

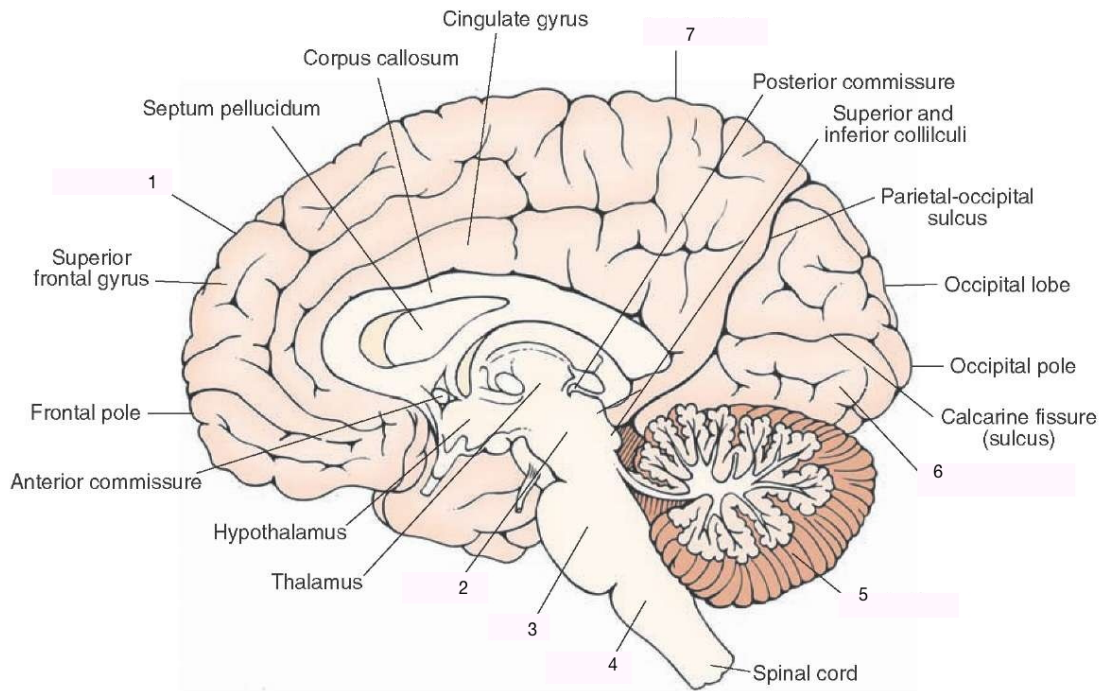
# PSYCH 260-BBH 203 Exam 1

February 16, 2016

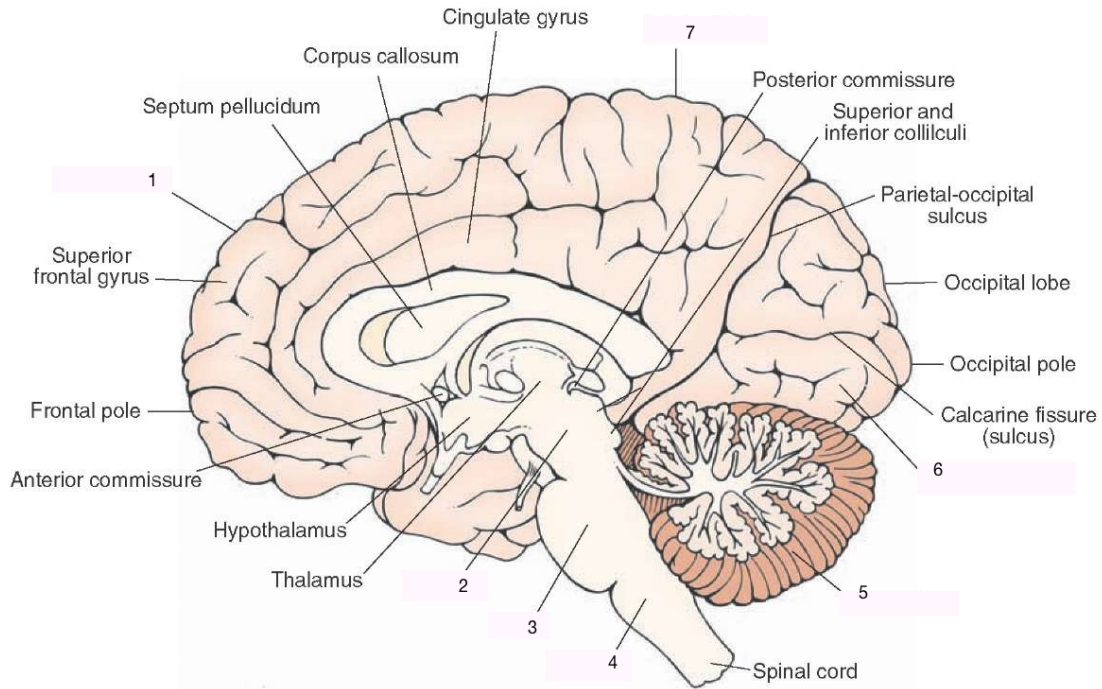
Answer the questions using the Scantron form.
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Name: \_\_\_\_\_

# 1 Main



1. Identify the structure
  - A. Frontal lobe**
  - B. Parietal lobe
  - C. Occipital lobe
  - D. Temporal lobe
2. Identify the structure
  - A. Forebrain
  - B. Midbrain**
  - C. Hindbrain
  - D. Spinal cord
3. Identify the structure
  - A. 4th ventricle
  - B. Medulla
  - C. Cerebellum
  - D. Pons**
4. Identify the structure
  - A. 4th ventricle
  - B. Medulla**
  - C. Cerebellum
  - D. Pons



5. Identify the structure

- A. 4th ventricle
- B. Medulla
- C. Cerebellum**
- D. Pons

6. Identify the structure

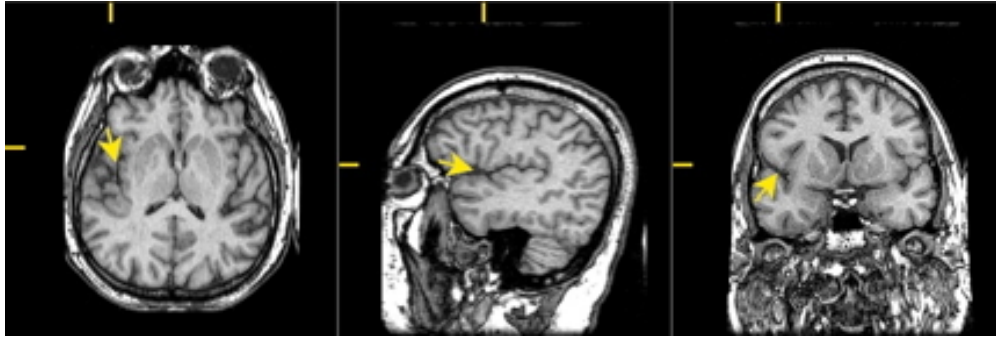
- A. Frontal lobe
- B. Parietal lobe
- C. Occipital lobe**
- D. Temporal lobe

7. Identify the structure

- A. Frontal lobe
- B. Parietal lobe**
- C. Occipital lobe
- D. Temporal lobe

8. Natural philosophers in the middle ages thought that fluid from these structures inflated the muscles.

- A. Astrocytes
- B. Meninges
- C. Cerebral ventricles**
- D. Circle of Willis



9. What plane of section is represented in the left panel?
- A. Coronal
  - B. Sagittal
  - C. Axial/horizontal**
  - D. Dorsal
10. What plane of section is represented in the middle panel?
- A. Coronal
  - B. Sagittal**
  - C. Axial/horizontal
  - D. Dorsal
11. What plane of section is represented in the right panel?
- A. Coronal**
  - B. Sagittal
  - C. Axial/horizontal
  - D. Dorsal
12. What fissure or sulcus is represented in the figures?
- A. Superior temporal sulcus
  - B. Central sulcus
  - C. Longitudinal fissure
  - D. Lateral fissure**
13. Primary motor cortex is found in the \_\_\_\_\_.
- A. Temporal lobe
  - B. Frontal lobe**
  - C. Hypothalamus
  - D. Basal ganglia
  - E. Parietal lobe

14. Primary auditory cortex is found in the \_\_\_\_\_.  
**A. Temporal lobe**  
B. Frontal lobe  
C. Hypothalamus  
D. Basal ganglia  
E. Parietal lobe
15. The pituitary gland is connected with the \_\_\_\_\_.  
A. Temporal lobe  
B. Frontal lobe  
**C. Hypothalamus**  
D. Basal ganglia  
E. Parietal lobe
16. The caudate nucleus is part of the \_\_\_\_\_.  
A. Temporal lobe  
B. Frontal lobe  
C. Hypothalamus  
**D. Basal ganglia**  
E. Parietal lobe
17. The typical flow of information in neurons begins with input on the \_\_\_\_\_ and ends with output from the \_\_\_\_\_.  
A. axon; dendrites.  
B. soma; dendrites.  
**C. dendrites; terminal button.**  
D. terminal button; soma.
18. Which of the following statements about neurons is *incorrect*?  
A. Neurons have very long lives.  
B. Neurons can extend over long distances.  
**C. Neurons are the only cells that have negative resting potentials.**  
D. Neurons use both electrical and chemical mechanisms to communicate.
19. Your grandmother has a stroke. The neurologist chooses use an X-ray-based structural brain imaging method that gives decent spatial resolution. What method is that?  
**A. Computed tomography (CT).**  
B. functional MRI.  
C. Positron Emission Tomography (PET).  
D. Anterograde tract tracers.

20. The first scan is inconclusive, so the neurologist orders a second scan that gives much higher spatial resolution of the gray and white matter and does not involve any ionizing radiation. That method is \_\_\_\_\_.
- A. electroencephalography (EEG).
  - B. hemodynamic response imaging.
  - C. structural MRI.**
  - D. Computed Tomography (CT).
21. The \_\_\_\_\_ is/are especially thin around the area postrema in the brainstem, and neurons here are specialized for detecting \_\_\_\_\_.
- A. astrocytes; glutamate.
  - B. myelin sheath; Na<sup>+</sup> ions.
  - C. Circle of Willis; blood loss.
  - D. blood/brain barrier; toxins.**
22. How many neurons are there in the human brain?
- A. About 86 billion.
  - B. About 86 million.
  - C. Too many to count in multiple lifetimes.
  - D. Both A. and C.**
23. This type of glial cell plays a central role in cleaning up dead or diseased brain tissue.
- A. Schwann cells
  - B. Oligodendrocytes
  - C. Microglia**
  - D. Purkinje cells
24. The hypothalamus plays a central role in
- A. Sexual behavior**
  - B. Metabolic, physical support of neurons
  - C. Sensory relay
  - D. Memory storage and retrieval
  - E. CNS protection

25. The dura mater is crucial for
- A. Metabolic, physical support of neurons
  - B. Sensory relay
  - C. Preparation for action
  - D. Memory storage and retrieval
  - E. CNS protection**
26. One of the functions of the thalamus is to serve
- A. Sexual behavior
  - B. Metabolic, physical support of neurons
  - C. Sensory relay**
  - D. Preparation for action
  - E. Memory storage and retrieval
27. The hippocampus plays a central role in
- A. Sexual behavior
  - B. Metabolic, physical support of neurons
  - C. Sensory relay
  - D. Preparation for action
  - E. Memory storage and retrieval**
28. The sympathetic nervous system is crucial for
- A. Sexual behavior
  - B. Metabolic, physical support of neurons
  - C. Sensory relay
  - D. Preparation for action**
  - E. Memory storage and retrieval
29. You're having trouble sleeping, so your physician orders a sleep study using polysomnography. You spend a night in the hospital with electrodes on your scalp. This is an example use case for \_\_\_\_\_.
- A. electroencephalography (EEG).**
  - B. Multi-unit recording.
  - C. transcranial magnetic stimulation.
  - D. optical imaging.
30. \_\_\_\_\_, a type of glial cell, help regulate local blood oxygen levels in response to neuronal activity. These cells thus contribute to the signal measured by \_\_\_\_\_.
- A. oligodendrocytes; MEG
  - B. Schwann cells; structural MRI
  - C. astrocytes; functional MRI**
  - D. microglia; structural and functional MRI
31. The neurotransmitters dopamine, norepinephrine, and serotonin originate from nuclei clustered in which midbrain region?
- A. Basal ganglia
  - B. Lateral geniculate nucleus
  - C. Tegmentum**
  - D. Medial frontal cortex

32. The hypothalamus is NOT responsible for which of the following functions?
- A. Fleeing
  - B. Feeding
  - C. Fighting
  - D. Falling**
33. Which of the following marks the posterior boundary of the frontal lobe?
- A. Lateral fissure
  - B. Longitudinal fissure
  - C. Central sulcus**
  - D. Inferior temporal gyrus
34. This type of myelinating cell, found in the \_\_\_\_\_, ensheaths many neurons at once.
- A. Astrocytes; PNS
  - B. Oligodendrocytes; CNS**
  - C. Schwann cells; CNS
  - D. Schwann cells; PNS
35. Nodes of Ranvier, or gaps in the myelination of an axon, serve which purpose?
- A. Increase the speed of propagation**
  - B. Allow space in the axon for neurotransmitter release
  - C. Provide structural support to the neuron
  - D. Combine input from different dendrites
36. When a neuron is “at rest,” which of the following ions are more heavily concentrated *outside* of the cell?
- A. Na<sup>+</sup> and Cl<sup>-</sup>**
  - B. K<sup>+</sup> and A<sup>-</sup>
  - C. Na<sup>+</sup> and K<sup>+</sup>
  - D. Cl<sup>-</sup> and A<sup>-</sup>



37. When a neuron's membrane potential reaches threshold \_\_\_\_\_.  
A. voltage-gated K<sup>+</sup> channels close  
B. voltage-gated Na<sup>+</sup> channels close and inactivate  
C. the Na/K pump works even harder to keep the concentration balance.  
**D. voltage-gated Na<sup>+</sup> channels open**
38. This part of the cell functions as the neuron's "antennae" by serving as the primary place for receiving input.  
A. Axon  
B. Soma  
**C. Dendrites**  
D. Terminal Buttons
39. During the rising phase of the action potential, \_\_\_\_\_ channels \_\_\_\_\_.  
A. Ligand-gated K<sup>+</sup>; close  
B. Voltage-gated Na<sup>+</sup>; close  
**C. Voltage-gated Na<sup>+</sup>; open**  
D. Voltage-gated K<sup>+</sup>; close
40. Neurons ensheathed in myelin conduct action potentials \_\_\_\_\_ than those without myelin.  
A. more slowly  
**B. more quickly**  
C. more slowly and efficiently  
D. more quickly, but less efficiently

## 2 Bonus

41. During the *falling* phase of the action potential, \_\_\_\_\_ions \_\_\_\_\_.
- A. **K<sup>+</sup>; flow out**
  - B. Na<sup>+</sup>; flow out
  - C. K<sup>+</sup>; flow in
  - D. Na<sup>+</sup>; flow in
42. Which of the following is a characteristic of a neuron's *relative* refractory period?
- A. Na<sup>+</sup> channels are either open or inactive
  - B. **Very strong stimulation is required to generate an action potential**
  - C. All types of ions are able to flow freely across the post-synaptic membrane
  - D. Action potentials generated during this time vary in size
43. In a typical neuron near or slightly above its resting potential chloride (Cl<sup>-</sup>) ions would flow \_\_\_\_\_following the concentration gradient. This would move the neuron \_\_\_\_\_its firing threshold.
- A. **Inward; farther from**
  - B. Inward; closer to
  - C. Outward; farther from
  - D. Outward; closer to
44. A toxin found in Japanese pufferfish blocks voltage-gated Na<sup>+</sup> channels. Applying such a toxin to neurons would have what effect?
- A. Slower falling phase of the action potential.
  - B. Increasing the concentration of Na<sup>+</sup> inside the cell.
  - C. K<sup>+</sup> ions would accelerate their flow to compensate.
  - D. **Action potentials would be abolished.**