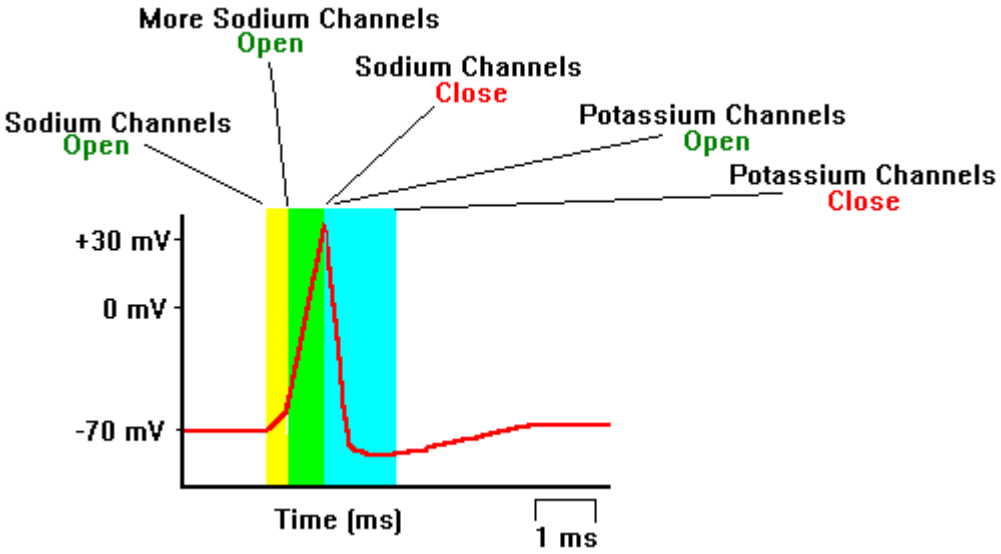
REVIEW THE NERVOUS SYSTEM



THE NERVOUS SYSTEM NOTES

____1. The brain and the spinal cord are the
a. peripheral nervous system c. central nervous system
b. sympathetic nervous system d. parasympathetic nervous system

____2. What is the basic functional unit of the nervous system?
a. cell body b. reflex arc c. neuron d. neutron

____3. Which of the following is true?
a. Dendrites carry information toward the cell body. c. Axons carry information toward the cell body.
b. Dendrites carry information away from the cell body. d. None of the above

____4. Neurons carry information through the body in the form of
a. nerve impulses. b. dendrites. c. axons. d. nerve fibers.

____5. Which neurons conduct information toward the central nervous system?
a. sensory neurons b. motor neurons c. interneurons d. none of the above

____6. Neurons with myelin sheath conduct nerve impulses
a. faster than neurons without myelin sheaths. c. slower than neurons without myelin sheaths.
b. at the same speed as neurons without myelin sheaths. d. in greater numbers than neurons without myelin sheaths.

____7. Messages take the form of electrical signals, and are known as
a. sensory neurons b. nerve impulses c. motor neurons d. reflex arc

____8. The depolarization and repolarization of a neuron membrane is called
a. action potential b. resting potential c. excitability d. propagation

____9. What are the spaces between adjacent neurons called?
a. reflex arc b. effector c. synaptic cleft d. resting potential

____10. What is the function of neurotransmitters?
a. hurl neurons through synapses to create new nerve impulses
b. chemically link neurons across the synapse to conduct impulses
c. receive and transmit ultrasound waves across synapses
d. none of the above

____11. For a neuron to return to its resting potential, it must
a. lose negative charge b. lose positive charge c. gain negative charge d. gain more sodium ions

____12. A change in the environment that may be of sufficient strength to initiate an impulse is called a(an)
a. excitability b. stimulus c. polarized d. potential

____13. When a neuron is depolarized, the inside of the membrane temporarily becomes
a. more negative than the outside c. more positive than the outside
b. neutral compared to the outside. d. None of the above

____14. The minimum level of a stimulus that is required to activate a neuron is called the
a. action potential b. threshold c. resting potential d. enzymes

____15. The long fiber that carries impulses away from the nerve cell body is a (n)
a. dendrite b. interneuron c. axon d. axon terminal

____16. The action that restores a neuron to its resting potential is
a. polarization b. action potential c. depolarization d. refractory period

____17. When a nerve cell is polarized, the inside of the cell membrane is
a. positively charged and the outside is positively charged.
b. positively charged and the outside is negative charged.
c. negatively charged and the outside is negatively charged.
d. negatively charged and the outside is positively charged.

____18. Which description does not apply to all nerve impulses?
a. They follow an all-or-none principle. c. They jump from node to node.
b. They flow at various speeds. d. They flow in only one direction.

____19. If you accidentally touch a hot stove, you pull your finger away before the impulse is relayed to the
a. spinal cord b. effector c. brain d. receptor

____20. The somatic nervous system regulates activities that are
a.unconscious control b. involuntary c. conscious control d. automatic

21. For a neuron to achieve Resting Potential, it must move _____ ions out of the cell, and actively pump _____ ions into the cell.

22. At the beginning of an impulse, the _____ gates open.

23. Action Potential is another name for a (an) _____.

24. A(n) _____ is an automatic response to a stimulus.

25. Subdivision of the PNS that regulates the activity of the heart and smooth muscle and of glands; also called the involuntary nervous system.
_____ nervous system.

26. Nerves that carry messages from the body to the central nervous system make up the _____ nervous system.

27. What are the two major division of the peripheral nervous system?
_____&_____
____

28. Nervous system subdivision that is composed of the brain and spinal cord.
_____ nervous system.

29. Messages take the form of electrical signals, and are known as_____
_____
_____.

30. The _____ is the basic functional unit of the nervous system.

31. _____ neurons carry impulses from the spinal cord to the effectors.

32. Within the spinal cord, motor and sensory neurons are connected by _____.

33. A major subdivision of the nervous system that serves as the communication lines, linking all parts of the body to the CNS._____ nervous system.

34. The _____ nervous system does not come in contact with the environment.

35. The autonomic nervous system is divided into TWO divisions, they are _____&_____ ____

36. The above two divisions have a(n) _____ effects on the organs they control.

37. A(n) _____ is a chemical substance that is used by one neuron to signal another.

38. The point of contact at which impulses are passed from one cell to another are known as a(n) _____.

39.What two ions are moved across a neuron's membrane giving it electric potential? _____&_____ ____

40. The Human Nervous System is divided into TWO Major Divisions, list them: _____&_____ ____

41. _____ neurons carry impulses from receptors to the spinal cord.

42. The depolarization and repolarization of a neuron's membrane is called a (n) _____

43. What are the spaces between adjacent neurons called? _____

44. A change in the environment that may be of sufficient strength to initiate an impulse is called a(an) _____.

45. The minimum level of a stimulus that is required to activate a neuron is called the _____.

46. The long fiber that carries impulses away from the nerve cell body is a (n) _____.

47. The action that restores a neuron to its resting potential is called _____.

48. Which type of neurons conduct information toward the central nervous system? _____.

49. The somatic nervous system regulates activities that are under _____

_____

50. The brain and the spinal cord make up the _____

_____.

51. What is the basic functional unit of the nervous system? _____

_____.

52. Subdivision of the PNS that controls voluntary activities such as the activation of skeletal muscles. _____.

For questions 53-58, match the following answers to one of the statements below.

A. Resting Potential
B. Action Potential
C. Repolarization
D. Sodium-potassium pump
E. Depolarization
F. Refractory Period

____ 53. K+ moves out of the axon
____ 54. Charges inside the axon change positive.
____ 55. Active transport system.
____ 56. Axon is not conducting an impulse.
____ 57. Time when the axon cannot conduct an impulse.
____ 58. Axon is depolarized, then repolarized.

1. What is the relationship between afferent neurons, interneurons, and efferent neurons?

2. What role does the sodium-potassium pump play in the restoration of the membrane potential?

3. Explain the difference between an afferent neuron and an efferent neuron.

4. Describe how the patellar (knee-jerk) reflex operates.

5. What are the functions of the Nervous System that enables the body to respond quickly?

6. Explain how the relative concentrations of sodium ions and potassium ions inside and outside a neuron change during an action potential.

7. Describe the process of the nerve impulse from the point at which the nerve has been stimulated.

8. Most organs in the body are stimulated by both the sympathetic division and the parasympathetic division of the autonomic nervous system. Explain how this helps maintain homeostasis and what each division does.

9. A neuron consists of three main parts, List Them and their Main Function:

10. How does the autonomic nervous system work to maintain homeostasis?

11. Describe the role of neurotransmitters in transmitting a signal across a synaptic cleft.

12. Explain how a signal in the nervous system is transmitted between adjacent neurons?

13. Contrast resting potential with action potential.

14. Explain the importance of the refractory period and what occurs during the refractory period.

15. Describe the anatomy of a neuron.

1. What is the basic functional unit of the nervous system? _____.

2. The nervous system _____ and _____ all essential functions of the human body.

3. The nervous system _____ and _____ information about activities within the body and monitors and responds to _____ and _____ changes.

4. What are the Four Functions of the nervous system?
   A._____
   _____
   B. _____
   _____
   C. _____
   _____
   D. _____
   _____

5. The cells that carry messages throughout the nervous system are called _____.

6. Messages take the form of electrical signals, and are known as _____.

7. Neurons can be classified into THREE Types and Describe each type.
   A._____
_____

_____
_____
   B._____
_____

_____
_____
   C._____
_____

_____
_____

8. What are the THREE main parts of a Neuron and their function?
   A._____
_____

_____

____

B._____

_____

_____

____

C._____

_____

_____

____

9. The difference in charge across a nerve cells membrane resulting from the negative charge on the inside and the positive charge on the outside is known as _____ _____.

10. As a result of resting potential, the neuron is said to be _____.

11. A _____ is a change in the environment that may be of sufficient strength to initiate an impulse.

12. The ability of a neuron to respond to a stimulus and convert it into a nerve impulse is known as _____.

13. What two ions move across a neuron giving it electric potential? _____ and _____

14. The depolarization and repolarization of a membrane produces a(n) _____ _____.

15. _____ returns the neuron back to its resting potential.

16. _____ _____ is another name for a Nerve Impulse.

17. _____ improves the rate of impulses along an _____.

18. The minimum level of a stimulus that is required to activate a neuron is called the _____.

19. A _____ is a chemical substance that is used by one neuron to signal another.

20. The point of contact at which impulses are passed from one cell to another are known as a _____ _____.

21. The Human Nervous System is divided into TWO major divisions, list them:
   A. _____
   B. _____

22. _____ neurons carry impulses from receptors to the spinal cord.

23. _____ neurons carry impulses from the spinal cord to the effectors.

24. Within the spinal cord, motor and sensory neurons are connected by _____.

25. All of the nervous system outside the brain and spinal cord is known as the _____ nervous system.

26. The _____ nervous system does not come in contact with the environment.

27. The autonomic nervous system is divided into TWO parts, they are
   A. _____
   B. _____

28. The above two parts have _____ effects on the organs they control.

29. For a neuron to achieve Resting Potential, it must move _____ ions out of the cell, and actively pump _____ ions into the cell.

30. At the beginning of an impulse, the _____ gates open.

31. Action Potential is another name for a (an) _____ _____.

32. The brain and the spinal cord are the _____.

33. Neurons carry information through the body in the form of _____ _____.

34. Which type of neuron conducts information toward the central nervous system? _____ _____

35. Neurons with myelin sheath conduct nerve impulses _____ than neurons without myelin sheath.

36. Messages take the form of electrical signals, and are known as _____ _____

37. What are the spaces between adjacent neurons called? _____ _____

38. The long fiber that carries impulses away from the nerve body is a(n) _____.

39. The action that restores a neuron to its resting potential is _____.

40. The autonomic nervous system regulates activities that are _____, or _____.

41. The _____ _____ acts as a communication link between the brain and the PNS.

42. A _____ is the simplest response to a stimulus.

43. The _____ Nervous System regulates activities that are under conscious control.

44. The sympathetic nervous system generally _____ organs.

45. The parasympathetic nervous system generally _____ organs.

46. The period after an impulse, in which a neuron is unable to conduct a nerve impulse is called _____ _____.

For questions 47-52, match the following answers to one of the statements below.

A. Depolarization
B. Sodium-potassium pump
C. Action Potential
D. Resting Potential
E. Refractory Period
F. Repolarization

_____47. Charges inside the axon change positive.
_____48. Active transport system.
_____49. Axon is not conducting an impulse.
_____50. Time when the axon cannot conduct an impulse.
_____51. Axon is depolarized, then repolarized.
_____52. K+ moves out of the axon

1. Describe the process of the nerve impulse from the point at which the nerve has been stimulated.

2. How is the signal in the nervous system transmitted between adjacent neurons?

3. Explain the difference between an afferent neuron and an efferent neuron.

4. Describe the structure of a neuron.

5. What functional advantage does a neuron with several dendrites have over a neuron with only one dendrite?

6. Identify the two main organs that make up the central nervous system.

7. Why does the nervous system consume a large amount of energy?

8. Most organs in the body are stimulated by both the sympathetic division and the parasympathetic division
of the autonomic nervous system. Explain how this helps maintain homeostasis.

9. How do the somatic nervous system and the autonomic nervous system differ?

10. Describe how the patellar (knee-jerk) reflex operates.

11. What is a neurotransmitter? Describe two possible effects that neurotransmitters may have at a synapse.

12. Briefly explain how the relative concentrations of sodium ions and potassium ions inside and outside a neuron change during an action potential.

13. Distinguish between sensory receptors, motor neurons, and interneurons.

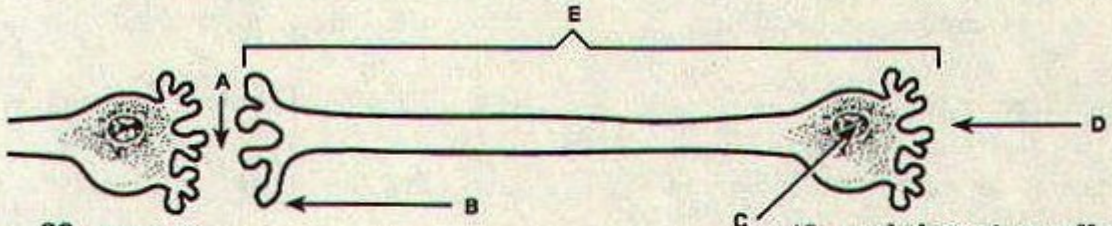
14. What role does the sodium-potassium pump play in the restoration of the membrane potential?

15. Contrast resting potential with action potential.

16. Explain the importance of the refractory period and what occurs during the refractory period.

17. Describe the role of neurotransmitters in transmitting a signal across a synaptic cleft.

Use the diagram to answer the questions. Write the letter of the correct structure on the line.



_____ **39.** neuron

_____ **40.** axon end

_____ **41.** synapse

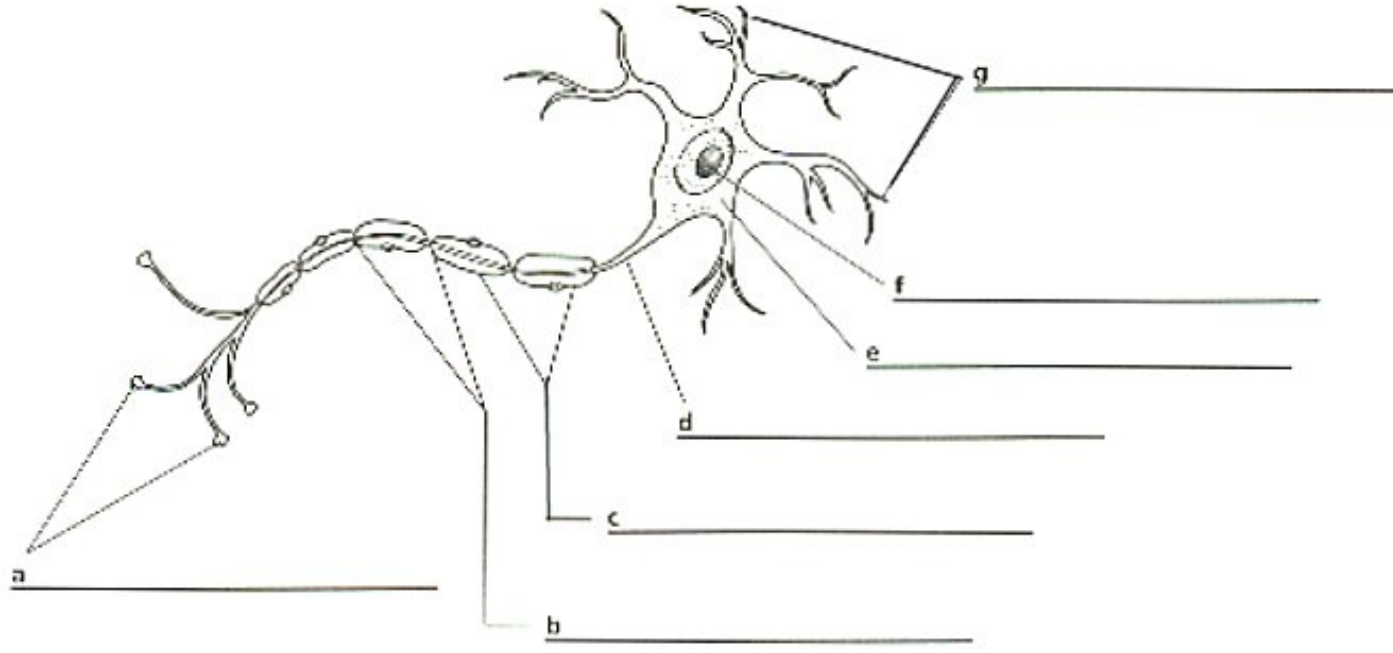
_____ **42.** nucleus

_____ **43.** end that gives off chemical messenger

_____ **44.** end that receives chemical messenger

_____ **45.** dendrite end

Identify the parts of the neuron that are labeled in the diagram below.



____1. The Brain is wrapped in three layers of connective tissue know as

A. Cerebellum

B. Corpus Callosum

C. Gray Matter

____2. Responsible for all voluntary activities of the body.

____3. Controls involuntary functions like breathing, blood pressure, and heart rate.

____4. The hemispheres of the cerebrum are connected in a region know as.

____5. Unmyelinated neurons.

____6. Each hemisphere of the cerebrum is divided into regions called_____.

D. Cerebral Cortex
E. Hypothalamus
F. Brain Stem
G. Pons
H. White Matter
I. Cerebral Medulla
J. Lobes
K. Tract
L. Thalamus
M. Cerebrum
N. Meninges
O. Medulla Oblongata
P. Midbrain

____7. Maintains life support systems or controls vital body processes.

____8. This area is involved in hearing and vision.

____9. Means "Bridge".

____10. The switching station for sensory input.

____11. Tells each half of the brain what the other is doing.

____12. Controls balance, posture and coordination.

____13. Myelinated neurons.

____14. Outer surface of the cerebrum.

____15. Control center for hunger, thirst, fatigue, anger, and body temperature.

____16. The inner surface of the cerebrum.

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17. The ____ is part of the brain that controls balance, posture, and coordination.
a) cerebrum b) cerebellum c) medulla oblongata d) hypothalamus

18. The hypothalamus
a) lies below the medulla oblongata in the brain stem
b) lies below the thalamus
c) lies above the cerebellum
d) is important in maintaining balance
e) None of the above.

19. The cerebral cortex
a) is located deep in the brain
b) is the lobed, highly folded structure at the back of the brain
c) is the folded outer covering of the brain
d) contains the reticular formation

20. The body's left side is controlled by the cerebrum's
a) left side b) right side c) both left and right sides d) front half

21. The gray matter of the brain consists of
a) unmyelinated neurons b) myelinated neurons c) axons d) only synapses

22. The cerebellum is important in
a) coordinating motor responses and maintaining posture
b) controlling hormone levels and maintaining homeostasis
c) protecting the brain and spine
d) processing olfactory and taste information
e) None of the above.

23. The gray matter of the brain
a) is called the cerebral medulla
c) is called the cerebral cortex
c) is called the cerebellum
d) is called the medulla oblongata

24. The thalamus and hypothalamus make up the
a) lower brain stem b) cerebrum c) cerebellum d) diencephalon

25. The part of the brain that controls conscious activities, memory, language, and the senses is the
a) medulla oblongata b) cerebrum c) cerebellum d) thalamus

26. This area of the brain plays an important role in emotion, memory, and motivation.
a) brain stem b) cerebrum c) limbic system d) cerebellum

27. Most sensory impulses pass through the _____ on their way to the cerebrum.
a) cerebellum b) pituitary c) motor neurons d) thalamus

28. The _____ is the area of the brain that controls activities related to homeostasis, such as body temperature, hunger, thirst, and sleep.

a) cerebrum b) cerebellum c) medulla oblongata d) hypothalamus

29. The right and left cerebrum hemispheres are linked by a bundle of neurons called a _____.

30. What are the three main parts of the human brain?

31. The brain stem connects the _____ to the _____.

32. The cerebrum hemispheres are connected in a region known as the _____.

33. _____ means bridge.

34. The _____ coordinates and balances the actions of muscles so that the body can move gracefully and efficiently.

35. The cerebrum is divided into two _____.

36. What are the main parts (divisions) of the lower brain stem?

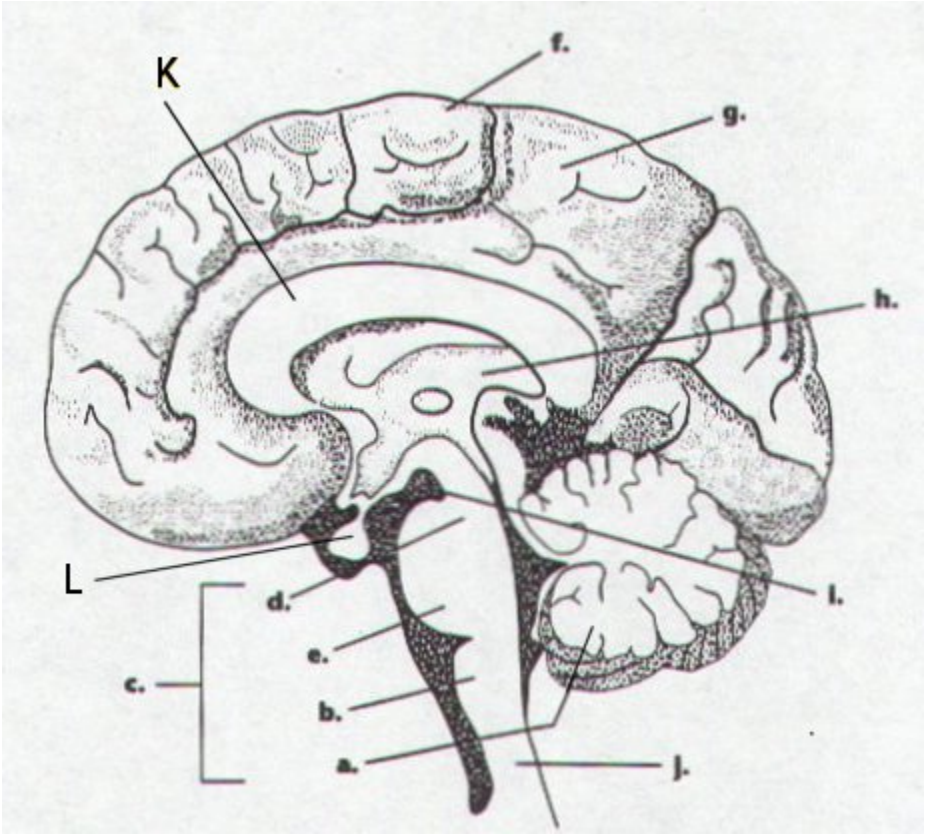
37. What are the names of the lobes of the cerebrum?

38. The _____ is the control center of the brain.

39. The brain is wrapped in three layers of _____ tissue known as the _____.
The outer layer is called the _____
The middle layer is called the _____,
The inner layer is called the _____.
_____ separates the middle and inner layers.

40. The control center for hunger, thirst, fatigue, anger, and body temperature is the _____.

41. The _____ controls involuntary functions that include breathing, blood pressure, heart rate, digestion, swallowing, and coughing.



____ 1. MIDBRAIN

____ 2. CORPUS CALLOSUM

____ 3. SPINAL CORD

____ 4. THALAMUS

____ 5. PITUITARY GLAND

____ 6. CEREBRAL CORTEX

____ 7. HYPOTHALAMUS

____ 8. PONS

____ 9. CEREBELLUM

____ 10. CEREBRAL MEDULLA

____ 11. MEDULLA OBLONGATTA

____ 12. BRAIN STEM

_1. The portion of the brain that receives most sensory information is the
a. hypothalamus b. thalamus c. cerebrum d. cerebellum

____2. High-pitched sounds cause hairs in the base of the _____ to vibrate.
a. semicircular canal b. stapes c. incus d. cochlea

____3. Chemicals acting on hairlike nerve endings in the upper portion of the nose initiate impulses in the
a. hairs b. axons c. dendrites d. synapse

____4. The _____ of the eye is a solid structure that focuses light on the back of the eye.
a. pupil b. lens c. iris d. cornea

____5. Receptors that detect changes in temperature, touch, pressure, and pain are located in large numbers in the
a. bones b. spinal cord c. muscles d. skin

____6. The part of the brain that controls conscious activities, memory, language, and the senses is the
a. medulla oblongata b. cerebrum c. cerebellum d. thalamus

____7. Cells found in the retina called _____ are adapted for detecting color and for sharp vision.
a. rods b. iris c. photons d. cones

____8. The _____ is the area of the brain that controls activities related to homeostasis.
a. hypothalamus b. cerebrum c. thalamus d. cerebellum

____9. The movement of the hairs in the inner ear starts a depolarization of the _____ nerve.
a. optic b. auditory c. olfactory d. facial

____10. Sensory impulses pass through the _____ on their way to the cerebrum.
a. cerebellum b. pituitary c. motor neurons d. thalamus

____11. The layer of nerve tissue at the back of the eye made up of cells that respond to light energy is the
a. pupil b. iris c. cornea d. retina

____12. The _____ is the area of the brain that controls activities related to homeostasis, such as body temperature, hunger, thirst, and sleep.
a. cerebrum b. cerebellum c. medulla oblongata d. hypothalamus

____13. The _____ is a snail-shaped structure in the inner ear that is filled with fluid, lined with hair cells,
and connected to the auditory nerve.
a. incus b. cochlea c. stapes d. semicircular canals

____14. The _____ is part of the brain that controls balance, posture, and coordination.
a. cerebrum b. cerebellum c. medulla oblongata d. hypothalamus

____15. When energy in the form of sound waves is converted into a nerve impulse in the inner ear, the response is known as
a. thermoreception b. chemoreception c. mechanoreception d. photoreception

____16. When chemicals acting on the hairlike ending located in your nose initiate impulses in the olfactory
nerve, the response is called
a. thermoreception b. chemoreception c. mechanoreception d. photoreception

____17. Which part of the spinal cord contains cell bodies of neurons?
a. gray matter b. dorsal root c. ventral root d. white matter

____18. The cerebellum is important in
a. coordinating motor responses and maintaining posture
b. controlling hormone levels and maintaining homeostasis
c. protecting the brain and spine
d. processing olfactory and taste information

____19. The thalamus
a. lies below the hypothalamus in the lower brain stem c. controls homeostasis
b. directs sensory information to the proper regions of the cerebral cortex d. is important in maintaining balance

____20. The cerebral cortex
a. is located deep in the brain c. is the folded outer covering of the brain
b. is the lobed, highly folded structure at the back of the brain d. contains the reticular formation

____21. Photoreceptors are stimulated by
a. heat b. pressure c. chemicals d. light

____22. Mechanoreceptors are stimulated by
a. heat b. pressure c. chemicals d. light

____23. The body's left side is controlled by the cerebrum's
a. left side b. right side c. both left and right sides d. front half

____24. Loud noises can damage hairlike cells in the
a. eardrum b. ear canal c. cochlea d. stirrup

____25. Which of the following is NOT one of the four tastes we detect on our tongues?
a. sweet b. hot c. salty d. bitter

____26. All messages received by the eyes are interpreted by the
a. optic nerve b. retina c. brain d. lens

____27. The message of smell is carried to the brain by the
a. nasal chamber b. auditory nerve c. olfactory nerve d. nostrils

____28. The gray matter of the brain consists of
a. cell bodies of neurons b. only synapses c. myelin d. nodes

____29. Sensory receptors
a. link interneurons with motor neurons c. are found only in the brain
b. are found only in the spine d. respond to stimuli

____30. Which part of the spinal cord contains motor neurons?
a. gray matter b. dorsal root c. ventral root d. All of the above.

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1. Nerves that control breathing, swallowing, heartbeat, and the diameter of the blood

vessels
are found in the _____ _____.

2. The cells (receptors) that are stimulated by chemicals are called _____.

3. The brain is wrapped in three layers of _____ tissue known as the _____. The outer layer is called the _____, the middle layer is called the _____, and the inner layer is called the _____.
_____ _____ separates the middle and inner layers.

4. The brainstem connects the _____ to the _____ _____.

5. The _____ is the control center of the brain.

6. The _____ _____ and the two tiny sacs behind them help us to sense balance or equilibrium.

7. The thalamus, hypothalamus, and cells deep within the gray matter of the brain make up
the _____ system which helps regulate emotions.

8. The sense organ that detects taste are the _____ _____.

9. What are the THREE main parts of the brain?
   a. _____
   b._____
   c._____

10. The Cerebrum is divided into TWO _____.

11. The sense of smell is a _____ sense.

12. The largest sense organ is your _____.

13. The cerebrum hemispheres are connected in a region known as the _____ _____.

14. The right and left cerebrum hemispheres are linked by a bundle of neurons called a _____.

15. What are the names of the FOUR lobes of each cerebrum hemisphere?
_____,
_____, _____,
_____

16. The _____ coordinates and balances the actions of muscles so that the body can move gracefully and efficiently.

17. What are the THREE main parts of the LOWER Brainstem?
a._____
b._____
c._____

18. What are the FOUR main kinds of tastes that humans can detect?
_____, _____, _____,
_____

19. _____ means bridge.

20. The control center for hunger, thirst, fatigue, anger, and body temperature is the _____.

21. The _____ _____ controls involuntary functions that include breathing, blood pressure, heart rate, digestion, swallowing, and coughing.

22. The _____ is the portion of the eye that gives your eye its color.

23. The outer surface of the cerebrum is called the _____
_____ and consists of _____ neurons.

24. Impulses leave the eye by way of the _____ _____.

25. Nerve impulses from the ear are carried to the brain by the _____
_____.

26. The most touch sensitive areas are the _____, _____, and _____.

27. The largest and most prominent part of the brain is the _____.

27. The inner surface of the cerebrum is called the _____
_____, which is made up of bundles of _____ axons.

29. What is the upper brainstem called? _____ And what two parts of the brain are found there? _____ and the _____.

30. The _____ is the area of the brain that controls activities related to homeostasis, such as body temperature, hunger, thirst, and sleep.

31. The _____ is part of the brain that controls balance, posture, and coordination.

32. The _____ is a snail-shaped structure in the inner ear that is filled with fluid, lined with hair cells, and connected to the auditory nerve.

33. When chemicals acting on the hair-like ending located in your nose initiate impulses in the olfactory nerve, the response is called _____.

34. Photoreceptors are stimulated by _____.

35. The body's left side is controlled by the cerebrum's _____ _____.

36. All messages received by the eyes are carried to the brain by the _____ _____.

37. The message of smell is carried to the brain by the _____ _____.

38. Mechanoreceptors are stimulated by _____.

39. The _____ is the area of the brain that controls activities related to homeostasis.

40. The movement of the hairs in the inner ear starts a depolarization of the _____ nerve.

41. Most sensory impulses pass through the _____ on their way to the cerebrum.

42. The layer of nerve tissue at the back of the eye made up of cells that respond to light energy is called the _____.

43. The _____ of the eye is a solid structure that focuses light on the back of the eye.

44. The portion of the brain that receives most sensory information is the _____ _____.

45. Cells found in the retina called _____ are adapted for detecting color and for sharp vision.

46. Receptors that detect changes in temperature, touch, pressure, and pain are located in large numbers in the _____.

47. The part of the brain that controls conscious activities, memory, language, and the senses is the _____.

48. The _____ and the two tiny sacs behind them help us to sense balance or equilibrium.

49. Tiny pieces of calcium carbonate in the ear called _____ help the body maintain its balance.

50. The _____ is the light-sensing portion of the eye.

51. When light enters the eye, it first passes through the _____.

52. The specialized hearing receptors found in the cochlea are _____ cells.

53. The _____ is a small, snail-shaped structure in the ear lined with hair cells.

54. The _____ is the light-sensing portion of the eye.

55. When chemicals acting on the hair-like endings located in your nose initiate impulses in the olfactory nerve, the response is called _____.

56. Mechanoreceptors are stimulated by _____ _____ ____.

57. Tiny pieces of calcium carbonate in the ear called
_____ help the body maintain its balance.

58. Impulses from the eye go to what part of the cerebrum?
_____
_____

59. Ventral-root axons carry information to _____,
while dorsal-root axons
carry information to _____.

60. The division of the nervous system that controls stimulation of internal organs during routine
conditions is called the _____ nervous system.

61. Sensory receptors that respond to tissue damage are called
_____ receptors.

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1. Why is the ear really TWO sense organs in one?

2. What are Two functions of cerebrospinal fluid?

3. What are the Five kinds of sensory receptors and the type of stimuli they respond to?

4. How is the brain protected from injury? (Be specific)

5. How do the functions of the cerebral hemispheres, cerebellum, and brain stem differ?

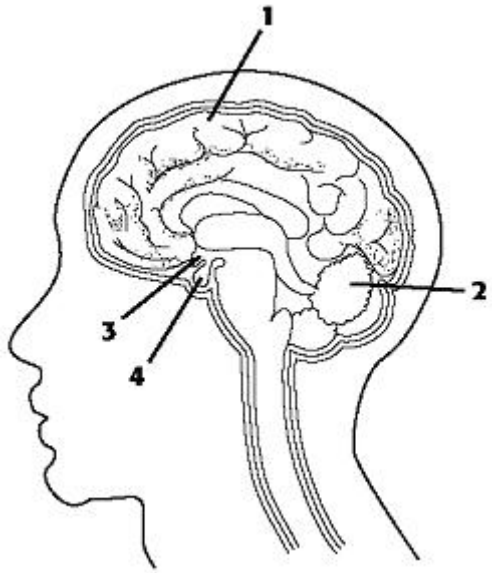
6. Why is important to have the pons bridge the Cerebrum and Cerebellum?

7. How is taste detected? What type of sensory receptor is involved with the perception of taste?

8. Explain how sound vibrations are transmitted through the ear?

____ 1. The central nervous system consists of
a. the brain and spinal cord.
b. the spinal nerves only.
c. the brain stem and cerebellum.
d. the cerebrum and spinal cord.

____ 2. Gray matter includes
a. cell bodies of neurons.
b. synapses.
c. myelin.
d. nodes.



____ 3. Refer to the illustration above. Structure 2 in the diagram is the
a. reticular formation. c. cerebellum.
b. brain stem. d. cerebrum.

____ 4. limbic system : processing information about emotions and memory ::
a. cerebellum : maintaining balance and posture
b. brain stem : providing nerve connections for consciousness
c. hypothalamus : connecting the brain to the spinal cord
d. reticular formation : regulating body temperature and blood pressure

____ 5. Which part of the spinal cord contains dendrites, unmyelinated axons, and the cell bodies of neurons?
a. gray matter c. ventral root
b. dorsal root d. white matter

____ 6. Which part of the spinal cord contains motor neurons?
a. gray matter c. ventral root
b. dorsal root d. All of the above

____ 7. Information is carried from the central nervous system to a muscle or gland by
a. sensory neurons. c. reticular neurons.
b. afferent neurons. d. motor neurons.

____ 8. Sensory neurons transmit messages
a. from the central nervous system to a muscle or gland.
b. from the brain to the spinal cord.
c. from the environment to the spinal cord or brain.
d. within the brain.

____ 9. Motor neurons transmit messages
a. from the environment to the brain.
b. from the environment to the spinal cord.
c. from the spinal cord to the brain.
d. from the central nervous system to a muscle or gland.

____ 10. The peripheral nervous system
a. is not linked to the central nervous system.
b. provides pathways to and from the central nervous system.
c. consists of the cerebellum and spinal cord.
d. is composed only of motor neurons.

____ 11. The autonomic nervous system controls
a. reflexes.
b. voluntary movement.
c. involuntary functions of the internal organs.
d. locomotion.

____ 12. The body's response to a physical threat involves activity of the
a. autonomic nervous system. c. sympathetic nervous system.
b. peripheral nervous system. d. All of the above

____ 13. A reflex
a. may involve two or three neurons. c. is not under conscious control.
b. is not learned. d. All of the above

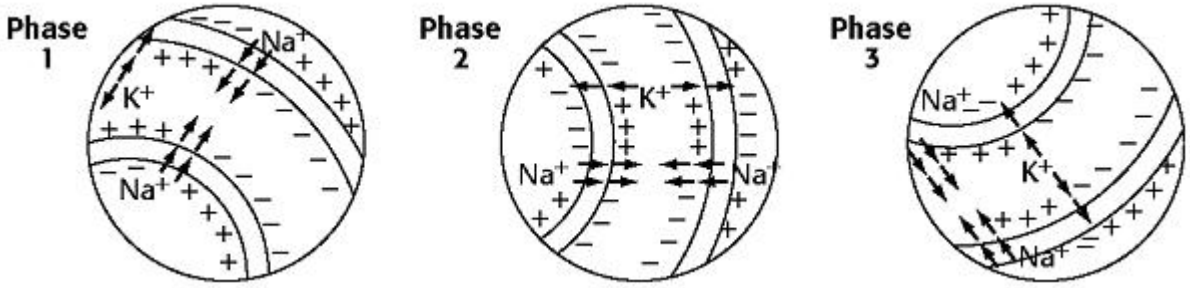
____ 14. Extensions at one end of a neuron's body that receive input are called
a. axons. b. synapses. c. cell bodies. d. dendrites.

____ 15. Nodes of Ranvier
a. strengthen axons. c. occur in dendrites.
b. slow the nerve impulse. d. are gaps in the myelin sheath.

____ 16. The myelin sheath
a. transmits impulses from one neuron to another.
b. insulates the synapses.
c. nourishes the neurons.
d. insulates the axons.

____ 17. The sodium-potassium pump
a. rebuilds axon fibers.
b. restores resting potential.
c. creates a stimulus.
d. is found only in the peripheral nervous system.

____ 18. Which statement about the resting potential of a neuron is true?
a. There are many times more sodium ions outside the neuron's membrane than inside.
b. Sodium ions are in balance inside and outside the neuron's membrane.
c. There are fewer potassium ions inside the neuron's membrane than outside.
d. Potassium and sodium ions are equal on both sides of the neuron's membrane.



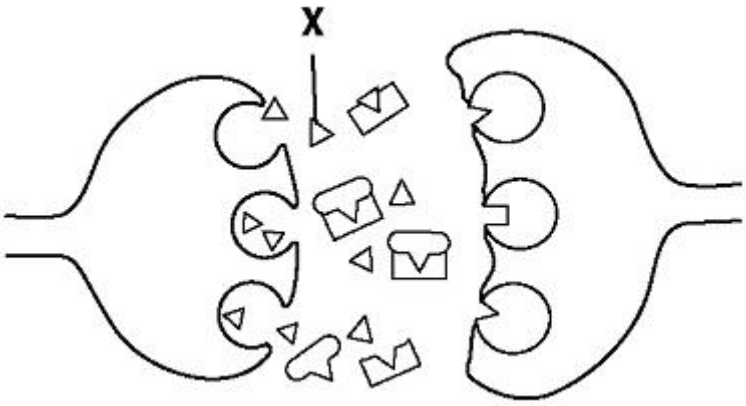
____ 19. Refer to the illustration above. When a neuron is at rest,
a. sodium ions are found mostly on the outside of the cell.
b. potassium ions are found mostly on the inside of the cell.
c. the inside of the cell is negatively charged.
d. All of the above

____ 20. Refer to the illustration above. The diagrams show a nerve impulse
a. moving from the inside to the outside of an axon.
b. moving from the outside to the inside of an axon.
c. moving an action potential along a neuron.
d. moving slowly.

____ 21. Refer to the illustration above. When an impulse moves down the axon,
a. sodium ions first rush out of the cell.
b. a small part of the axon momentarily reverses its polarity.
c. the resting potential of the cell does not change.
d. potassium ions are pumped into the axon.

____ 22. Refer to the illustration above. An action potential may be best described as
a. an electrical impulse.
b. an electromagnetic message.
c. a chemical message.
d. a chemical change occurring in the brain.

____ 23. Electrical changes in a neuron create
a. a stimulus.
b. an electrical shock.
c. an action potential.
d. light and sound.



____ 24. Refer to the illustration above. In the diagram, the structure labeled “X” is a
a. neurotransmitter molecule.
b. neuromodulator molecule.
c. receptor protein molecule.
d. psychoactive drug molecule.

____ 25. Refer to the illustration above. If neurotransmitters could not be cleared out of a synapse after transmitting a message,
a. the second neuron would continue to be stimulated for an indefinite period of time.
b. the first neuron could not pass on its impulse.
c. neuromodulators would be formed in the synapse.
d. the neurotransmitter would magnify the effect of a psychoactive drug.

____ 26. Neurotransmitters are
a. electrical impulses.
b. found only in neurons with myelin sheaths.
c. released at synapses.
d. produced by muscles.

____ 27. Some neurotransmitters cross a synaptic cleft and open sodium channels in the membrane of the postsynaptic neuron, causing
a. inhibition of impulses in the neuron.
b. the death of the neuron.
c. initiation of an impulse in the neuron.
d. the formation of protein receptors in the neuron.

____ 28. When a nerve impulse reaches a synapse, neurotransmitters
a. become enzymes in the space between the neurons.
b. are released into the synaptic cleft.
c. cover the membrane of the axon.
d. cause the cell body of the next neuron to enlarge.

____ 29. The layer of photoreceptors and other neurons at the back of the eye is called the
a. retina. b. iris. c. cochlea. d. optic nerve.

____ 30. The ____ respond(s) to dim light coming into the eye.
a. cones b. cornea c. lens d. rods

____ 31. Colorblindness is caused by faulty or missing
a. blood vessels. b. cones. c. rods. d. glands.

____ 32. iris : amount of light entering the eye ::
a. rod : amount of light entering the eye
b. cornea : shape of the lens
c. lens : point of focus on the retina
d. retina : movement of iris muscle

____ 33. Sensory receptors essential for balance are located in the
a. sclera. c. cochlea of the inner ear.
b. eardrum. d. semicircular canals.

____ 34. Hair cells in the semicircular canals detect
a. motion of the head. c. loudness.
b. the direction of gravity. d. the direction of sounds.

____ 35. Ears
a. function to detect sounds.
b. maintain your balance and sense of where you are in space.
c. detect only internal stimuli.
d. Both a and b

____ 36. Specialized hearing receptors are found in the
a. cornea. c. cochlea.
b. semicircular canals. d. cerebellum.

____ 37. When we hear a sound,
a. sound waves enter the ear canal and strike the eardrum.
b. the fluid in the cochlea moves.
c. the auditory nerve carries nerve impulses to the brain.
d. All of the above

____ 38. When tobacco is inhaled, nicotine
a. is absorbed into the bloodstream through the mouth and lungs.
b. is transported throughout the body.
c. increases blood pressure and heart rate.
d. All of the above

____ 39. Tars
a. cause an increase in heart rate.
b. paralyze cilia.
c. are neurotransmitters.
d. All of the above

____ 40. Smoking can cause
a. lung cancer.
b. cancer of the mouth and larynx.
c. stains on the teeth.
d. All of the above

____ 41. Drinking alcohol, smoking, or using other drugs during pregnancy can cause
a. birth defects.
b. low birth weight.
c. mental retardation.
d. All of the above

____ 42. Stimulants and depressants are named for their effects on
a. the respiratory system.
b. the digestive system.
c. behavior.
d. the central nervous system.

____ 43. Which of the following is not an effect of a depressant drug?
a. impaired coordination
b. slowed reaction time
c. increased heart rate
d. decreased respiration rate

____ 44. Fetal alcohol syndrome
a. results when babies are allowed to drink alcohol.
b. is a cluster of physical and mental defects associated with exposure of a fetus to alcohol.
c. is likely to occur only when pregnant women become drunk.
d. All of the above

____ 45. Which of the following definitions is incorrect?
a. An effective dose is a dose that causes a desired effect.
b. A lethal dose is a dose that results in death.
c. Withdrawal is a response to the lack of a drug.
d. Tolerance means that decreasing amounts of a drug are needed to be effective.

____ 46. When a drug blocks removal of neurotransmitters for a prolonged period,
a. receptors across the synapse are flooded with excess neurotransmitters.
b. the receiving nerve lowers the number of its receptors in the synapse.
c. the only way to maintain normal functioning of the nerve pathway is to continue taking the drug.
d. All of the above

____ 47. When an addict stops taking cocaine, the addict's body will not function normally until
a. the number of receptors in the affected synapses has had time to readjust.
b. the amount of cocaine has been reduced to a safe level.

c. narcotics are prescribed by a physician.
d. All of the above

____ 48. Cocaine
a. mimics neurotransmitters.
b. inhibits the reuptake of neurotransmitters.
c. degrades neurotransmitters.
d. All of the above

____ 49. Cocaine
a. affects the central nervous system by changing the activity of synapses.
b. inhibits the reuptake of neurotransmitters.
c. overstimulates nerve pathways.
d. All of the above

Complete each statement.

1. Nerves that control breathing, swallowing, heartbeat, and the diameter of blood vessels are found in the _____.

2. The thalamus, the hypothalamus, and cells deep within the gray matter of the brain make up the _____ system, which helps regulate emotions.

3. Ventral-root axons carry information to _____ and glands, while dorsal-root axons carry information to the _____ system.

4. The part of the nervous system that does not include the spinal cord and brain is called the _____ nervous system.

5. The part of the peripheral nervous system that controls internal organs is called the _____ nervous system.

6. A sudden, involuntary movement in response to a stimulus is called a(n) _____.

7. A(n) _____ is the basic unit of communication of the nervous system.

8. Cytoplasmic extensions called _____ allow a neuron to receive information simultaneously from many different sources.

9. Some axons are surrounded by an insulating structure called a(n) _____.

10. A neuron transmits a nerve impulse as a wave of _____ charge.

11. The electrical charge across the membrane of a neuron is caused by different concentrations of sodium and _____ ions inside and outside the cell.

12. Messages are carried across synapses by _____.

13. The junction of a neuron with another neuron or with a muscle cell is called a(n) _____.

14. Sensory receptors that respond to tissue damage are called _____ receptors.

15. Peripheral nerve cells that receive information from both internal and external stimuli are called _____.

16. The _____ is the light-sensitive inner layer of the eye.

17. When light enters the eye, it activates photoreceptors called _____, which respond to dim light, and _____, which respond to bright light and colors.

18. The amount of light entering the eye is controlled by the _____.

19. When light enters the eye, it passes first through the _____.

20. The _____ is a small, snail-shaped structure lined with hair cells.

21. The specialized hearing receptors found in the cochlea are _____ cells.

22. A(n) _____ is a globular cluster of cells specialized to detect chemicals found in foods.

23. High concentrations of pain receptors are located in the mouth and _____.

24. _____ are complex mixtures of chemicals and smoke particles produced by burning tobacco.

25. Drugs that decrease the activity of the central nervous system are known as _____.

26. _____ (BAC) is a measurement of the amount of alcohol in the blood.

27. Abuse of psychoactive drugs often leads to a state of uncontrollable physical or psychological dependence called _____.

28. Drugs that affect the functioning of the central nervous system are called _____ drugs.

Essay

1. Explain why you cannot hold your breath indefinitely.

2. How is a signal transferred from one neuron to another neuron?

3. Briefly describe how sensory receptors help you maintain posture and keep your balance.

4. What are the effects of nicotine on the body?

5. Explain why addiction to mood-altering drugs is said to have a physiological basis.

6. Describe the action of cocaine at the synapse and the effects of long-term cocaine use on receptors.