

PHARMACY SCIENCE AND CALCULATIONS SESSIONS 1-6 PRACTICE TEST (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. A solution contains 10% w/v; how many mg per mL does this concentration correspond to?**
 - A. 50 mg/mL
 - B. 10 mg/mL
 - C. 1000 mg/mL
 - D. 100 mg/mL
- 2. Where are intradermal injections delivered?**
 - A. Into the fat layer under the skin
 - B. Into the dermis, just below the epidermis
 - C. Deep into the skeletal muscle
 - D. Into the large proximal veins
- 3. Which method administers medication to the stomach via a tube through the nose?**
 - A. Nasogastric tube administration
 - B. Oral tablets
 - C. Rectal suppositories
 - D. Intramuscular injections
- 4. What is the parenteral route defined as?**
 - A. By swallowing the drug
 - B. By inhaling the drug
 - C. By topical application
 - D. By injecting the drug
- 5. A dilution will produce 200 mL of a solution at 3 mg/mL using a stock solution of 10 mg/mL. How many milliliters of stock solution are needed?**
 - A. 180 mL
 - B. 60 mL
 - C. 30 mL
 - D. 10 mL

- 6. Which term describes a generic product with the same ingredients, strength, and dosage as the brand-name drug?**
- A. Ordinary Generic Product
 - B. Brand-name Drug
 - C. Prodrug
 - D. Authorized Generic Product
- 7. A 300 mL bag of 0.9% saline contains how many grams of NaCl?**
- A. 1.8 g
 - B. 2.25 g
 - C. 3.0 g
 - D. 2.7 g
- 8. Which route is commonly used for TB skin testing?**
- A. Intramuscular
 - B. Intravenous
 - C. Intradermal
 - D. Sublingual
- 9. What is the correct order of the drug approval process?**
- A. Pre-Clinical (animals), Clinical (Phases I-III), Post Marketing (Phase IV)
 - B. Clinical, Pre-Clinical, Post Marketing
 - C. Pre-Clinical, Post Marketing, Clinical
 - D. Market, IND, NDA
- 10. A nurse needs to administer 60 units of insulin in a syringe labeled U-100 (100 units/mL). How many milliliters should be drawn?**
- A. 0.75 mL
 - B. 0.6 mL
 - C. 0.5 mL
 - D. 0.04 mL

Answers

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

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Explanations

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1. A solution contains 10% w/v; how many mg per mL does this concentration correspond to?

- A. 50 mg/mL
- B. 10 mg/mL
- C. 1000 mg/mL
- D. 100 mg/mL**

Understanding how percent weight/volume translates to concentration is the first step. A 10% w/v solution means 10 g of solute in every 100 mL of solution. To express this in mg per mL, convert grams to milligrams and divide by the volume in mL. So, 10 g equals 10,000 mg. 10,000 mg in 100 mL gives $10,000 \text{ mg} / 100 \text{ mL} = 100 \text{ mg per mL}$. Therefore, the concentration is 100 mg/mL. This corresponds to 10% w/v because 100 mg/mL multiplied by 100 mL equals 10,000 mg, i.e., 10 g. For reference, other values would map to different percentages (e.g., 50 mg/mL is 5 g per 100 mL, or 5% w/v).

2. Where are intradermal injections delivered?

- A. Into the fat layer under the skin
- B. Into the dermis, just below the epidermis**
- C. Deep into the skeletal muscle
- D. Into the large proximal veins

Intradermal injections are placed into the dermis, the skin layer just beneath the outermost epidermis. This thin, highly vascular layer is rich in antigen-presenting cells, which is why it's used for tests like skin tests and for delivering very small volumes of solution. Depositing into the fat under the skin would be a subcutaneous injection, going deeper into muscle would be intramuscular, and injecting into a vein would be intravenous. So the dermis, just below the epidermis, is the correct site for intradermal administration. A tiny amount with a fine needle often produces a small wheal, confirming proper placement.

3. Which method administers medication to the stomach via a tube through the nose?

- A. Nasogastric tube administration
- B. Oral tablets
- C. Rectal suppositories**
- D. Intramuscular injections

Delivering medication to the stomach via a tube that goes in through the nose is nasogastric tube administration. An NG tube is threaded through the nostril, down the esophagus, and into the stomach, allowing liquids or medications to be given directly into the stomach when swallowing isn't possible or practical. This route is distinct from oral tablets, which must be swallowed and dissolve in the GI tract; rectal suppositories, which are inserted into the rectum for absorption; and intramuscular injections, which deliver medication into muscle tissue for systemic absorption.

4. What is the parenteral route defined as?

- A. By swallowing the drug
- B. By inhaling the drug
- C. By topical application
- D. By injecting the drug**

Parenteral administration means delivering a drug by injection, bypassing the gastrointestinal tract. This includes intravenous, intramuscular, and subcutaneous routes, and can also encompass other injected methods. Because the drug goes directly into the tissues or bloodstream, it often gives a rapid or more controlled onset and is used for medications that are poorly absorbed orally or degraded in the GI tract. The other options involve swallowing (oral/enteral), inhaling (inhalation), or applying to the skin (topical), which do not fit the parenteral definition.

5. A dilution will produce 200 mL of a solution at 3 mg/mL using a stock solution of 10 mg/mL. How many milliliters of stock solution are needed?

- A. 180 mL
- B. 60 mL**
- C. 30 mL
- D. 10 mL

The key idea is that the total amount of drug stays the same when you dilute. Use $C_1V_1 = C_2V_2$ (equivalently, final concentration times final volume equals the amount of drug you need). First, find how much drug is required in the final solution: $3 \text{ mg/mL} \times 200 \text{ mL} = 600 \text{ mg}$ of drug. From the stock solution, you have 10 mg of drug per mL. To get 600 mg, you need $600 \text{ mg} \div 10 \text{ mg/mL} = 60 \text{ mL}$ of stock solution. So, you would use 60 mL of the stock solution and dilute it up to 200 mL total. This gives a final concentration of $600 \text{ mg}/200 \text{ mL} = 3 \text{ mg/mL}$.

6. Which term describes a generic product with the same ingredients, strength, and dosage as the brand-name drug?

- A. Ordinary Generic Product**
- B. Brand-name Drug
- C. Prodrug
- D. Authorized Generic Product

The main idea is that a generic product is designed to be interchangeable with the brand-name drug because it has the same active ingredient in the same amount and dosage form, and it must be demonstrated to be bioequivalent. When a generic is approved, it means that it delivers the same amount of drug into the bloodstream in the same time frame as the brand-name product, so it should produce the same therapeutic effect. This is why generic products are typically less expensive—the initial development costs are not repeated. In the given options, the ordinary generic product describes this general concept: a non-brand drug that uses the same active ingredient, strength, dosage form, and route as the brand-name drug. Prodrugs are compounds that become active only after metabolism, so they're not the same as the brand-name product. The brand-name drug is the original product, not a generic. An authorized generic product is a specific case where the brand company sells a generic version, but the broad, standard term for a generic that matches the brand-name product is the ordinary generic product.

7. A 300 mL bag of 0.9% saline contains how many grams of NaCl?

- A. 1.8 g
- B. 2.25 g
- C. 3.0 g
- D. 2.7 g**

0.9% is a weight/volume concentration meaning 0.9 g of NaCl in every 100 mL of solution. For 300 mL, scale up by a factor of 3: $0.9 \text{ g} \times 3 = 2.7 \text{ g}$. (Equivalently, $0.009 \text{ g/mL} \times 300 \text{ mL} = 2.7 \text{ g}$.) So the bag contains 2.7 g of NaCl.

8. Which route is commonly used for TB skin testing?

- A. Intramuscular
- B. Intravenous
- C. Intradermal**
- D. Sublingual

TB skin testing relies on delivering antigen into the skin so that dermal immune cells can recognize it and mount a local delayed-type hypersensitivity response. Injecting a tiny amount of purified protein derivative into the dermis places the antigen where Langerhans cells and other antigen-presenting cells can pick it up and present it to T cells, producing a small raised wheal if the person has been exposed to TB. This intradermal route is essential because deeper injections (into muscle or veins) or mucosal routes do not produce the same localized dermal reaction and can lead to unreliable results. A subcutaneous, intramuscular, intravenous, or sublingual approach would bypass the dermal immune environment that the test relies on, so the characteristic induration is not reliably generated. Hence, intradermal administration is the method used for TB skin testing.

9. What is the correct order of the drug approval process?

- A. Pre-Clinical (animals), Clinical (Phases I-III), Post Marketing (Phase IV)**
- B. Clinical, Pre-Clinical, Post Marketing
- C. Pre-Clinical, Post Marketing, Clinical
- D. Market, IND, NDA

Drug development follows a clear progression from lab to patient to real-world monitoring. It starts with preclinical studies in animals to gather data on safety, toxicology, and how the drug behaves in the body. If that data looks favorable, an IND is filed to allow testing in humans, and clinical testing proceeds in phases I through III to evaluate safety, dosage, and efficacy. After successful trials and regulatory review, the drug is approved and marketed, with ongoing post-marketing surveillance in phase IV to detect rare or long-term adverse effects. This sequence—pre-clinical, clinical (phases I–III), then post-marketing—best reflects the actual development path. The other choices mix up the order or introduce terms that are regulatory steps rather than stages of development (for example, testing after market launch or implying market before approval).

10. A nurse needs to administer 60 units of insulin in a syringe labeled U-100 (100 units/mL). How many milliliters should be drawn?

A. 0.75 mL

B. 0.6 mL

C. 0.5 mL

D. 0.04 mL

The key idea is that a U-100 insulin syringe has 100 units per milliliter. To find the volume for a given number of units, divide the units by 100. $60 \text{ units} \div 100 \text{ units/mL} = 0.6 \text{ mL}$. So, 0.6 mL should be drawn. For context, 0.75 mL would deliver 75 units, 0.5 mL would deliver 50 units, and 0.04 mL would deliver 4 units, illustrating how the volume maps to units on a U-100 syringe.

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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://pharmscicalcsesh1to6.examzify.com>

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

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