**SYNAPTIC TRANSMISSION WORKSHEET**
(PP. 566-569)

**Fill in the Blanks:**

When action potentials reach the ______________ zone of a neuron, they usually induce the neuron to release one or more ________________________________. These are ______________ molecules that __________________ across chemical synapses. Synapses may occur between 2 _______________ or between a ________________ and a _______________ cell or ______________.

Neurotransmitter molecules are stored in synaptic ______________ in the cytoplasm of the ______ synaptic cell (neuron). Gated channels for ______________ ions open with the arrival of an _________________. An ______________ (influx / efflux?) of calcium ions occurs. When they flow in, _______________ are induced to fuse with the neuron membrane and the neurotransmitter is then released into the _________________.

Neurotransmitters diffuse across and bind with specific _______________ on the membrane of the ______ synaptic cell (neuron). Binding changes the _______________ of the proteins, so that a _______________ opens up to their interior. ______________ now diffuse through the channels.

How the postsynaptic cell (neuron) responds depends on: the __________ of neurotransmitter; its ______________ in the cleft; the particular kinds of ______________ in the postsynaptic cell; and whether the channels are primed to _______________.

If a neurotransmitter has an “excitatory” effect, it drives the postsynaptic cell’s membrane toward the ________________ of an _________________. If it has an “inhibitory” effect it drives the membrane _________________.

**Questions (answer on note paper):**

1. What positive ion is likely to enter the postsynaptic neuron to cause depolarization to excite a neuron to fire an action potential?

2. What negative ion is likely to enter the postsynaptic neuron to cause hyperpolarization to inhibit production of an action potential?

3. Briefly state the function of the following neurotransmitters and neuromodulators: - serotonin, norepinephrine, dopamine, GABA, substance P, endorphin

4. Explain the effects of *Clostridium botulinum* and *Clostridium tetani* on the nervous system.