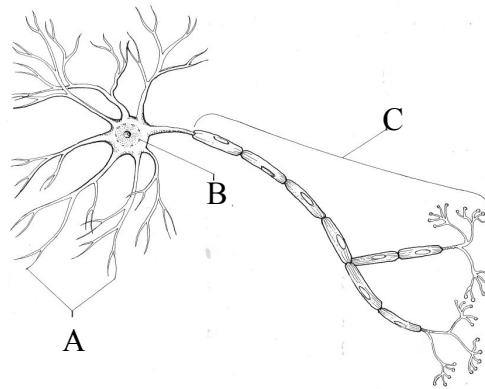


Notes - Nervous System

1. **What are the functions of the nervous system? (p.487)** *The four main functions of the nervous system are (1) receiving internal and external information through the sensory neurons; (2) processing information and making decisions; (3) controlling organs and muscles; and (4) maintaining homeostasis through the control of body functions such as heart rate, breathing rate and body temperature.*
2. **What cells carry information in the nervous system? (p.487)** *Neurons.*
3. **Draw a diagram of a neuron, and label the three main parts. (p.488)** *The three main parts of a neuron are the (A) dendrites; (B) cell body; and (C) axon, as labeled in the diagram below:*



4. **Describe how a nerve impulse travels through a neuron. (p.488)** *A nerve impulse begins at a dendrite tip, then travels through the cell body and finally leaves the neuron through the axon tip.*
5. **What are the three kinds of neurons, and what are the functions of each? (pp.488-89).** *The three kinds of neurons are the sensory neurons, motor neurons and interneurons. Sensory neurons lead from a sensory organ such as the tongue, eyes, nose or ears, or from the sensory nerves in the skin, to the brain. Motor neurons lead from the brain to the various muscle groups. Interneurons form connections between other neurons that together perform thinking and memory functions.*
6. **Describe how a nerve impulse travels between neurons. (p.490)** *When a nerve impulse reaches the end of an axon, the tip of the axon secretes a chemical that travels across the gap between the axon and the dendrite of the next neuron. This gap is called a synapse. The chemical signal triggers a nerve impulse in the dendrite, which travels to the end of that neuron's axon.*
7. **What are the two divisions of the nervous system? (p.492)** *The two main divisions of the nervous system are the (1) central nervous system, consisting of the brain and spinal cord; and (2) peripheral nervous system, consisting of all of the motor and sensory neurons after they leave the spinal cord.*
8. **What is a spinal cord? (pp.493, 495)** *The spinal cord is a bundle of sensory and motor neurons leading from the brain to the rest of the body. It is protected by the vertebra of the spine.*
9. **About how many neurons are in the brain? (p.493)** *About 100 billion.*

10. **What are the three main parts of the brain? What does each part do? (p.494-95)** *The three main parts of the brain are the cerebrum, cerebellum and brain stem. The cerebrum controls all thinking, reasoning and memory functions, as well as voluntary muscle control. The left half of the cerebrum generally does the analytical work such as math, which the right half of the cerebrum does the creative thinking. The cerebellum controls the balance and movement of the body, using information from the eyes and ears and signals from all muscles. The brain stem controls the organs and involuntary muscles.*
11. **What is the function of the peripheral nervous system? How many pairs of nerves are in this system? (p.496)** *The peripheral nervous system connects all of the body's organs and muscles to the central nervous system (the brain and spinal cord), so that the organs and muscles can be controlled by the brain. There are 43 pairs of neuron bundles (nerves) reaching from the spinal cord to every part of the body.*
12. **What are the somatic and autonomic nervous systems? What is the function of each? (p.496)** *The somatic nervous system is the part of the peripheral nerves that controls the voluntary muscle movements. The autonomic nervous system is the part of the peripheral nerves that controls involuntary muscles and organs.*
13. **What is a reflex? Describe the sequence of events in the nervous system that makes reflexes work. (p.497)** *A reflex is a response to a stimulus that occurs without the brain's involvement. The pain nerve impulse travels to the spinal cord to a interneuron, where a motor neuron impulse is immediately sent back down to the muscles nearest the pain source, telling those muscles to move away from the pain source. The brain receives the pain message a moment later, after the reflex has occurred.*
14. **Why are spinal cord injuries so serious? (p.498)** *The spinal cord cannot repair itself if broken, and cannot be repaired by surgery. If the spinal cord is cut or damaged, all muscles and sensory neurons below the cut will be unusable. For example, if the spinal cord is cut at the top of the shoulder, a person will lose all use of their arms and legs, and will have no sense of touch below the neck.*