

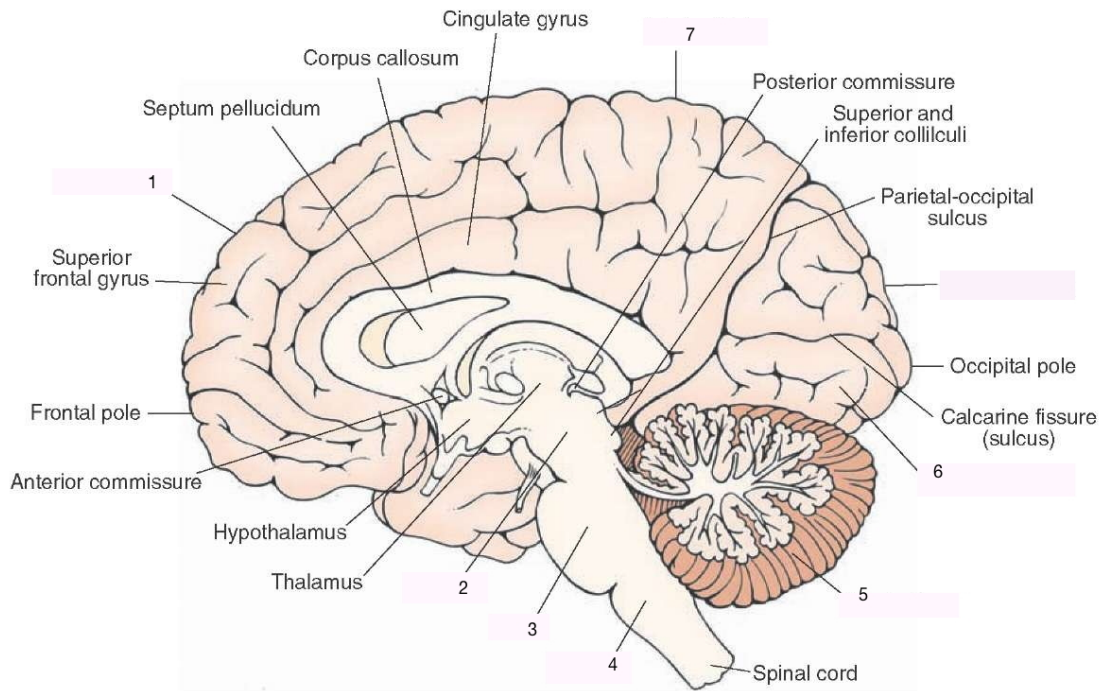
PSYCH 260 Exam 1

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

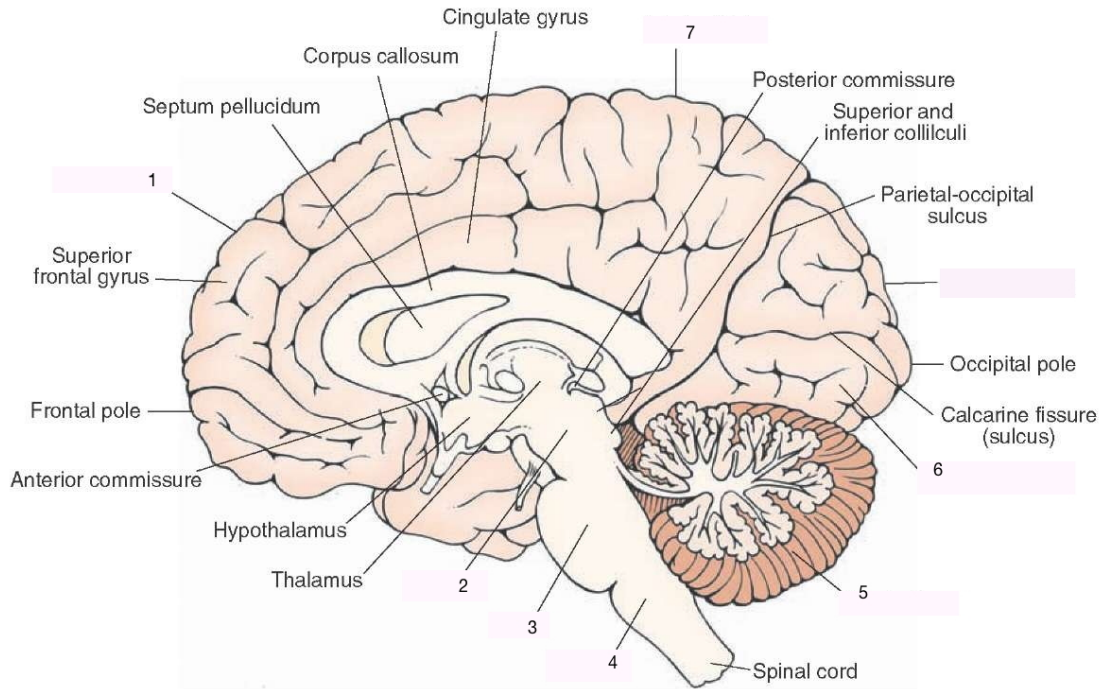
- A. Forebrain
- B. Midbrain**
- C. Hindbrain
- D. Spinal cord

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

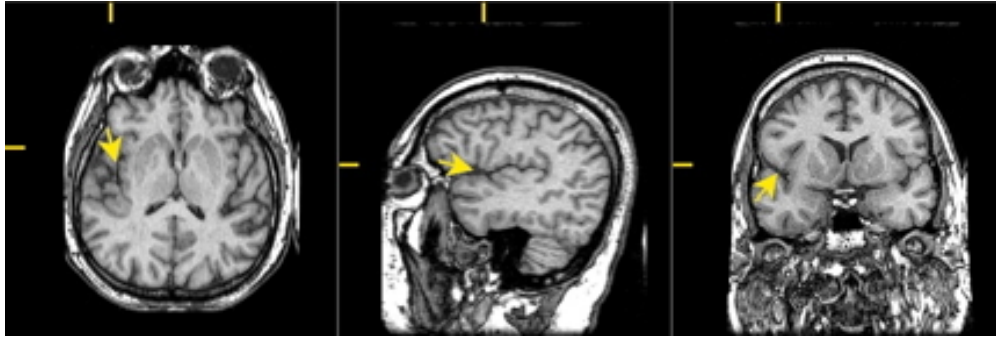
- A. Frontal lobe
- B. Parietal lobe
- C. Occipital lobe**
- D. Temporal lobe

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.**