Multiple Choice

1. True or false: Binding of the neurotransmitter GABA with postsynaptic receptors would make the postsynaptic neuron more likely to depolarize.
    A True
    B False [correct]

2. True or false: The cell bodies of all neurons in the brain are located in the cerebral cortex.
    A True
    B False [correct]

3. A neuron that is in which state is less likely to fire an action potential?
    A Depolarized
    B Hyperpolarized [correct]

4. The disequilibria that neurons seek to maintain are characterized by:
    A A negative electrical potential and a higher concentration of Na^+ ions inside the cell [True]
    B A negative electrical potential and a higher concentration of K^+ ions inside the cell
    C A positive electrical potential and a higher concentration of Na^+ ions inside the cell
    D A positive electrical potential and a higher concentration of K^+ ions inside the cell

5. Oscillations in the local field potential (LFP) are most likely due to:
    A The summation of fluctuating membrane potential in the dendritic arbors of many neurons [True]
    B The fluctuation of the membrane potential of the synapse nearest to the recording electrode
    C The summation of action potentials being fired by many neurons
    D The action potentials being fired by the neuron nearest to the recording electrode

Short Answer / Fill-in-the-blank

1. What are the four parts of the central nervous system?
    a. Cerebrum, spinal cord, brainstem, cerebellum

2. What are the five lobes of the cerebrum?
    a. Frontal, parietal, occipital, temporal, limbic

3. What makes grey matter grey and white matter white?
    a. Grey: unmyelinated cell bodies; white: myelinated axons

4. The bumps in the brain are known as _____ and the grooves as _____.
    a. Gyri; sulci

5. What disease is associated with demyelination?

    a. Multiple sclerosis

6. Reuptake of neurotransmitters occurs on which side of the synaptic cleft?
    a. Presynaptic
7. Which part of the neuron is responsible for sending signals to other neurons? Which part for receiving signals?
    a. Axon; dendrites

8. The hollow chambers of the brain are known as _____ and are filled with _____.
    a. Ventricles; cerebrospinal fluid

9. _____ is the primary excitatory neurotransmitter in the brain and _____ the primary inhibitory neurotransmitter
    a. Glutamate; GABA

10. What is the name of the major white-matter bundle that connects the two cerebral hemispheres?
    a. Corpus callosum

Essay / Longer Answer

1. What is myelin? Why is it important to neuronal communication?

2. Describe the sequence of events that lead up to and follow a neuron firing an action potential.

3. What is a local field potential? Name two ways in which it can be measured.

4. Describe how phase synchrony impacts the effectiveness of neuronal communication.