

Nervous Tissue – Chapter 12
Tortora & Derrickson

Note: all of these questions are on the “hot list”

1. What two structures make up the central nervous system (Fig 12.1)? Their location?
2. Where is the peripheral nervous system located (Fig 12.1)?
3. What three nervous systems make up the peripheral nervous system (Fig 12.1-b)
4. How does the peripheral nervous system interact with the CNS (Fig 12.1)?
5. Draw a typical neuron and explain the function of its parts (Fig 12.2)
6. What are the three types of functional neurons? (Fig 12.5)
7. What terms describe the direction of the action potential “?”
8. What terms describe the structural identification of neurons? Located? (Fig 12.3)
9. What is the most common type of structural neuron?
10. What structural neurons carry action potentials to the spinal cord in somatic sensation?
11. What is significant about a neuron lacking centrioles?
12. Are all neurons in the brain trapped in G₀? Explain exceptions?
13. What are the seven neuroglia cells? Functions and locations? (Note – five in CNS and two in PNS) (Fig 12.6)
14. What is myelin? Function?
15. What type(s) of glia cells make myelin? Their locations? (Fig 12.7)
16. How are signals (graded potentials and action potentials) transmitted when you pick up a pencil and decide to write a sentence? (Fig 12.10)
17. What features affect the speed of an action potential?
18. What is the significance of the voltage-regulated calcium gate at the end of an axon? What does it initiate?
19. How fast do action potentials move across your body? Maximum speed limit?

20. What do we call the separation of charge particles across a plasma membrane?
21. What do we call the flow of charged particles over the surface of a plasma membrane?
22. What happens to the plasma membrane when it is hyperpolarization? How may this occur? (Fig 12.4)
23. What type of pump restores the plasma membrane to its resting membrane potential after the plasma membrane is hyperpolarized?
24. What are the differences between a graded potential and an action potential (fig 12.15)?
25. What is a resting membrane potential (Fig 12.12 and Fig 12.3)? What type of cells have a RMP?
26. What type of tissues may generate an action potential?
27. What ions cross the plasma membrane and when do they cross during an action potential? (Fig 12.3)
28. What ion moves during the depolarization phase of an action potential? (Fig 12.10)
29. What ion moves during the repolarizing phase of an action potential?
30. What ion movement is associated with repolarization?
31. What factors contribute to the resting membrane potential? (fig 12.13)
32. What is the difference between an action potentials and a graded potentials? (Fig 12.14 and Fig 12.26)
33. Are action potentials and graded potentials both decremental? Explain
34. What is the significance of an action potential's threshold? Where is this event located in a neuron?
35. What is the nerve's "all or none principle"?
36. What is the refractory period? Absolute vs relative?
37. What is the structure of a chemical synapse?
38. What is the difference (advantages and disadvantages) between a chemical synapse and an electrical synapse? What is the significance between these structures?

39. What are neurotransmitters? Where are they produced and where are they stored? (Fig 12.27)
40. What is a neuromodulator?
41. Explain the function and structure of cholinergic synapses, GABA-ergic synapses, and adrenergic synapses? (see lecture slide)
42. What determines how the neurotransmitter affects the post synaptic cell?
43. What happens to the resting membrane potential during an excitatory postsynaptic potential and an inhibitory postsynaptic potential?
44. What is the difference between an IPSP and an EPSP? (Fig 12.26)
45. What is a “neural circuit” (also called a motor pattern generator)? Function? (Fig 12.28)
46. Are neurons in the peripheral nervous system able to regenerate? Explain
47. Immediately after a car accident you may be paralyzed but the doctor can not tell you if you will ever walk again. Why? How will the regeneration tube determine your outcome? (Fig 12.29)