

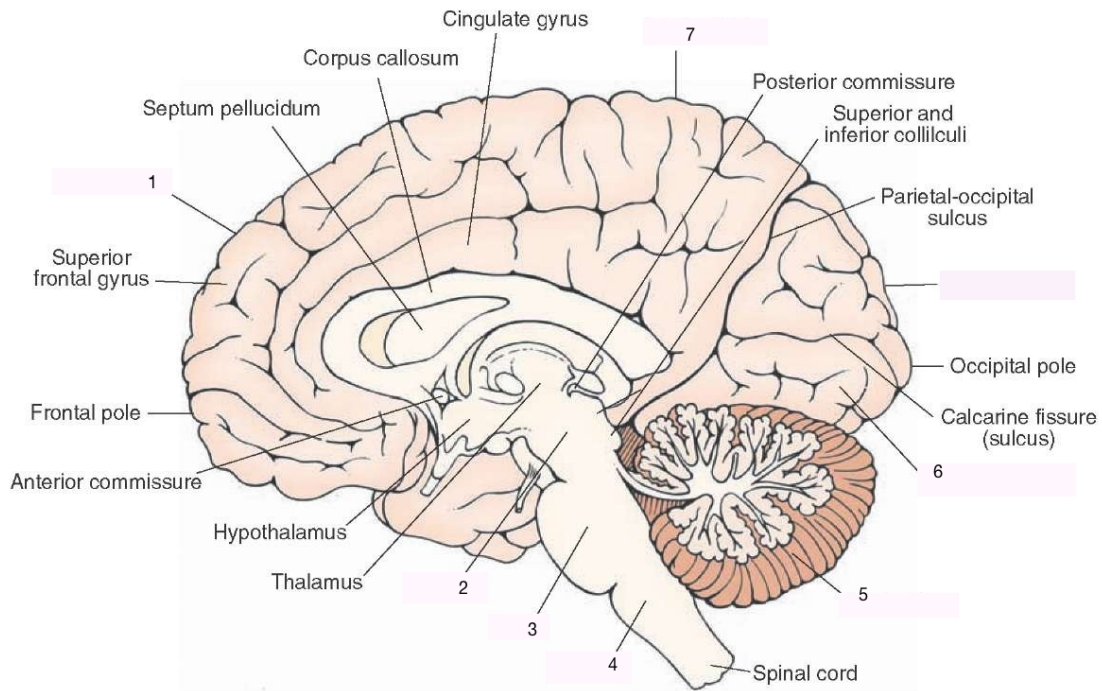
PSYCH 260 Exam 1

February 8, 2017

Answer the questions using the Scantron form.

Name: _____

1 Main

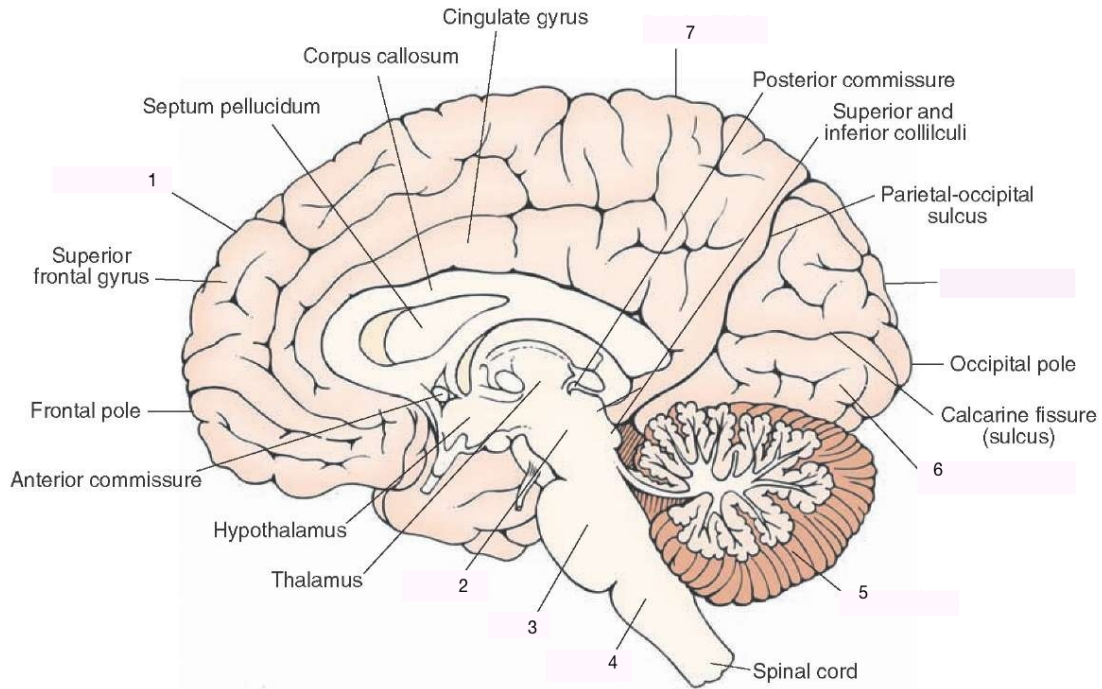


1. Identify the structure
 - A. Frontal lobe**
 - B. Parietal lobe
 - C. Occipital lobe
 - D. Temporal lobe

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

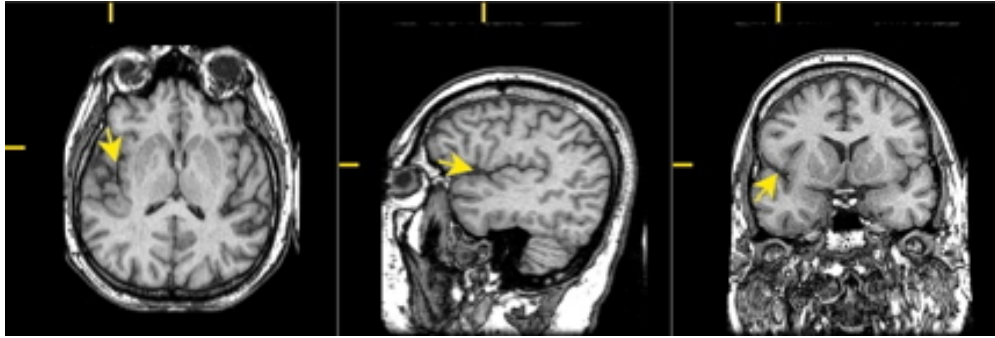
- A. Frontal lobe
- B. Parietal lobe
- C. Occipital lobe**
- D. Temporal lobe

7. Identify the structure

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

8. These tissues provide external structural support and protection for the CNS.

- 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 somatosensory cortex (SI) is found in the _____.
- A. Temporal lobe
 - B. Frontal lobe
 - C. Hypothalamus
 - D. Basal ganglia
 - E. Parietal lobe**

14. 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.
15. Primary motor cortex is found in the _____.
- A. Temporal lobe
 - B. Frontal lobe**
 - C. Hypothalamus
 - D. Basal ganglia
 - E. Parietal lobe
16. Your grandmother has a stroke. The neurologist chooses an X-ray-based structural brain imaging method that gives satisfactory, but not especially detailed spatial resolution. What method is that?
- A. Computed tomography (CT).**
 - B. functional MRI.
 - C. Positron Emission Tomography (PET).
 - D. Anterograde tract tracers.
17. The caudate nucleus is part of the _____.
- A. Temporal lobe
 - B. Frontal lobe
 - C. Hypothalamus
 - D. Basal ganglia**
 - E. Parietal lobe
18. The _____ plays a role in biologically crucial behaviors, including those associated with ingestion (eating and drinking) and reproduction.
- A. Temporal lobe
 - B. Frontal lobe
 - C. Hypothalamus**
 - D. Basal ganglia
 - E. Parietal lobe
19. The typical flow of information through 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.
20. Among other functions _____ play(s) a role in regulating the extracellular concentration of _____.
- A. astrocytes; glutamate.**
 - B. myelin sheath; Na⁺ ions.
 - C. Circle of Willis; blood loss.
 - D. blood/brain barrier; oxygen levels.

21. Scientists are exploring how chronic conditions like depression can change the size and shape of brain structures using high resolution whole brain imaging techniques like _____.
- A. electroencephalography (EEG).
 - B. hemodynamic response imaging.
 - C. structural MRI.**
 - D. Computed Tomography (CT).
22. How many neurons are there in the human brain?
- A. About 86 billion.**
 - B. About 86 million.
 - C. About the same number of seconds as in the average lifetime.
 - D. It can't be estimated.
23. This type of glial cell provides neurons in the peripheral nervous system (PNS) with a myelin sheath.
- A. Schwann cells**
 - B. Oligodendrocytes
 - C. Microglia
 - D. Purkinje cells
24. The hippocampus plays a central role in _____.
- A. Sexual behavior
 - B. Metabolic, physical support of neurons
 - C. Sensory relay processing
 - D. Memory storage and retrieval**
 - E. CNS protection
25. The thalamus serves this function, among others.
- A. Metabolic, physical support of neurons
 - B. Sensory relay**
 - C. Preparation for action
 - D. Memory storage and retrieval
 - E. CNS protection
26. Sodium (Na^+) is highly concentrated _____. This means that the force of diffusion acting alone will push Na^+ _____.
- A. inside; inward
 - B. outside; inward**
 - C. inside; outward
 - D. outside; outward

27. 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 of _____.
- A. **electroencephalography (EEG).**
 - B. Multi-unit recording.
 - C. transcranial magnetic stimulation.
 - D. optical imaging.
28. _____, 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
29. 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
30. The hypothalamus is NOT responsible for which of the following functions?
- A. Fleeing
 - B. Feeding
 - C. Fighting
 - D. **Falling**
31. Which of the following marks the medial boundary of the frontal lobe?
- A. Lateral fissure
 - B. **Longitudinal fissure**
 - C. Central sulcus
 - D. Inferior temporal gyrus
32. This type of myelinating cell, found in the CNS, ensheaths many neurons at once.
- A. Astrocytes
 - B. **Oligodendrocytes**
 - C. Microglia cells
 - D. Stellate cells

33. Descartes thought that this midbrain structure was the place where the soul interacted with the body to create movement by inflating the muscles.
- A. Pons
 - B. Cerebral aqueduct
 - C. pineal gland**
 - D. Superior colliculus
34. When a neuron is “at rest,” which of the following ions are more heavily concentrated *outside* of the cell?
- A. Na⁺ and Cl⁻**
 - B. K⁺ and A⁻
 - C. Na⁺ and K⁺
 - D. Cl⁻ and A⁻
35. When a neuron’s membrane potential reaches the threshold for an action potential, _____.
- A. voltage-gated K⁺ channels close
 - B. voltage-gated Na⁺ channels close and inactivate
 - C. the Na/K pump works even harder to keep the concentration balance.
 - D. voltage-gated Na⁺ channels open**
36. 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
37. During the rising phase of the action potential, _____ channels _____.
- A. Ligand-gated K⁺; close
 - B. Voltage-gated Na⁺; close
 - C. Voltage-gated Na⁺; open**
 - D. Voltage-gated K⁺; close
38. 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
39. _____ are a type of glial cell that contributes to the Blood Oxygen-Level Dependent (BOLD) response measured in _____ brain imaging.
- A. Astrocytes; fMRI**
 - B. Schwann cells; structural MRI
 - C. Oligodendrocytes; EEG
 - D. Stellate cells; PET

40. All of the following ions move across the neuronal membrane at different times *EXCEPT*
- A. Na⁺
 - B. K⁺
 - C. Cl⁻
 - D. Organic anions (A-)**

2 Bonus

41. During the *falling* phase of the action potential, _____ ions _____.
- A. K⁺; flow out**
 - B. Na⁺; flow out
 - C. K⁺; flow in
 - D. Na⁺; flow in
42. 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
43. In a typical neuron near or slightly above its resting potential chloride (Cl⁻) 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⁺ 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⁺ inside the cell.
 - C. K⁺ ions would accelerate their flow to compensate.
 - D. Action potentials would be abolished.**