Development of the Central Nervous System Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. The lateral cerebral sulcus is near which brain region?

- **A. Frontal lobe**
- **B. Parietal lobe**
- **C. Occipital lobe**
- **D. Temporal lobe of the cerebral hemisphere**

2. Where are radial glia cells located in the developing nervous system?

- **A. They span most of the wall of the early neural tube**
- **B. They are restricted to the dorsal spinal cord**
- **C. Only at the ventral neural tube**
- **D. Only in the cortex**

3. Afferent means what direction?

- **A. Incoming**
- **B. Outgoing**
- **C. Parallel**
- **D. Emerging**

4. What is the primary function of the corpus callosum?

- **A. Connects the brain to the spinal cord**
- **B. Connects the left and right hemispheres by transferring information between homologous cortical areas**
- **C. Regulates autonomic functions**
- **D. Processes olfactory information**

5. Which two glial cell types form the main CNS glial classes?

- **A. Microglia and Schwann cells**
- **B. Ependymal cells and satellite cells**
- **C. Astrocytes and oligodendrocytes**
- **D. Neurons and oligodendrocytes**

6. During brain vesicle development, the neural canal expands into which structure?

A. Lateral ventricle

B. Fourth ventricle

C. Primitive ventricle

D. Central canal

7. What happens on day 24 of development?

A. The neural plate thickens

B. The cranial neurospore closes

C. The neural tube closes at the cranial end

D. Neural crest cells begin migrating

8. Which structure primarily connects the left and right cerebral hemispheres?

A. Corpus callosum

B. Anterior commissure

C. Pineal gland

D. Fornix

9. Which set correctly lists the three parts referred to as components of spinal nerves?

A. Dorsal root, ventral root and intermediolateral cell column

B. Dorsal root, dorsal horn and intermediolateral cell column

C. Ventral root, ventral horn and dorsal root ganglion

D. Dorsal root ganglion, ventral root and lateral horn

10. Which portion connects the parietal and occipital lobes?

A. Rostrum

B. Genu

C. Splenium

D. Body

Answers

1. D
2. A
3. A
4. B
5. C
6. C
7. B
8. A
9. A
10. C

Explanations

1. The lateral cerebral sulcus is near which brain region?

A. Frontal lobe

B. Parietal lobe

C. Occipital lobe

D. Temporal lobe of the cerebral hemisphere

The lateral cerebral sulcus, or Sylvian fissure, is the large groove that runs along the side of the brain and forms the boundary between the temporal lobe below and the frontal and parietal lobes above. Since the temporal lobe sits directly beneath and adjacent to this fissure, the region near it is the temporal lobe. (The insula lies tucked within the fissure itself.)

2. Where are radial glia cells located in the developing nervous system?

A. They span most of the wall of the early neural tube

B. They are restricted to the dorsal spinal cord

C. Only at the ventral neural tube

D. Only in the cortex

Radial glia act as both neural progenitors and a migration scaffold in early CNS development. Their processes stretch from the ventricular (inner) surface to the outer pial surface, spanning most of the neural tube wall. This arrangement provides a radial path for newly born neurons to migrate to their target positions, so these cells are located across most of the neural tube wall rather than being confined to a single region like the dorsal spinal cord, ventral neural tube, or cortex.

3. Afferent means what direction?

A. Incoming

B. Outgoing

C. Parallel

D. Emerging

Afferent indicates information moving toward the central nervous system. It describes sensory input traveling from receptors (in skin, muscles, organs, eyes, ears, etc.) up to the brain or spinal cord. So signals like touch, pain, temperature, or visual input are carried along afferent pathways to be processed. This is the opposite of efferent, which refers to outgoing signals that carry commands from the CNS to muscles or glands. In neuroanatomy, these pathways are often described as ascending (sensory) versus descending (motor). That makes incoming the best description for afferent.

4. What is the primary function of the corpus callosum?

A. Connects the brain to the spinal cord

B. Connects the left and right hemispheres by transferring information between homologous cortical areas

C. Regulates autonomic functions

D. Processes olfactory information

Interhemispheric communication in the cerebral cortex is the primary concept being tested. The corpus callosum is the largest bundle of commissural fibers that links the left and right hemispheres by transferring information between homologous cortical areas, enabling coordinated processing across both sides of the brain. This sharing supports integrated perception, motor coordination, and higher cognitive tasks that rely on contributions from both hemispheres. It does not connect the brain to the spinal cord (that role involves brainstem and spinal pathways), it does not regulate autonomic functions (primarily controlled by the brainstem and hypothalamus), and it does not process olfactory information (that pathway involves the olfactory bulb and related cortical regions).

5. Which two glial cell types form the main CNS glial classes?

A. Microglia and Schwann cells

B. Ependymal cells and satellite cells

C. Astrocytes and oligodendrocytes

D. Neurons and oligodendrocytes

The main concept is identifying the two glial cell types that form the major glial populations in the central nervous system. In the CNS, the two principal glial classes are astrocytes and oligodendrocytes. Astrocytes are versatile support cells that help maintain the brain's environment: they regulate extracellular ion balance, clear neurotransmitters, provide metabolic support to neurons, and contribute to the blood-brain barrier and tissue repair after injury. Oligodendrocytes are the myelinating cells of the CNS; each oligodendrocyte extends multiple processes that wrap around several axons to form myelin sheaths, which speed up nerve conduction. Other glial types exist in the CNS, such as microglia, which act as resident immune cells, and ependymal cells, which line the ventricles and participate in CSF dynamics. Schwann cells and satellite cells are glia of the peripheral nervous system, not the CNS. Neurons are not glial cells. Therefore, astrocytes and oligodendrocytes constitute the main CNS glial classes.

6. During brain vesicle development, the neural canal expands into which structure?

A. Lateral ventricle

B. Fourth ventricle

C. Primitive ventricle

D. Central canal

As brain vesicles form, the space inside the developing neural tube—the neural canal—expands to create the brain's first ventricular cavity, called the primitive ventricle. This primitive ventricle is the starting chamber that later differentiates into the full ventricular system: the lateral ventricles form from the telencephalic part of the forebrain, the third ventricle from the diencephalon, and the fourth ventricle from the hindbrain region. The central canal remains as the continuous canal through the spinal cord and brainstem, but the initial expansion of the neural canal is into the primitive ventricle.

7. What happens on day 24 of development?

A. The neural plate thickens

B. The cranial neurospore closes

C. The neural tube closes at the cranial end

D. Neural crest cells begin migrating

Neurulation is the process that forms the neural tube from the neural plate. The cranial neuropore is the anterior opening of that tube. By about day 24 of human development, this opening has closed, sealing the head portion of the neural tube. This closure is crucial because it prevents neural tissue from remaining exposed and sets up proper brain development; if it fails, severe neural tube defects like anencephaly can result. After this, the neural tube will finish closing along its length in the following days, with the caudal end closing a bit later around day 27–28. The neural plate thickens earlier during gastrulation and early neurulation, and neural crest cells begin migrating after the neural tube has formed and closed, so those events don't occur exactly on day 24.

8. Which structure primarily connects the left and right cerebral hemispheres?

A. Corpus callosum

B. Anterior commissure

C. Pineal gland

D. Fornix

Interhemispheric communication is carried mainly by a large white-matter bridge that links the two cerebral hemispheres. This structure, the corpus callosum, contains hundreds of millions of axons that cross the midline to connect corresponding areas of the left and right cortex, allowing coordinated processing and integration of information across both sides of the brain. Because of its size and breadth, it serves as the primary conduit for communication between hemispheres, enabling activities that require bilateral coordination. The anterior commissure also crosses the midline but is much smaller and mainly connects parts of the temporal lobes and some olfactory pathways, not the broad cortical connections the corpus callosum provides. The pineal gland is an endocrine gland located in the epithalamus and doesn't function as a bridge between hemispheres. The fornix is part of the limbic system, carrying signals from the hippocampus to other limbic structures, and it doesn't primarily connect the two hemispheres.

9. Which set correctly lists the three parts referred to as components of spinal nerves?

A. Dorsal root, ventral root and intermediolateral cell column

B. Dorsal root, dorsal horn and intermediolateral cell column

C. Ventral root, ventral horn and dorsal root ganglion

D. Dorsal root ganglion, ventral root and lateral horn

The question is asking which structures are associated with spinal nerves in terms of their formation and autonomic connections. Spinal nerves are formed by the union of a dorsal root and a ventral root. The intermediolateral cell column is the region in the spinal cord (thoracic and upper lumbar) containing the cell bodies of preganglionic sympathetic neurons; their axons travel out with the ventral root to join the spinal nerve and reach sympathetic ganglia and targets. So, listing the dorsal root, the ventral root, and the intermediolateral cell column captures the key components linked to spinal nerves: the two roots that form the nerve and the autonomic input that travels with it. The other options mix structures that are within the spinal cord itself (like the dorsal/ventral horns or dorsal root ganglion) and aren't described as the triplet components of the spinal nerve.

10. Which portion connects the parietal and occipital lobes?

A. Rostrum

B. Genu

C. Splenium

D. Body

The posterior portion of the corpus callosum, known as the splenium, serves as the main bridge linking the back regions of the two hemispheres. Its fibers connect the occipital cortices across sides and, to include posterior parietal areas, enabling cross-hemispheric communication for visual processing and spatial integration. A helpful way to picture this is the forceps major, the bundle of fibers passing through the splenium to connect the occipital lobes. The other parts of the corpus callosum have different primary targets: the front end (genu) connects frontal regions, the middle portion (body) mostly links frontal and parietal areas, and the rostrum sits anteriorly connecting more ventral/frontal regions.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://devofcentralnervoussystem.examzify.com

We wish you the very best on your exam journey. You've got this!