

CHAPTER 28 - Nervous Systems

Chapter Reading Guide

Nervous System Structure and Function

1. Describe the two main divisions of nervous systems.

2. Label the diagram of a motor neuron below. Describe the structure and functions of each individual component of the neuron. **An example has been done for you!**



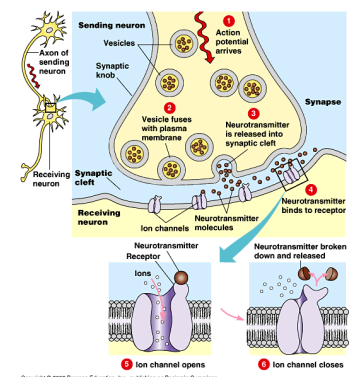
dendrites

short, highly branched fibers which receive incoming messages from a sensory cell or an interneuron and conveys this message to the cell body.

Nerve Signals and Their Transmission

3. Compare and contrast a resting potential and an action potential. Explain **what causes a resting potential** and the **changes associated with an action potential**.

4. Synapses are either electrical or chemical. Compare the structures, functions, and locations of electrical and chemical synapses.



5. Describe the types of inputs a single neuron can receive and note the nature of the neuron's response.

6. Neurotransmitters are essential in homeostasis. Describe the **types and functions of neurotransmitters** known in humans.

a. **acetylcholine** –

b. **biogenic amines** –

c. **amino acids** –

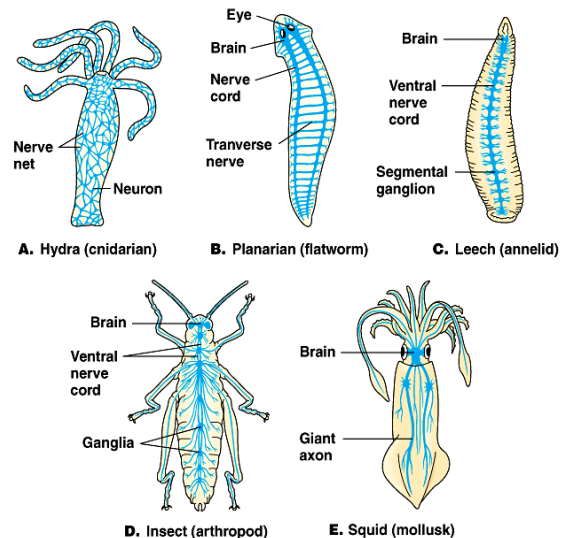
d. **peptides** –

e. **dissolved gases** –

7. Explain how drugs can alter chemical synapses.

Nervous Systems

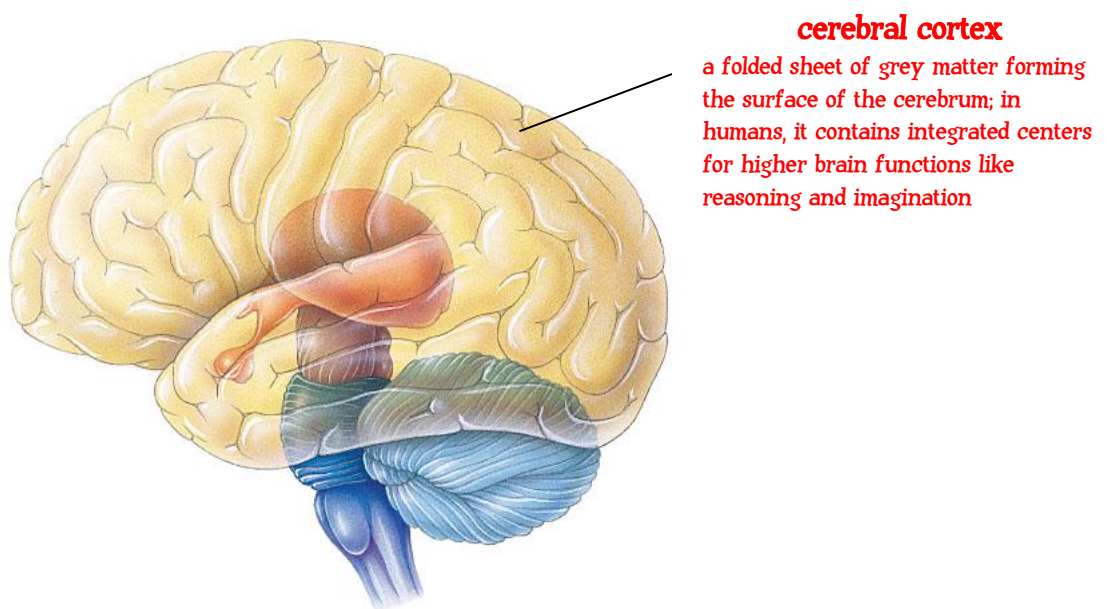
8. Describe, with examples, the diversity of animal nervous systems.



9. Describe the general structure of the brain, spinal cord, and associated nerves.
10. Compare the functions of the sensory and motor divisions of the peripheral nervous system. Distinguish between the somatic and autonomic divisions of the nervous system.
11. Compare the functions of the parasympathetic and sympathetic divisions of the peripheral nervous system.

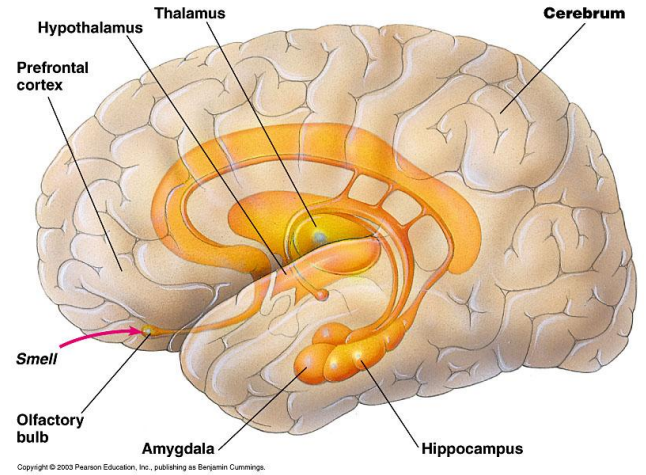
The Human Brain

12. **Completely label** and provide a **description** of the parts and functions of the human brain in the diagram below (**as you did in Question #2**). Note the detailed structures and functions of the cerebral cortex.



13. Explain how the brain regulates sleep and arousal.

14. Describe the functions of the limbic system.



15. Explain the causes of long-term depression and long-term potentiation.