

9.01 Study Questions on Lecture Sessions 5 - 6

1. What is meant by the "resting potential" for a neuron? How can it be recorded? What value would you expect?
2. What are the forces acting on ions at the cell membrane? How do ions pass through a cell membrane?
3. How does the semipermeable nature of the cell membrane result in a resting potential?
4. Describe a graded electrical response to mechanical stimulation of a neuron. Is such a response always graded? What else may occur?
5. What are three ways that activity can spread from one part of a cell to another part?
6. Draw a long-axon neuron with the major structural parts named. Where does the action potential normally begin? Where does it normally end?
7. What are the three major functional divisions of a neuron?
8. What is the sodium pump? What is its role in the conduction of the action potential?
9. Contrast conduction of action potentials in unmyelinated and myelinated axons.
10. Give four measures of electrical properties of a resting membrane.
11. Refractory period: What is it?
12. What is meant by antidromic conduction?
13. Contrast: excitatory and inhibitory postsynaptic potentials.
14. Define "temporal summation" and "spatial summation" in neurons. Use these phenomena in characterizing the conditions that favor the triggering of an action potential by input to a neuron from one other neuron.
15. Name two types of receptors that may be found in the postsynaptic membrane at chemical synapses.
16. Contrast neurotransmitters and neural hormones. Give an example of each, with locations and functional effects.
17. Describe at least three types of synapses as seen with the electron microscope.