

Name: _____ Per: _____

Chapter 8- Nervous System

The nervous system has three specific functions:

1. Sensory input =

2. Integration =

3. Motor output =

(2) Main divisions of the nervous system:

1.

2.

Peripheral Nervous System (PNS) divided into:

| Somatic Nervous System | Autonomic Nervous System |
|------------------------|--------------------------|
| | |

Autonomic Nervous System

| Sympathetic Nervous System | Parasympathetic Nervous System |
|----------------------------|--------------------------------|
| | |

Nervous Tissue:

Nervous tissue is made up of (2) types of cells.

1. Neurons-

2. Neuroglia-

Schwann cell:

Oligodendrocyte:

Microglia:

Astrocyte:

Ependyma:

Neuron Structure:

1. Cell body/soma =

2. Dendrites =

3. Axon =

4. Nissl bodies =

5. Schwann cells =

6. Myelin sheath =

7. Nodes of Ranvier =

Classification of Neurons

By Structure:

1. Bipolar neurons =

2. Multipolar neurons =

3. Unipolar neurons =

By Function:

1. Sensory neuron (afferent) =

2. Interneuron (association neuron) =

3. Motor neuron (efferent) =

Nerves

1. Nerve =

2. Axons within the nerve are arranged into groupings called _____.

3. Connective tissue layers:

a. Epineurium =

b. Perineurium =

c. Endoneurium =

White matter vs. Gray matter in the CNS

1. White matter =

2. Gray matter =

Nerve Impulses

Resting potential =

1. Due to _____, there are more _____ outside of the axon's membrane but more _____ inside the membrane.

2. At rest, the _____ of the membrane is more _____, because the outside has more positive charges.

Action potential =

1. Depolarization =

2. Repolarization =

Action potential a.k.a. _____

Impulse conduction

On myelinated axons, action potential occurs at _____ as myelin sheaths insulates and prevents ion flow.

Nerve impulses jump from one node to another.

Synapse

1. Synapse =

2. Synaptic cleft =

3. Synaptic transmission =

Neurotransmitter =

1. Some neurotransmitters _____ on postsynaptic membrane.
2. Some neurotransmitters are _____ in synaptic cleft.
3. Some neurotransmitters are _____ into presynaptic axon.

Types of neurotransmitters:

1. Excitatory =

2. Inhibitory =

Meninges

Meninges =

(3) layers of meninges

1. Dura mater =

2. Arachnoid mater =

3. Pia mater =

Epidural space-

Subdural space-

Subarachnoid space-

Cerebrospinal fluid (CSF) =

1. CSF is formed by specialized capillaries called _____ in the brain's interconnecting chambers called _____.
2. CSF is stored within the _____ of the spinal cord, in the brain's _____ and _____.

Spinal Cord

Spinal cord =

Major functions of the spinal cord:

1.

2.

Cross section of spinal cord:

1. White matter =
2. Gray matter =
3. Spinal ganglion =
4. Central canal =

The spinal cord gives rise to _____ pairs of _____.

Spinal nerves =

Nerve tracts:

Ascending =

Descending =

Reflexes

The routes nerve impulses travel are called _____, the simplest of which is a _____.

Components of a reflex arc:

1. Sensory receptor-
2. Sensory neuron-
3. Interneuron-
4. Motor neuron-
5. Effector-

Reflexes are automatic, subconscious responses to stimuli that help you survive.

1. Reflexes can be _____ (mediated by the brain).
2. Reflexes can be _____ (mediated by the spinal cord).
3. Most reflexes, like a withdrawal reflex, are _____ (have an interneuron).
4. Some reflexes, such as knee-jerk reflex, are _____ (no interneuron).

Brain

Four major parts of the brain:

- 1.
- 2.
- 3.
- 4.

Structure of the cerebrum:

1. Cerebral hemispheres =

2. Corpus callosum =

3. The surface of the brain is marked by:

gyri-
sulci-
fissures-

Left and Right Hemispheres =

(4) Lobes of the Cerebrum:

1. Frontal lobe-

2. Parietal lobe-

3. Temporal lobe-

4. Occipital lobe-

Structure of Diencephalon:

1. Thalamus-

2. Hypothalamus-

3. Epithalamus-

Structure of Brainstem:

1. Midbrain =

2. Pons =

3. Medulla Oblongata =

Structure of the Cerebellum:

1. Cerebellum is divided into two _____.

2. Cerebellum =

Brain gives rise to ____ pairs of Cranial Nerves. Some are _____, some are _____, and some are _____ nerves.