexuses that are responsible for producing CSF. (See page 19)

T/F True

18. CSF provides buoyancy and support to the brain against gravity without resting the brain on the floor of the cranium, which would destroy nervous tissue. (See page 19)

T/F True

19. Grey matter acts as the brain and spinal cord lymphatic system. (See pages 19-20)

T/F False CSF

20. Name the part of the brain stem which houses structures that control functions associated with survival, such as breathing, swallowing, and vomiting. (See pages 17-18)

- a) **Medulla Oblongata**
- b) Limbic System
- c) Ventricular System
- d) Pons

21. The medulla oblongata is the upper part of the brainstem that integrates sensory information and relays it to the brain. (See page 16)

T/F

Answer: False. Midbrain

22. Name the part of the brainstem that bridges the cerebrum and cerebellum by relaying information to and from the cerebellum to the rest of the brain. It plays a key roll in the REM sleep cycle, known as the dreaming state. (See page 17)

- a) Reticular Formation
- b) Medulla Oblongata
- c) Cerebral Peduncles
- d) **Pons**

23. Which part of the brainstem controls autonomic reflexes such as breathing, heart rate and blood pressure, smooth muscles for digestion, etc.? (See Pages 17-18)

- a) Reticular formation
- b) **Medulla Oblongata**
- c) Cerebral Peduncles
- d) Pons

A Guided Study of the Nervous System

(Reference text, photos, and videos for answers.)

1. What system is a network of billions of cells in the brain and the body? It is responsible for all aspects of what we feel, think, and do. It coordinates voluntary and involuntary actions and transmits signals between different parts of the body.
 - a) Central Nervous System
 - b) Nervous System
 - c) Peripheral Nervous System
 - d) Autonomic Nervous System
2. What portion of the nervous system consists of the brain and spinal cord?
 - a) Peripheral Nervous System
 - b) Autonomic Nervous System
 - c) Somatic Nervous System
 - d) Central Nervous System
3. The spinal nerves emerge directly from the brain and the brainstem. Information is exchanged between the brain and various regions, primarily of the head and neck.
T/F
Answer: False. Cranial Nerves
4. How many pairs of cranial nerves are there?
 - a) 10
 - b) 12
 - c) 20
 - d) 24
5. Cranial nerve responsible for ophthalmic, maxillary, and mandibular responses.
 - a) Trigeminal Nerve
 - b) Facial Nerve
 - c) Optic Nerve
 - d) Trochlear Nerve

6. Cranial nerve that moves tongue from side to side.

- a) Glossopharyngeal Nerve
- b) Hypoglossal Nerve
- c) Trigeminal Nerve
- d) Vestibulocochlear Nerve

7. Cranial nerve responsible for smell.

- a) Vestibulocochlear Nerve
- b) Glossopharyngeal Nerve
- c) Hypoglossal Nerve
- d) Olfactory Nerve

8. Cranial nerve responsible for facial expressions.

- a) Trigeminal Nerve
- b) Facial Nerve
- c) Trochlear Nerve
- d) Vagus Nerve

9. Cranial nerve responsible for superior oblique eye muscle.

- a) Trochlear Nerve
- b) Optic Nerve
- c) Oculomotor
- d) Abducens

10. Cranial nerve responsible for hearing and balance.

- a) Olfactory Nerve
- b) Trigeminal Nerve
- c) Vestibulocochlear Nerve
- d) Vagus Nerve

11. Cranial nerve responsible for 4 major muscles of the eyeball and restriction of the pupil.

- a) Optic Nerve
- b) Oculomotor Nerve
- c) Optic Nerve

- d) Glossopharyngeal Nerve
12. Cranial nerve responsible for taste and swallowing.
- a) Hypoglossal Nerve
 - b) Vagus Nerve
 - c) Glossopharyngeal Nerve
 - d) Trochlear Nerve
13. Cranial nerve responsible for the 180-degree visual field.
- a) Optic Nerve
 - b) Abducens Nerve
 - c) Trigeminal Nerve
 - d) Spinal Accessory Nerve
14. Cranial nerve known as the “wanderer” because it leaves the cranium and is responsible for parasympathetic innervation of organs.
- a) Spinal Accessory Nerve
 - b) Glossopharyngeal Nerve
 - c) Trigeminal Nerve
 - d) Vagus Nerve
15. Cranial nerve responsible for lateral rectus eye movement outward.
- a) Trigeminal Nerve
 - b) Optic Nerve
 - c) Trochlear Nerve
 - d) Abducens
16. Cranial Nerve responsible for motor output to the trapezius and sternocleidomastoid muscles.
- a) Vagus Nerve
 - b) Spinal Accessory Nerve
 - c) Glossopharyngeal Nerve
 - d) Hypoglossal Nerve
17. How many pairs of spinal nerves arise from the spinal cord?
- a) 8
 - b) 12
 - c) 31
 - d) 18

18. How many pairs of cervical nerves are there?

- a) 18
- b) 31
- c) 7
- d) 8

19. How many pairs of thoracic nerves are there?

- a) 5
- b) 12
- c) 18
- d) 31

20. How many pairs of lumbar nerves are there?

- a) 31
- b) 8
- c) 5
- d) 18

21. How many pairs of sacral nerves are there?

- a) 18
- b) 8
- c) 31
- d) 5

22. Ascending tracts in the spinal cord carry sensory information. T/F

23. Descending tracts in the spinal cord carry sensory information. T/F

Answer: False. Motor Information

24. The horse tail-like collection of spinal nerves at the inferior end of the spinal cord is called the cauda equina. These are free nerve endings that extend past the L2 vertebrae. T/F

25. The autonomic nervous system receives information about what is happening inside and outside your body. T/F

Answer: False. Central Nervous System

26. The central nervous system is the section of the nervous system lying outside the brain and spinal cord that enables nerves to connect to the central nervous system with muscles, organs, and glands. T/F

Answer: False. Peripheral Nervous System

27. Sight, sound, taste, touch, and smell are the five motor nerves referred to as special sensory nerves. T/F

Answer: False. They are sensory nerves

28. What part of the peripheral nervous system transmits sensory signals and motor signals between the central nervous system and the skin; controls the skeletal muscles and joints?

- a) Autonomic Nervous System
- b) Somatic Nervous System
- c) Central Nervous System
- d) Sympathetic Nervous System

29. This system opposes the somatic nervous system and automatically regulates the body's internal movements, such as the smooth muscles, heart, and glands. It is also a part of the peripheral nervous system and transmits sensory signals and motor signals between the central nervous system and the body's glands and internal organs.

- a) Sympathetic Nervous System
- b) Parasympathetic Nervous System
- c) Central Nervous System
- d) Autonomic Nervous System

30. The somatic nervous systems controls voluntary muscles. T/F

31. The autonomic nervous system controls involuntary muscles. T/F

32. The Sympathetic Nervous System is a branch of the autonomic nervous system and is responsible for helping to regulate a variety of body functions, including heart rate, breathing, sweating, and digestion. It increases heart rate, respiration, and perspiration to ready our body for "flight or flight". T/F

33. The Parasympathetic Nervous System is a branch of the autonomic nervous system and is responsible for slowing the body's functions to allow processes, such as digestion to occur. Also known as "rest and digest". T/F

34. Afferent neurons conduct impulses away from the CNS to muscles and glands. T/F
Answer: False. Towards the CNS
35. Efferent neurons conduct impulses toward the CNS from the body periphery. T/F
Answer: False. Away
36. The sodium potassium pump uses ATP to move sodium ions out of the cell and potassium ions back into the cell, completely restoring the resting conditions of the neuron. T/F
37. What are the two divisions of the nervous system?
- a) Central Nervous System & Peripheral Nervous System
 - b) Sympathetic Nervous System & Parasympathetic Nervous System
 - c) Somatic Nervous System & Autonomic Nervous System
 - d) Brain & Spinal Cord
38. The brain and spinal cord are part of the Central Nervous System (CNS). T/F
39. Motor nerves and sensory nerves are types of nerves that are included in the Central Nervous System. T/F
Answer: False. The motor and sensory nerves are part of the Peripheral Nervous System (PNS)
40. What two divisions are the Peripheral Nervous System (PNS) divided into?
- a) Autonomic Nervous System & Somatic Nervous System
 - b) Sympathetic Nervous System & Parasympathetic Nervous System
 - c) Motor Neurons & Sensory Neurons
 - d) None of the above
41. What portion of the Peripheral Nervous System (PNS) is under conscious control?
- a) Somatic Nervous System
 - b) Autonomic Nervous System
 - c) Both
 - d) None of the above

42. What portion of the Peripheral Nervous System (PNS) is under unconscious control?

- a) Somatic Nervous System
- b) Autonomic Nervous System
- c) Both
- d) None of the above

43. What are the two divisions of the autonomic nervous system?

- a) Autonomic Nervous System & Somatic Nervous System
- b) Sympathetic Nervous System & Parasympathetic Nervous System
- c) Motor Neurons & Sensory Neurons
- d) None of the above