

PHARMACOLOGY III – CNS MODULE PRACTICE EXAM (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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THE FULL VERSION STUDY GUIDE**

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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

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- 1. What type of drugs can cross the blood-brain barrier to be converted into dopamine?**
 - A. Beta agonists
 - B. Dopaminergics
 - C. Adrenergics
 - D. Cholinergics

- 2. In myasthenia gravis, what is the impact on muscle contractions due to ACh receptor attack?**
 - A. Increased muscle strength
 - B. Effective muscle contraction
 - C. Ineffective muscle contraction
 - D. Muscle hypertrophy

- 3. At what age is valproate contraindicated?**
 - A. 1 year and younger
 - B. 2 years and younger
 - C. 3 years and younger
 - D. 5 years and younger

- 4. What seizure type is characterized by muscle stiffness?**
 - A. Focal seizures
 - B. Myoclonal seizures
 - C. Tonic seizure
 - D. Clonic seizures

- 5. Which of the following statements about sedative-hypnotics is true?**
 - A. They primarily target serotonin receptors
 - B. They may cause dependence with long-term use
 - C. They are used only for anxiety treatment
 - D. All are equally effective for sleep induction

6. What is an example of an MAO-B inhibitor given to newly diagnosed Parkinson's patients?
- A. Rasagiline
 - B. Selegiline
 - C. Entacapone
 - D. Amantadine
7. What is the non-flammable alternative to cyclopropane?
- A. Halothane
 - B. Enflurane
 - C. Sevoflurane
 - D. Desflurane
8. Which of the following is an atypical antidepressant?
- A. Fluoxetine
 - B. Duloxetine
 - C. Cariprazine
 - D. Nortriptyline
9. What is the half-life of zolpidem tartrate?
- A. 0.5-3 hours
 - B. 1.4-8.4 hours
 - C. 2-6 hours
 - D. 3-7 hours
10. What method is used to deliver general anesthesia through gas or volatile liquids?
- A. Intravenous administration
 - B. Inhalation
 - C. Topical application
 - D. Local infiltration

Answers

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

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Explanations

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1. What type of drugs can cross the blood-brain barrier to be converted into dopamine?

- A. Beta agonists
- B. Dopaminergics**
- C. Adrenergics
- D. Cholinergics

Dopaminergics are the type of drugs that can cross the blood-brain barrier and be converted into dopamine. These drugs typically include precursors to dopamine, such as levodopa (L-DOPA), which is used in the treatment of Parkinson's disease. Once in the brain, these precursors are converted into dopamine, effectively replenishing the depleted neurotransmitter levels in conditions where dopamine production is inadequate. The blood-brain barrier is a selective permeability barrier that protects the brain from potentially harmful substances while allowing essential nutrients and certain drugs to pass. Dopaminergic drugs are specifically designed to penetrate this barrier, focusing on restoring dopamine levels to alleviate symptoms associated with dopamine deficiency. The other drug classes mentioned do not have this capability in the context of dopamine production. Beta agonists primarily target the adrenergic receptors and are generally not involved in dopamine synthesis. Adrenergics are medications that act on the adrenergic receptors and do not convert to dopamine. Cholinergics focus on acetylcholine transmission and also do not influence dopamine directly. Thus, dopaminergics are the only category among the choices that directly relate to the synthesis and replenishment of dopamine in the central nervous system.

2. In myasthenia gravis, what is the impact on muscle contractions due to ACh receptor attack?

- A. Increased muscle strength
- B. Effective muscle contraction
- C. Ineffective muscle contraction**
- D. Muscle hypertrophy

In myasthenia gravis, the body's immune system mistakenly produces antibodies that attack nicotinic acetylcholine receptors (AChR) at the neuromuscular junction. This attack leads to a decrease in the number of functional ACh receptors available for binding acetylcholine, which is essential for muscle contraction. As a result, the binding of acetylcholine to the receptor is reduced, leading to a diminished response from the muscle fibers. Consequently, this impairment causes ineffective muscle contractions, as the signals sent from motor neurons cannot result in proper muscle activation due to the lack of adequate receptor engagement. Over time, patients may experience muscle weakness that worsens with activity and improves with rest, underscoring the impact of the antibody-mediated attack on muscle contraction efficacy. In contrast, options suggesting increased muscle strength, effective muscle contraction, or muscle hypertrophy do not align with the pathological basis of myasthenia gravis, as the disease fundamentally decreases muscle strength and coordination due to the compromised signaling at the neuromuscular junction.

3. At what age is valproate contraindicated?

- A. 1 year and younger
- B. 2 years and younger**
- C. 3 years and younger
- D. 5 years and younger

Valproate is contraindicated in children aged 2 years and younger primarily due to the risk of serious adverse effects, including hepatotoxicity and pancreatitis, which are more pronounced in this age group. Research indicates that the liver is particularly vulnerable in very young children, and the metabolism of valproate can be erratic, leading to unpredictable and potentially dangerous side effects. In addition to the hepatic risks, there is an increased risk of developmental issues and cognitive impairment associated with the use of valproate in very young children, especially in those with certain underlying conditions like mitochondrial disorders. This age group is still developing, and the neurotoxic potential of valproate can have lasting implications. Choosing an age older than 2 may suggest that the medication could be used more safely, though it's important to weigh the risks and benefits even at those ages.

4. What seizure type is characterized by muscle stiffness?

- A. Focal seizures
- B. Myoclonal seizures
- C. Tonic seizure**
- D. Clonic seizures

The type of seizure characterized by muscle stiffness is indeed tonic seizures. During a tonic seizure, the person experiences a sudden onset of stiffening of the muscles, which can lead to a loss of posture and may cause the individual to fall if they are standing. This stiffness predominantly affects the muscles in the back, legs, and arms, resulting in a rigid body posture. Tonic seizures are a specific type of generalized seizure, meaning they affect both hemispheres of the brain simultaneously. They typically last for a few seconds to a minute. This characteristic of sustained muscle contractions differentiates tonic seizures from other types. For example, clonic seizures involve rhythmic jerking movements, while focal seizures can manifest in various ways depending on the area of the brain affected and may not involve stiffness. Myoclonic seizures consist of brief, shock-like jerks of a muscle or group of muscles, not a sustained stiffness. Understanding the distinct features of different seizure types is crucial for accurate diagnosis and treatment, which is why identifying the tonic seizure's hallmark symptom of muscle stiffness is essential.

5. Which of the following statements about sedative-hypnotics is true?

- A. They primarily target serotonin receptors
- B. They may cause dependence with long-term use**
- C. They are used only for anxiety treatment
- D. All are equally effective for sleep induction

The statement regarding sedative-hypnotics potentially causing dependence with long-term use is indeed valid. Sedative-hypnotics, which include various classes of medications such as benzodiazepines and barbiturates, are often prescribed to manage conditions like anxiety, insomnia, and other sleep disorders. When these medications are used over an extended period, especially in higher doses, they can lead to physical and psychological dependence. This means that patients may find themselves requiring higher doses to achieve the same effect or may experience withdrawal symptoms if they stop taking the medication suddenly. As for the other statements, sedative-hypnotics do not primarily target serotonin receptors; rather, they mainly affect gamma-aminobutyric acid (GABA) receptors, which are the primary inhibitory neurotransmitter systems in the brain. While sedative-hypnotics can help treat anxiety, describing their usage as "only" for anxiety treatment is misleading, as these drugs are also widely utilized for sleep induction and other conditions. Moreover, not all sedative-hypnotics are equally effective for sleep induction, as their pharmacokinetic profiles greatly differ, leading to variations in how quickly they induce sleep, their duration of action, and overall effectiveness in managing sleep disorders.

6. What is an example of an MAO-B inhibitor given to newly diagnosed Parkinson's patients?

- A. Rasagiline
- B. Selegiline**
- C. Entacapone
- D. Amantadine

In the context of Parkinson's disease treatment, Selegiline is an example of a monoamine oxidase type B (MAO-B) inhibitor that is often used for newly diagnosed patients. MAO-B inhibitors work by preventing the breakdown of dopamine in the brain, which can help alleviate the motor symptoms associated with Parkinson's disease. Selegiline specifically inhibits the enzyme monoamine oxidase B, which is more selective for the breakdown of dopamine compared to MAO-A. This selectivity is beneficial as it helps to enhance dopaminergic activity without significantly affecting other neurotransmitters that might be metabolized by MAO-A. By increasing dopamine levels, Selegiline can help improve motor function and may delay the need for more potent treatments like levodopa in early-stage Parkinson's. Rasagiline is another MAO-B inhibitor and is also used in the treatment of Parkinson's disease, but in this case, Selegiline was chosen as the best-known early treatment option. Entacapone is a COMT inhibitor rather than an MAO-B inhibitor, while Amantadine is primarily an antiviral that is also used for Parkinson's symptoms but works through a different mechanism.

7. What is the non-flammable alternative to cyclopropane?

- A. Halothane**
- B. Enflurane
- C. Sevoflurane
- D. Desflurane

The correct choice, Halothane, is recognized as a non-flammable inhalational anesthetic agent that served as an alternative to cyclopropane. Cyclopropane, while effective, was highly flammable and posed significant risks during administration. Halothane provided an effective anesthetic profile while being relatively safer in terms of flammability. Other agents in the list, such as Enflurane, Sevoflurane, and Desflurane, are also non-flammable anesthetics and have their own attributes. Enflurane is similar in some respects to Halothane but is not as widely used; it has a higher potential for causing seizure activity in certain patients. Sevoflurane is favored for its rapid onset and offset properties, making it popular in outpatient settings, while Desflurane is known for its low blood solubility leading to quick recovery. However, Halothane historically stands out for its non-flammability as a more traditional alternative to cyclopropane, especially during the era when cyclopropane was more commonly used.

8. Which of the following is an atypical antidepressant?

- A. Fluoxetine
- B. Duloxetine
- C. Cariprazine**
- D. Nortriptyline

Cariprazine is classified as an atypical antidepressant because it acts primarily as a partial agonist at dopamine D2 and D3 receptors, along with antagonistic properties at serotonin receptors (5-HT1A). This unique mechanism differentiates it from the more traditional antidepressants, which typically target serotonin or norepinephrine pathways. Atypical antidepressants often have a diverse pharmacological profile and can also address various aspects of mood disorders that are not fully captured by standard antidepressant medications. Cariprazine's mechanism of action allows it to be effective for treating depression, particularly in patients who may not respond well to conventional antidepressants. In contrast, fluoxetine and duloxetine belong to the selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) categories, respectively. These drugs predominantly increase serotonin and/or norepinephrine levels in the synaptic cleft, which is characteristic of mainstream antidepressants. Nortriptyline is a tricyclic antidepressant (TCA) that also primarily affects the reuptake of norepinephrine and serotonin but does so in a less targeted manner, often leading to a broader range of side effects. This distinction highlights car

9. What is the half-life of zolpidem tartrate?

- A. 0.5-3 hours
- B. 1.4-8.4 hours**
- C. 2-6 hours
- D. 3-7 hours

Zolpidem tartrate, a medication commonly used for the treatment of insomnia, has a half-life that is generally reported to range from approximately 1.4 to 8.4 hours in healthy adults. This range reflects the time it takes for the concentration of the drug in the bloodstream to decrease by half, which is crucial for understanding how long its sedative effects may last and when it might be necessary to take another dose or when a patient might need to wait before engaging in activities that require alertness. The duration of the drug's action is influenced by various factors, including individual metabolism, age, liver function, and other concomitant medications. Understanding this pharmacokinetic parameter helps healthcare providers assess how to best utilize zolpidem in a treatment regimen, including considerations around safety, efficacy, and the potential for side effects.

10. What method is used to deliver general anesthesia through gas or volatile liquids?

- A. Intravenous administration
- B. Inhalation**
- C. Topical application
- D. Local infiltration

The method used to deliver general anesthesia through gas or volatile liquids is inhalation. This approach allows for rapid absorption of anesthetic agents into the bloodstream via the lungs. When a patient inhales a gaseous anesthetic or volatile liquid, the anesthetic enters the alveoli of the lungs and is then distributed throughout the body via the circulatory system. Inhalation delivery is advantageous because it provides precise control over the depth of anesthesia and allows for quick adjustments to respond to the needs of the patient during a surgical procedure. Additionally, the pharmacokinetics of inhalational agents often allows for rapid recovery from anesthesia once the administration is discontinued. Other methods, such as intravenous administration, may deliver anesthetics directly into the bloodstream, but they do not typically utilize gases or volatile liquids. Topical application and local infiltration are not suitable for general anesthesia, as they primarily provide localized analgesia and sedation rather than the systemic effects required for general anesthesia.

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://pharmacology3cns.examzify.com>

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

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