DEVELOPMENT OF THE CENTRAL NERVOUS SYSTEM PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://devofcentralnervoussystem.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 15

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. Which region connects the frontal lobes?

A. Splenium

B. Genu

C. Body

D. Rostrum

2. Where is the mesencephalic flexure located?

A. Hindbrain region

B. Midbrain region

C. Forebrain region

D. Spinal cord

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

A. Lateral ventricle

B. Fourth ventricle

C. Primitive ventricle

D. Central canal

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. Exposure to valproic acid during pregnancy increases the risk of which CNS abnormalities?

A. Neural tube defects and other CNS malformations

B. Increased brain size

C. Enhanced neuronal migration

D. Decreased CSF production

SAMPLE

6. Which process is most directly affected by damage to the corpus callosum?

A. Autonomic regulation

B. Intrahemispheric processing within a single hemisphere

C. Interhemispheric transfer of information between homologous cortical areas

D. Cerebellar motor coordination

7. The enteric nervous system is part of which broader nervous system?

A. Peripheral nervous system

B. Central nervous system

C. Autonomic nervous system

D. Somatic nervous system

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

A. Corpus callosum

B. Anterior commissure

C. Pineal gland

D. Fornix

9. Tangential migration is a mode of neuronal movement involved in cortical development. Which option correctly identifies this migration?

A. Radial migration

B. Tangential migration

C. Lateral migration

D. Apical migration

10. Holoprosencephaly is associated with defects in signaling of which developmental pathway?

A. WNT

B. NOTCH

C. SHH

D. FGF

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Which region connects the frontal lobes?

A. Splenium

B. Genu

C. Body

D. Rostrum

Interhemispheric communication between the frontal lobes is carried by fibers in the front part of the corpus callosum, the genu. This bend in the corpus callosum contains callosal fibers that connect the left and right frontal cortices, supporting coordinated frontal functions such as planning and executive control across both hemispheres. The posterior end—the splenium—connects the occipital lobes, while the body links more posterior areas like the parietal lobes. The rostrum is the anterior extension with ventral connections, but the direct bridge between the frontal lobes is through the genu.

2. Where is the mesencephalic flexure located?

A. Hindbrain region

B. Midbrain region

C. Forebrain region

D. Spinal cord

The mesencephalic flexure is located in the midbrain region (the mesencephalon) during neural development. It's an internal bend that forms within the midbrain, helping to shape the brainstem and position the forebrain above and the hindbrain below as the neural tube grows. The name itself—mesencephalic—points to the midbrain, distinguishing it from flexures in the hindbrain (like the pontine flexure) or at the brain–spinal cord junction.

3. 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.

SAMPLE

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. Exposure to valproic acid during pregnancy increases the risk of which CNS abnormalities?

A. Neural tube defects and other CNS malformations

B. Increased brain size

C. Enhanced neuronal migration

D. Decreased CSF production

Valproic acid is a teratogen that disrupts early CNS development, especially during the first month when the neural tube is forming and closing. Exposure at this critical time raises the risk of neural tube defects, such as spina bifida, along with other CNS malformations. The mechanism involves interference with folate metabolism and inhibition of histone deacetylases, which alters gene expression needed for normal neurulation. The other described effects—increased brain size, enhanced neuronal migration, or decreased CSF production—aren't typical outcomes of valproate exposure, making neural tube defects the best answer.

6. Which process is most directly affected by damage to the corpus callosum?

A. Autonomic regulation

B. Intrahemispheric processing within a single hemisphere

C. Interhemispheric transfer of information between homologous cortical areas

D. Cerebellar motor coordination

Here the key issue is how the brain connects its two halves. The corpus callosum is the main highway that links homologous cortical areas in the left and right hemispheres, allowing rapid exchange of sensory, motor, and higher-order information. When this bridge is damaged, the most direct effect is a disruption of interhemispheric transfer of information, so signals that start in one hemisphere may not effectively reach the other to influence perception or action. Autonomic regulation is governed mainly by brainstem and hypothalamic systems, not by callosal connections. Cerebellar motor coordination relies on cerebellar circuits and brainstem pathways rather than cross-hemisphere cortical communication. Processing within a single hemisphere can remain relatively intact, but coordinating activity across both sides becomes impaired.

SAMPLE

7. The enteric nervous system is part of which broader nervous system?

A. Peripheral nervous system

B. Central nervous system

C. Autonomic nervous system

D. Somatic nervous system

The enteric nervous system is part of the peripheral nervous system. It sits in the walls of the gastrointestinal tract as a network of neurons—the myenteric and submucosal plexuses—that regulate gut motility and secretion. Its neurons are outside the brain and spinal cord, which is the defining feature of the peripheral nervous system. It can operate autonomously to coordinate local gut reflexes, yet it also communicates with the brain and spinal cord via autonomic pathways, linking it to the autonomic nervous system. This distinguishes it from the central nervous system, and its everyday role is quite different from the somatic system, which handles voluntary movement and conscious sensation.

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. Tangential migration is a mode of neuronal movement involved in cortical development. Which option correctly identifies this migration?

A. Radial migration

B. Tangential migration

C. Lateral migration

D. Apical migration

Neuronal movement in cortical development happens mainly in two modes: radial and tangential. Radial migration moves neurons outward from the ventricular zone toward the cortical surface along radial glial fibers, perpendicular to the surface. Tangential migration, by contrast, moves neurons parallel to the surface, traveling along the plane of the cortex. The described process is tangential migration because it involves movement along the cortical plane, a pattern typical for interneurons traveling from subcortical regions (like the ganglionic eminences) into the cortex before they settle into their final layers. Radial migration is the outward, perpendicular path to form cortical layers, while apical migration would refer to movement toward the ventricular surface and isn't the same as tangential movement. Lateral migration isn't the standard term used for this cortical movement.

SAMPLE

10. Holoprosencephaly is associated with defects in signaling of which developmental pathway?

A. WNT

B. NOTCH

C. SHH

D. FGF

Sonic Hedgehog signaling is the key driver of ventral forebrain patterning and midline separation during early brain development. SHH acts as a critical morphogen, creating a gradient that instructs neural progenitors to adopt proper ventral identities and drives the splitting of the forebrain vesicle into two hemispheres. When SHH signaling is disrupted, the forebrain fails to divide correctly, producing holoprosencephaly along a spectrum from severe (alobar) to milder (lobar) forms, often with facial midline defects like cyclopia in the most severe cases. Other pathways like WNT, NOTCH, and FGF play important roles in various aspects of CNS development, but holoprosencephaly is most strongly linked to defects in SHH signaling.

SAMPLE

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!

SAMPLE