

## 1.1 ~~~~~

**Directions:** For short answer questions, write your response in the space provided. Most of the short answer questions should be only a sentence or two long. For multiple choice questions, circle the letter of the correct response. For fill-in-the-blank questions, write your response in the space provided. For matching questions, write the letter of the correct response in the space to the right. For true or false questions, write “True” if the statement is true, and if the statement is false, *explain why* the statement is false. Lastly, the sections (1.1, 1.2, etc.) are provided to break the exam into smaller sections. Don’t worry about having to fill them in. Good luck!

**Q1.1.1 Short Answer:** Define neuroscience.

*Answer:*

**Q1.1.2 True or False:** Behavioral neuroscience involves understanding the nervous system’s underlying behavior.

*Answer:*

**Q1.1.3 Fill in the Blank:** The Central Nervous System (CNS) is composed of the \_\_\_\_\_ and the \_\_\_\_\_.

**Q1.1.4 Matching:** Match the following systems with their primary functions.

### Choices

- (i) Voluntary motor control and sensory input.
- (ii) Involuntary control of the gastrointestinal system.
- (iii) Involuntary control of smooth muscle and glands.

- (a) Somatic Nervous System ..... \_\_\_\_\_
- (b) Autonomic Nervous System ..... \_\_\_\_\_
- (c) Enteric Nervous System ..... \_\_\_\_\_



**Q1.1.5 True or False:** The autonomic nervous system regulates the body's fight-or-flight AND rest-and-digest response.

*Answer:*

**Q1.1.6 Short Answer:** How does the flight-or-flight response affect your body?

*Answer:*

**Q1.1.7 Fill in the Blank:** In the fecal microbiota transplant study, researchers found that the microbiota change the \_\_\_\_\_ of the mice.

**Q1.1.8 True or False:** In the elevated plus maze study, rats that underwent a fecal transplant from anxious mice became less anxious.

*Answer:*

## 1.2 ~~~~~

**Q1.2.1 Short Answer:** What is the primary function of the meninges?

*Answer:*

**Q1.2.2 Multiple Choice:** Which of the following is the outermost meningeal layer?

(A) Arachnoid Membrane

(B) Dura Mater

(C) Pia Mater

(D) Subarachnoid Space

**Q1.2.3 Short Answer:** Why did early anatomists call the outermost meningeal layer "pachymeninges"?

*Answer:*

**Q1.2.4 Fill in the Blank:** *Dura Mater* is sometimes called "\_\_\_\_\_" because of its tough, fibrous nature.

**Q1.2.5 True or False:** The Peripheral Nervous System uses all three layers of the meninges.

*Answer:*

**Q1.2.6 Fill in the Blank:** Arachnoid \_\_\_\_\_ are web-like structures that connect the Arachnoid Membrane to the *pia mater*

**Q1.2.7 True or False:** The subarachnoid space is filled with cerebrospinal fluid.

*Answer:*

**Q1.2.8 Short Answer:** What is meningitis?

*Answer:*



**Q1.2.9 Multiple Choice:** Which is NOT a symptom of Meningitis?

- (A) Headache (B) Fever  
(C) Hallucinations (D) None of the above

### 1.3 ~~~~~

**Q1.3.1 Short Answer:** List two functions of CSF.

*Answer:*

**Q1.3.2 True or False:** CSF is similar in composition to blood plasma.

*Answer:*

**Q1.3.3 Fill in the Blank:** CSF is produced by the \_\_\_\_\_ cells lining the lateral ventricles.

**Q1.3.4 Fill in the Blank:** A contra-coup injury is an injury that occurs on the \_\_\_\_\_ side of the brain from the impact site.

### 1.4 ~~~~~

**Q1.4.1 Matching:** Match the location with its description.

#### Choices

- (i) Connected to the pituitary gland via the infundibulum.
- (ii) Production of CSF and connection to the third ventricle via the interventricular foramen.
- (iii) Connects the third and fourth ventricles.

(a) Lateral Ventricles ..... \_\_\_\_\_

(b) Third Ventricle ..... \_\_\_\_\_

(c) Cerebral Aqueduct ..... \_\_\_\_\_

**Q1.4.2 True or False:** The central canal connects the fourth ventricle to the spinal cord.

*Answer:*



## 1.5 ~~~~~

**Q1.5.1 Short Answer:** Where is CSF absorbed into the bloodstream?

*Answer:*

**Q1.5.2 Fill in the Blank:** \_\_\_\_\_ is caused by swelling of the brain due to a blockage in the CSF flow.

**Q1.5.3 True or False:** The *Interventricular Foramen* connects the lateral ventricles to the third ventricle.

*Answer:*

## 1.6 ~~~~~

**Q1.6.1 Fill in the Blank:** The term “*epi*” means \_\_\_\_\_ and the term “*tap*” means \_\_\_\_\_.

**Q1.6.2 Multiple Choice:** A lumbar puncture is sometimes called a:

- |               |                     |
|---------------|---------------------|
| (A) Brain Tap | (B) Spinal Tap      |
| (C) CSF Drain | (D) Ventricular Tap |

**Q1.6.3 Fill in the Blank:** The needle for a lumbar puncture is typically inserted into the \_\_\_\_\_ sac in the lumbar region.

## 1.7 ~~~~~

**Q1.7.1 Matching:** Match the cranial nerve number with its function.

<b>Choices</b>
----------------

- |   |
|---|
| (i) Facial sensation or motor control of the mandible |
| (ii) Vision   |
| (iii) Smell   |

(a) I ..... \_\_\_\_\_

(b) II ..... \_\_\_\_\_



(c) V ..... \_\_\_\_\_

**Q1.7.2 True or False:** Cranial nerve IV controls pupil constriction and eye movement.

*Answer:*

**Q1.7.3 Short Answer:** What is the function of cranial nerve X?

*Answer:*

**Q1.7.4 Fill in the Blank:** There are \_\_\_\_\_ cranial nerve(s) that modulate eye movements, and \_\_\_\_\_ cranial nerve(s) that control the sense of vision.

**Q1.7.5 True or False:** The term “*glossal*” means “taste”.

*Answer:*

**Q1.7.6 Fill in the Blank:** For the following table, fill in the blanks with the correct name.

Cranial Nerve	Name	Cranial Nerve	Name
I	_____	VII	_____
II	_____	VIII	_____
III	_____	IX	_____
IV	_____	X	_____
V	_____	XI	_____
VI	_____	XII	_____

## 1.8 ~~~~~

**Q1.8.1 Short Answer:** What does the term *Soma* refer to?

*Answer:*

**Q1.8.2 True or False:** The term “*nucleus*” refers to a collection of cell bodies in the PNS.

*Answer:*

**Q1.8.3 Fill in the Blank:** Fill in the following table for the terms that match its definition.

Term	Definition
Tract	_____
_____	The ends of the neuron that send information.
_____	Extends surface area of the neuron.
_____	A collection of axons in the PNS.



**Q1.8.4 True or False:** *Ganglion* and *Nuclei* are both collections of axons.

*Answer:*

**Q1.8.5 Short Answer:** What is the function of the myelin sheath?

*Answer:*

## 1.9 ~~~~~

**Q1.9.1 Short Answer:** Name two principal structures of the hindbrain.

*Answer:*

**Q1.9.2 Short Answer:** What vital functions are regulated by the Reticular Formation in the Medulla Oblongata?

*Answer:*

**Q1.9.3 Short Answer:** Describe the role of the Pons in the brainstem.

*Answer:*

**Q1.9.4 Fill in the Blank:** The \_\_\_\_\_ (specific) is a structure in the pons that produces norepinephrine.

**Q1.9.5 True or False:** The norepinephrine produced by the Locus Coeruleus is sent primarily to the hind brain.

*Answer:*

**Q1.9.6 Short Answer:** What is the primary function of the cerebellum?

*Answer:*

**Q1.9.7 Bonus Short Answer:** Can you name every function of the cerebellum? (There's 8!)

*Answer:*

**Q1.9.8 Fill in the Blank:** The rare malformation wherein the cerebellum is not developed is called \_\_\_\_\_.

**Q1.9.9 Multiple Choice:** Which of the following midbrain structures is primarily responsible for visual reflexes?

(A) Olives    (B) Pyramids    (C) Superior Colliculus    (D) Substantia Nigra

**Q1.9.10 Fill in the Blank:** The \_\_\_\_\_ in the midbrain is critical for motor coordination.



**Q1.9.11 Short Answer:** What does the *periaqueductal gray area* produce?

*Answer:*

**Q1.9.12 True or False:** The medulla oblongata contains the reticular formation which regulates vital functions like heart rate and respiration.

*Answer:*

**Q1.9.13 Fill in the Blank:** The midbrain's \_\_\_\_\_ Colliculus is important for visual reflexes, while the \_\_\_\_\_ Colliculus is involved in auditory reflexes.

**Q1.9.14 Multiple Choice:** The *substantia nigra* is known for its role in:

- (A) Serotonin production
- (B) Dopamine production
- (C) GABA production
- (D) Acetylcholine production

## 1.10 ~~~~~

**Q1.10.1 Short Answer:** What is the role of the thalamus in the brain?

*Answer:*

**Q1.10.2 Fill in the Blank:** Fill in the following table with the correct terms.

Thalamic Relay Nuclei	Description
_____	Vision
_____	Pain
_____	Promotes wakefulness

**Q1.10.3 Fill in the Blank:** The *Massa Intermedia* connects the left \_\_\_\_\_ half with the right half.

**Q1.10.4 Multiple Choice:** Which of the following is NOT a function of the hypothalamus?

- (A) Survival of the individual
- (B) Survival of the species
- (C) Regulation of pain
- (D) Integration of information

**Q1.10.5 True or False:** The *Suprachiasmatic Nucleus* is responsible for circadian rhythms.

*Answer:*



**Q1.10.6 True or False:** The hypothalamus is involved in both individual survival functions (like eating and drinking) and species survival functions (such as reproduction).

*Answer:*

**Q1.10.7 Matching:** Match the following telencephalic structures with their functions.

**Choices**

- (i) Sensory integration and spatial awareness.
- (ii) Executive functions, motor control, language production.
- (iii) Memory, hearing, language comprehension.
- (iv) Vision

- (a) Frontal Lobe ..... \_\_\_\_\_
- (b) Temporal Lobe ..... \_\_\_\_\_
- (c) Parietal Lobe ..... \_\_\_\_\_
- (d) Occipital Lobe ..... \_\_\_\_\_

**Q1.10.8 Fill in the Blank:** The *Corpus Callosum*'s neurons go from \_\_\_\_\_ to \_\_\_\_\_ and not from \_\_\_\_\_ to \_\_\_\_\_.

**Q1.10.9 Multiple Choice:** Which of the following is NOT a symptom of Callosal Agenesis?

- (A) Impaired motor coordination
- (B) Impaired language comprehension
- (C) Impaired spatial awareness
- (D) Impaired executive functions

**Q1.10.10 True or False:** The *Basal Ganglia* is involved in the regulation of voluntary motor control.

*Answer:*

**Q1.10.11 Fill in the Blank:** The *Striatum* consists of the \_\_\_\_\_, \_\_\_\_\_, and the \_\_\_\_\_. (*Note: The Globus Pallidus is not a viable answer here.*)

**Q1.10.12 True or False:** When people mention the Nucleus Accumbens and the Globus Pallidus, they call it the lentiform nucleus.

*Answer:*





**Q1.10.13 True or False:** Participants in Rees et al.'s (2011) study showed extreme liberals had a larger amygdala than extreme conservatives.

*Answer:*

**Q1.10.14 Short Answer:** What is the function of the hippocampus?

*Answer:*

**Q1.10.15 Short Answer:** What is the left hemisphere of the brain responsible for? And the right hemisphere? (2 each)

*Answer:*

**Q1.10.16 Matching:** Arrange the following structures in the brain in the right order.

**Choices**

- (i) Tectum
- (ii) Medulla Oblongata
- (iii) Limbic System
- (iv) Hypothalamus

- (a) Telencephalon ..... \_\_\_\_\_
- (b) Diencephalon ..... \_\_\_\_\_
- (c) Mesencephalon ..... \_\_\_\_\_
- (d) Myelencephalon ..... \_\_\_\_\_

**Q1.10.17 Short Answer:** What is *Klüver-Bucy Syndrome*?

*Answer:*

**Q1.10.18 True or False:** The *Limbic System* is involved in the regulation of emotions, memory, and motivation.

*Answer:*

**Q1.10.19 Fill in the Blank:** Selective attention, love, and pain are all functions of the \_\_\_\_\_.

**Q1.10.20 Short Answer:** What lobes make up the *Cerebral Cortex*?

*Answer:*



**Q1.10.21 Short Answer:** We learned that the *Temporal Lobe* is responsible for hearing and language comprehension. Who was the scientist that discovered this? Similarly, we learned that the *Frontal Lobe* is responsible for language production. Who was the scientist that discovered this?

*Answer:*

**Q1.10.22 Multiple Choice:** In a study by Eisenberger (1990) called the Cyberball study, participants who were excluded from the game showed increased activity in the:

- (A) Amygdala (B) Hippocampus  
(C) Anterior Cingulate Cortex (D) Septal Nucleus

**Q1.10.23 Bonus Fill in the Blank:** Fill out the following table with the correct terms.

Major Divisions	Ventricle	Subdivision	Principal Structures
Forebrain	Lateral	Telencephalon	_____
			_____
			_____
Midbrain	_____	Diencephalon	_____
			_____
			_____
_____	Fourth	Mesencephalon	_____
			_____
			_____
_____	Fourth	Myelencephalon	_____
			_____
			_____

## 1.11 ~~~~~

**Q1.11.1 Multiple Choice:** Which of the following is NOT a typical symptom of Parkinson's Disease?

- (A) Bradykinesia (B) Rigidity (C) Tremors (D) Hyperactivity

**Q1.11.2 Short Answer:** Name one symptom associated with Alzheimer's Disease.

*Answer:*

**Q1.11.3 True or False:** Only retrograde amnesia is observed in Alzheimer's Disease.

*Answer:*