AP Psychology   Name: _____
Unit 3: Biological Bases of Behavior

NOTE: This is a very important unit, so please study this material carefully!!

Module 9: Biological Psychology and Neurotransmission (pgs. 76-85)
1. Define the following:
    - Phrenology _____

    - Biological psychologists _____

    _____

    _____

2. Read about the different parts of a neuron. On the back of this
   page, *draw* a neuron (like the one to the right) and *label* the
   parts. Next to each label*, define the purpose/function* of each
   part. Finally, *color* each part a different color. The parts you
   need to label are: Neurons (can be at top of picture), dendrite,
   axon, myelin sheath, terminal branches, cell body, synapse.
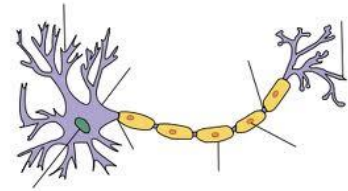
3. Summarize the process of neural communication in your own words. You must include the
   following terms in your summary: action potential, ions, resting potential, selectively permeable,
   depolarizes, refractory period, excitatory, inhibitory, threshold, all-or-none-response, synaptic gap,
   neurotransmitters, reuptake.

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4. Below your neuron drawing, draw a picture of a synapse (like the one on pg. 81). _Label_ the
   following, _color_ each part a different color, and next to each label _define the purpose_ of that part: (1)
   synaptic gap, (2) receptor sites, (3) neurotransmitter, (4) axon terminal, (5) sending neuron, (6)
   receiving neuron.

5. Neurotransmitters are the chemical molecules that bind to the receptor sites. For each
   neurotransmitter listed below, explain its function. Also, list what diseases are associated with each
   neurotransmitter.
    - Acetylcholine _____

    _____

- Dopamine _____

  _____

- Serotonin _____
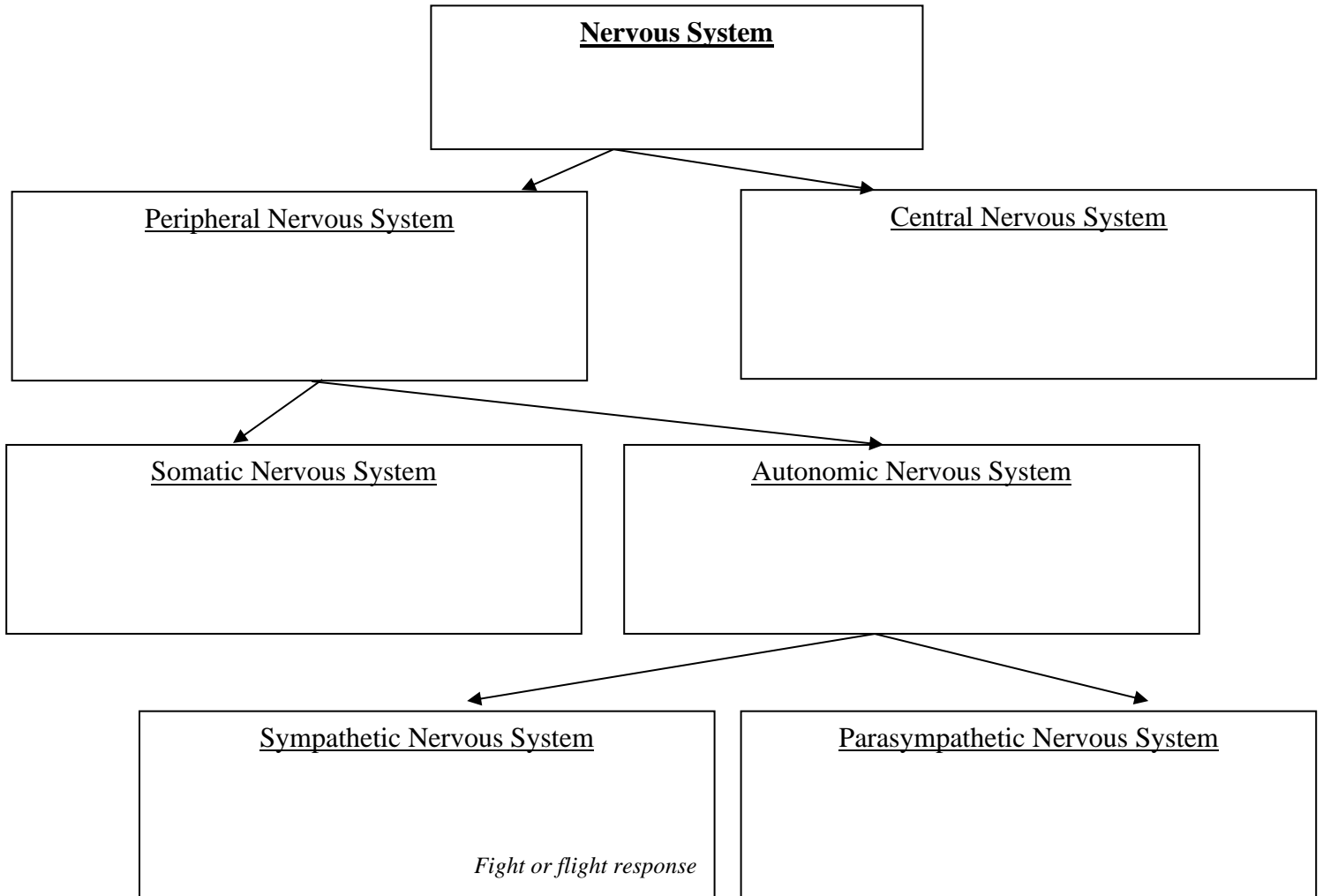
  _____

- Norepinephrine _____

  _____

- GABA _____

  _____

- Glutamate _____

  _____

- Endorphins _____

  _____

6. What is an agonist? What is an antagonist? (The pictures on pg. 83 are especially helpful!)

_____

_____

_____

Module 10: The Nervous and Endocrine Systems (pgs. 86-93)

1. What are nerves? What is the difference between sensory, motor, and interneurons?

_____

_____

_____

_____

2. Complete the diagram below with definitions of each part of the nervous system.

Nervous System

Peripheral Nervous System

Central Nervous System

Somatic Nervous System

Autonomic Nervous System

Sympathetic Nervous System

Fight or flight response

Parasympathetic Nervous System

3. Summarize the importance of neural networks.

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_____

_____

4. Define reflex. What controls general reflexes and pain reflexes? Why do you think your brain does not control those?

_____

_____

_____

_____

_____

5. Define the following terms:
    *   Endocrine system _____
    *   Hormones _____

- Adrenal glands _____

- Pituitary gland _____

Module 11: Studying the Brain, and Older Brain Structures (pgs. 94-103)
1. Neuroscientists study the brain functioning in a variety of ways. For each of the research methods listed below, summarize briefly <u>how it works</u> and <u>what it tells scientists about the brain</u>.

- Lesion _____

_____

- Electroencephalograph (EEG) _____

_____

- Computerized Tomography (CT) scan _____

_____

- Positron Emission Tomography (PET) scan _____

_____

- Magnetic Resonance Imaging (MRI) scan _____

_____

_____

- Functional MRI (fMRI) _____

_____

2. On the brain diagram below, _label_ each part of the brain using pgs. 97-101 as a reference. Underneath each label, provide a _concise definition_ of the function of each part—no more than 3 words per part! Finally, _color_ each part a different color. Label the following parts: (1) brainstem, (2) medulla, (3) pons, (4) thalamus, (5) reticular formation, (6) cerebellum, (7) spinal cord, (8) hypothalamus, (9) pituitary gland, (10) amygdala, (11) hippocampus, (12) corpus callosum
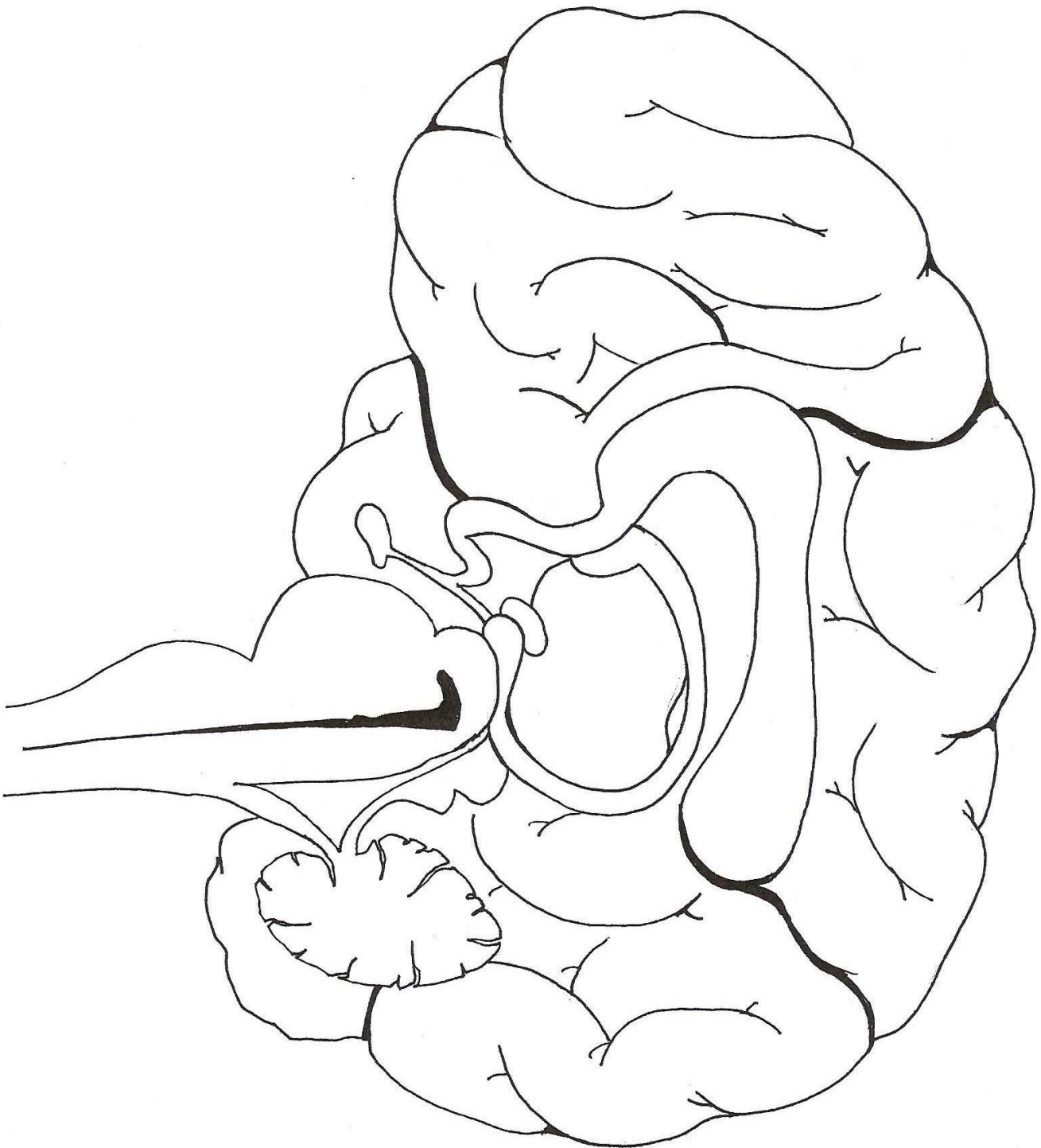
3. What parts of the brain are included in the limbic system? In general, what kinds of functions are associated with the limbic system? _____

_____

_____

Module 12: The Cerebral Cortex (pgs. 104-113)

1. What is the cerebrum? What is the cerebral cortex? In general, what are its functions?

_____

_____

_____

2. What are glial cells? Where specifically in the brain are glial cells located?

_____

_____

3. The cerebral cortex is divided into many parts associated with their functions. For each part below, explain what the function is and describe its approximate location:
   - Frontal lobe _____
   - Parietal lobe _____
   - Occipital lobe _____
   - Temporal lobe _____
   - Motor cortex _____
   - Somatosensory cortex _____

4. What are association areas? Where are they found?

_____

_____

5. What does Broca's area do? What does Wernicke's area do?

_____

_____

6. Summarize what happened to Phineas Gage and what it helped tell us about the brain.

_____

_____

7. What does brain plasticity mean? Why is it important? What is neurogenesis?

_____

_____

Module 13: Brain Hemisphere Organization and the Biology of Consciousness (pgs. 114-122)

1. What is the corpus callosum? What did Roger Sperry and Michael Gazzaniga do?

    _____

    _____

2. What happens in split-brain surgery? Why is it performed? What does it reveal about brain

    functioning? _____

    _____

3. Explain the HEART experiment with split-brain surgery patients.

    _____

    _____

4. What functions are mainly controlled by the left hemisphere? What functions are controlled by the

    right hemisphere? _____

    _____

    _____

5. Define consciousness. Why do evolutionary psychologists think we have consciousness?

    _____

    _____

6. Define cognitive neuroscience. _____

    _____

7. Define dual processing. Explain how the hollow face illusion can be explained by dual processing.

    _____

    _____

Module 14: Behavior Genetics: Predicting Individual Differences (pgs. 123-134)

1. Define the following terms about genetics:
    - Behavior genetics_____
    - Environment _____
    - Chromosome _____
    - DNA _____
    - Genes _____
    - Genome _____

2. What is the difference between identical and fraternal twins? _____

    _____

3. Why are twins, particularly twins separated at birth, the perfect people to study to answer the nature vs. nurture question? _____

_____

4. When comparing adopted twins, are twins more like their biological parents or their adoptive parents? _____

5. Define molecular genetics. What is your opinion, if we have the technology, should we allow parents to screen their embryos before birth for disorders, smartness, beauty, etc.?

_____

_____

6. Define heritability. What does it mean that the heritability of intelligence is 50%?

_____

_____

Module 15: Evolutionary Psychology: Understanding Human Nature (pgs. 135-144)
1. Define the following:
   - Evolutionary psychologists _____
   - Natural selection _____
   - Mutations _____
2. Explain how behaviors can be selected for their adaptive value. Be sure to explain a few examples.

_____

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_____

3. What do men find attractive in a mate? What do women find attractive in a mate? Explain how natural selection is involved in those traits being more favorable.

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