Name:_____ Lab Day/Time:_____

Nervous Tissue, Brain, and Cranial Nerves
Study Guide, Chapter 17 and 19

Part I. Clinical Applications

1. How does a blockages of cerebrospinal fluid (CSF) exiting a ventricle cause irreversible brain damage? How is the condition treated?

The condition is called hydrocephalus. Even though cerebrospinal fluid is blocked from exiting the brain, CSF continues to be produced. The fluid continues to build inside the brain, causing ventricle to dilate and the pressure compresses the nerve tissue which causes irreversible damage. Hydrophalus is treated by draining the excess CSF to relieve the pressure. A neurosurgeon may implant a drain line, called a shunt, into the blocked ventricle to divert the CSF into an area such as the superior vena cava or abdominal cavity.

2. After taking a walk you return home and immediately feel the urge to drink water because you are thirsty. What part of the brain is involved in the urge to drink because you are thirsty?

Activity in thirst center of the hypothalamus produces the conscious urge to drink. Hypothalamic neurons in this center detect changes in the osmotic concentration of the blood. When the concentration rises, the thirst center is stimulated.

3. Ever since the mid-1980's an increasing number of young people have developed Parkinson's disease. The reason has been linked to a "street drug" that had a contaminant that destroyed neurons in the substantia nigra of the mesencephalon (midbrain). What clinical explanation substantiates the relationship between this street drug and the development of Parkinson's disease?

The neurotransmitter dopamine is manufactured by neurons in the substantial nigra and carried to synapses in the cerebral nuclei where it has an inhibitory effect. If the dopamine-producing neurons are damaged, inhibition is lost and the excitatory neurons become increasing active. This increased activity produces the motor symptoms of spasticity and/or tremor associated with Parkinson's disease.

4. A person received a blow to the head and is unable to abduct his right eye. What cranial nerve do you suspect is damaged?

Abducens nerve (VI)

5. A young woman is brought into the emergency room with extremely dilated pupils. Her friends state that she has overdosed on cocaine. What cranial nerve is stimulated by the drug?

Oculomotor nerve (III)

6. Following a train accident, a man with an obvious head injury was observed stumbling about eh scene. An inability to walk properly and a loss of balance were quite obvious. What brain region was injured?

Cerebellum

Part II

1. sensory, integrative, and motor
2. peripheral
3. afferent
4. somatic; autonomic
5. central nervous system; muscle and glands
6. sympathetic
7. neurons; neuroglia
8. axon
9. synaptic end bulb
10. axoplasm
11. dendrite
12. axon hillock
13. axolemma
14. synaptic vesicles
15. lipofuscin
16. neurofibrils
17. axon collaterals
18. axon terminals
19. Electrically insulates the axon of a neuron and increases the speed of nerve impulses conduction
20. peripheral; neurolemma
21. neurofibro nodes (nodes of Ranvier)
22. B
23. A
24. C
25.
    A. White matter: Areas in CNS that are dominated by myleinated axons and dendrites
    B. Gray matter: Areas in the CNS and ganglia of PNS that are dominated by nonmylenated nerve tissue including cell bodies, neuroglia, and unmyelinated axons and dendrites.
26.
    A. Brain stem
    B. Diencephalon
    C. Cerebrum
    D. Cerebellum
27. subarachnoid
28. choroid plexuses; blood-cerebrospinal fluid

Part III

1.
    A. dura mater
    B. arachnoid mater
    C. pia mater
2. hydrocephalus
3. astrocytes
4. VIII – XII
5.
    A. thalamus
    B. epithalamus
    C. hypothalamus
    D. subthalamus
6. Walls; 2; intermediate mass
7. medial geniculate
8. lateral geniculate
9. ventral posterior
10. 80%
11. inferior; sella turcica
12. antidiuretic; oxytocin
13. T
14. F
15. T
16. T
17. T
18. gray; cortex
19. gyri or convolutions; fissures; sulci
20. longitudinal; left and right; falx cerebri
21. corpus callosum
22. Alzheimer's disease
23. multiple sclerosis
24. Parkinson's disease
25. cerebral palsy
26. T
27. T
28. F
29. F
30. F
31. Multipolar
32. unipolar
33. bipolar

Part IV

1. choroid plexus
2. cerebral hemispheres
3. corpus callosum
4. pineal body
5. cerebral peduncle
6. cerebral aqueduct
7. fourth ventricle
8. cerebellum
9. thalamus
10. fornix
11. third ventricle
12. corpora quadrigemina
13. optic chiasma
14. pituitary gland
15. mammillary body
16. pons
17. medulla oblongata
18. B
19. D
20. thalamus
21. hypothalamus/pituitary gland
22. commissural
23. hippocampus
24. fornix
25. third ventricle
26. aqueduct of Sylvius (cerebral aqueduct)
27. spinal cord
28. sulci
29. fissures
30. hypothalamus
31. B
32. B
33. C
34. A
35. C
36. C
37. B
38. C
39. C
40. A
41. A
42. B

Part V

1. C
2. B
3. B
4. A
5. D
6. D
7. A
8. D
9. A
10. D
11. B
12. C
13. C
14. C
15. A
16. C
17. C
18. D
19. E
20. B
21. synapse
22. central
23. A
24. B
25. E
26. D

Part VI

1. Color Diagram and then identify the structures of the diagram
    a. Gray matter of spinal cord
    b. Cell body of preganglionic neurons of ANS
    c. Preganglionic axon (also pointing at a node of Ranvier)
    d. Myelin sheath (produced by Schwann cells)
    e. Cell body of postganglionic neuron of ANS
    f. Postganglionic axon
    g. White matter of spinal cord
    h. Cell body of somatic neuron
    i. Myelin sheath
    j. Autonomic ganglion

Part VII

1. A, sympathetic
2. B, Parasympathetic
3. A. Sympathetic
4. B, Parasympathetic
5. A, Sympathetic
6. B, Parasympathetic
7. C, Both Sympathetic and Parasympathetic
8. A, Sympathetic
9. B, Parasympathetic
10. C, Both
11. D Neither Sympathetic nor Parasympathetic
12. B, Parasympathetic

Part VIII

1. sympathetic
2. parasympathetic
3. parasympathetic
4. sympathetic
5. parasympathetic
6. sympathetic
7. sympathetic
8. sympathetic
9. parasympathetic
10. sympathetic
11. parasympathetic
12. missing
13. B
14. A
15. D
16. B