

**Review for Exam 5**  
**Elementary Psychology**

**Brain Imaging Techniques**

For each of the brain imaging techniques, indicate whether it gives pictures of brain structure (S) or function (F).

EEG	_____
CT scan	_____
MRI	_____
fMRI	_____
PET	_____

Identify the type brain imaging technique that is involved with each of the following.

- \_\_\_\_\_ 1. A radioactive tracer is injected with glucose. More glucose is taken up by the more active parts of the brain.
- \_\_\_\_\_ 2. A magnetic field and radio waves are used and with the aid of a computer pictures are produced of what the brain looks like.
- \_\_\_\_\_ 3. Only horizontal views of slices of the brain are produced with this technique.
- \_\_\_\_\_ 4. This technique using electrodes placed on the scalp of a person's head in order to record the electrical activity of the brain.
- \_\_\_\_\_ 5. This technique uses X-rays to produce pictures of what the brain looks like.
- \_\_\_\_\_ 6. A magnetic field and radio waves are used with the aid of a computer to produce pictures of what parts of the brain are active while an individual is performing a particular task.
- \_\_\_\_\_ 7. A picture that was produced using this technique was shown in class that compared the brain activity of an individual with ADHD with an individual without ADHD. The more active parts of the brain were shown in red and yellow, and the less active parts of the brain were shown in blue and green.

## Structures in the Brain

For your answer, use the initials given for the brain structures shown below.

<b>A</b>	Amygdala
<b>C</b>	Cerebellum
<b>CC</b>	Corpus Callosum
<b>H</b>	Hippocampus
<b>HY</b>	Hypothalamus
<b>LS</b>	Limbic System
<b>M</b>	Medulla
<b>P</b>	Pons
<b>T</b>	Thalamus

- \_\_\_\_\_ 1. When this structure is activated, our dreaming takes place.
- \_\_\_\_\_ 2. This structure consolidated memories, changing short-term memories into long-term ones. H.M.'s was damaged, and therefore he could only remember the last 20 seconds of his life.
- \_\_\_\_\_ 3. This is the band of nerve fibers that connects the two hemispheres of the brain. This connection was severed in H.M. in order to control his epileptic seizures.
- \_\_\_\_\_ 4. This is a sensory relay station. Nerve connections from all the senses, except smell, pass through this structure on the way to be processed in the higher brain centers (the lobe of the brain that processes the particular sense involved).
- \_\_\_\_\_ 5. This is referred to as the "seat of emotion."
- \_\_\_\_\_ 6. This structure is involved in maintaining our basic biological functions such as maintaining our heart rate and respiration.
- \_\_\_\_\_ 7. This is another structure in the brain involved in survival functions. It is involved in the regulation of fighting, fleeing, feeding, and mating behaviors.
- \_\_\_\_\_ 8. This structure is involved in forming our emotional memories. For example, when Little Albert was classically conditioned to fear furry things by John Watson, his memories were formed in this structure.
- \_\_\_\_\_ 9. This structure is related not only to procedural memory (memory without conscious effort), but also to our balance and coordination.

## The Four Lobes of Each Hemisphere of the Brain

Write in the lobe of the brain involved with the function that is given.

Frontal

Parietal

Occipital

Temporal

1. The processing of visual information is in the \_\_\_\_\_ lobe.
2. The processing of tactile information (touch) and pain sensations is in the \_\_\_\_\_ lobe.
3. The \_\_\_\_\_ lobe has a role in memory formation.
4. The \_\_\_\_\_ lobe is responsible for our motor movement (walking, talking, etc.).
5. The \_\_\_\_\_ lobe is involved in controlling impulsivity and in planning ahead.
6. The \_\_\_\_\_ lobe allows us to understand speech and language.
7. The \_\_\_\_\_ is sometimes referred to as our “executive command center,” in that it allows us to initiate actions and plan ahead.

## The Divisions of the Nervous System

**CNS** Central Nervous System  
**PNS** Peripheral Nervous System  
**Ans** Autonomic Nervous System  
**sns** Sympathetic Nervous System  
**pns** Parasympathetic Nervous System  
**Sons** Somatic Nervous System

\_\_\_\_\_

- \_\_\_\_\_ 1. The two major divisions of the peripheral nervous system.
- \_\_\_\_\_ 2. This division of the peripheral nervous system is involved in regulating bodily activities that we normally do not think about, such as our breathing, digestion, and heart rate.
- \_\_\_\_\_ 3. This particular part of No. 2 above, is involved in our **fight and flight** response during an emergency. It increases our heart rate and respiration and slows down our digestion.
- \_\_\_\_\_ 4. Instead of speeding up our nervous system, this particular part of No. 2 above slows it down. It lowers our heart rate and respiration and aids in our digestion.
- \_\_\_\_\_ 5. This division of the peripheral nervous system activates what is thought of as our voluntary muscle movement. These nerves are responsible for allowing us to walk, talk, type, take notes, etc.
- \_\_\_\_\_ 6. All nerves NOT in the peripheral nervous system are in the \_\_\_\_\_.

The two parts of No. 6 above are the \_\_\_\_\_ and the \_\_\_\_\_.

## The Neuron (The Individual Nerve Cell)

**Axon**  
**Dendrites**  
**Myelin**  
**Neurotransmitter**  
**Soma**  
**Synapse**  
**Terminal Buttons**

- \_\_\_\_\_ 1. The small gap between the terminal button of one nerve cell and the receptor of another nerve cell.
- \_\_\_\_\_ 2. The word for “body,” this is the part of the nerve cell that has the machinery to keep the cell in good working order.
- \_\_\_\_\_ 3. This is similar to an electrical cable that carries information on to the end of the nerve cell.
- \_\_\_\_\_ 4. The knobs at the end of the nerve cell from which chemicals are released.
- \_\_\_\_\_ 5. The chemicals that are released into the gap between nerve cells to be available to fit into the receptors of another nerve cell.
- \_\_\_\_\_ 6. The white fatty substance that covers some nerve cells that speeds the transmission of the electrical impulse.
- \_\_\_\_\_ 7. These parts of the nerve cell receive the chemicals that are given out by other nerve cells. They look like tree branches.

## Neurotransmitters

<b>AC</b>	Acetylcholine
<b>DO</b>	Dopamine
<b>EN</b>	Endorphins
<b>GABA</b>	Gamma Aminobutyric Acid
<b>NE</b>	Norepinephrine
<b>ST</b>	Serotonin

- \_\_\_\_\_ 1. A pathway in the brain with this neurotransmitter is referred to as the pleasure pathway. All substances of abuse or that have the potential for abuse are believed to act on this pathway.
- \_\_\_\_\_ 2. A high level of activity of this neurotransmitter in the brain is associated with anxiety and panic.
- \_\_\_\_\_ 3. These chemicals can alleviate pain. They resemble the opiate drugs in structure and are associated with the “runner’s high.”
- \_\_\_\_\_ 4. Low levels of activity of this neurotransmitter are associated with depression, anxiety, suicidality, and impulsivity.
- \_\_\_\_\_ 5. Low levels of activity of this neurotransmitter are associated with anxiety and panic. (Note the difference in wording from Question 2.)
- \_\_\_\_\_ 6. This is the neurotransmitter that is between the motor neurons and the muscles responsible for voluntary movement of our legs, arms, etc.
- \_\_\_\_\_ 7. Low activity of this neurotransmitter is associated with Parkinson’s disease and the problems in muscle movement associated with the disease.