

Essay Questions

1. Compare and contrast the endocrine and nervous systems on the basis of: mechanism of action, speed of action, duration of action, specificity of action, and function.
2. Describe the process of creating and propagating an action potential. Start from a resting membrane and end with the membrane back to resting membrane potential, be sure to include in your discussion the events that can cause a membrane to reach threshold potential, the channels and their configurations through the rising and falling phases and what this means regarding the unidirectional characteristic of action potentials and the refractory periods.
3. Compare and contrast graded and action potentials on the basis of: function (uses), directionality, duration, amplitude, and initiation.
4. With regard to lipid soluble and water soluble signals, explain how a these very different signals both illicit changes within the cell.
5. Starting with a single neuron, sketch a hypothetical neuronal circuit that would expand to control the heart & lungs in an inhibitory manner and the stomach & urinary bladder in an excitatory manner, use the same neurotransmitter (acetylcholine) for all the signals, but use differing receptors to achieve the desired effect.
6. Learning is a big part of our life. From school to work, new hobbies and sports, pretty much everything we do has a learning component to it. Compare how we learn based on memory theories of short and long term memory. Include the subdivisions of each type in your discussion.