I. Resting Potential

28.3 Resting Potential

resting potential, sodium-potassium pump

1. What is the condition of a nerve cell at resting potential (the charge, location of different ions, etc.)?
2. If a neuron’s membrane suddenly becomes more permeable to sodium ions, there is a rapid net transport of the sodium ions into the cell. What are the two forces that drive the ions inward?
II. Action Potential

28.4 Nerve Signal

*stimulus, action potential, threshold potential*

1. What is an action potential?
2. What is a stimulus and how does it trigger an action potential?
3. Explain what happens during an action potential (charge, flow of ions, gates, threshold potential).
4. Why is an action potential a chain reaction?
28.5 Action Potential regenerates itself along the neuron
1. How is an action potential propagated along an axon?
2. Why is an action potential and “all-or-nothing” reaction?
3. If it is an “all-or-nothing” reaction, how does it relay different intensities of information?
4. During an action potential, ions move across the neuron membrane in a direction perpendicular to the direction of the impulse along the neuron. What is it that actually travels along the neuron as the signal?
III. Synapse

28.6 Neurons communicate at synapses

Synapse, synaptic cleft, neurotransmitter
1. What occurs at the synapse?
2. Why does the message travel in only one direction?

28.7 Chemical synapse

Summation
1. Why does the membrane of a neuron resemble a switch board?
2. What do neurotransmitters actually do to receiving neurons?
3. What is the difference between excitatory and inhibitory neurotransmitters?
28.20 Memory and Learning.

- **Short-term memory** stored in the frontal lobes.
- The establishment of **long-term memory** involves the hippocampus.
- Functional changes in synapses in synapses of the hippocampus and amygdala are related to memory storage and emotional conditioning.
- **Long-term depression (LTD)** occurs when a postsynaptic neuron displays decreased responsiveness to action potentials. Induced by repeated, weak stimulation.
- **Long-term potentiation (LTP)** occurs when a postsynaptic neuron displays increased responsiveness to stimuli. Induced by brief, repeated action potentials that strongly depolarize the postsynaptic membrane. May be associated with memory storage and learning.