

# Bishop Clinical Chemistry Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

**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

<b>Copyright</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>How to Use This Guide</b> .....	<b>4</b>
<b>Questions</b> .....	<b>5</b>
<b>Answers</b> .....	<b>8</b>
<b>Explanations</b> .....	<b>10</b>
<b>Next Steps</b> .....	<b>16</b>

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.

# 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

SAMPLE

- 1. Hyperkalemia may be caused by each of the following EXCEPT**
  - A. Alkalosis**
  - B. Acute or chronic renal failure**
  - C. Hypoaldosteronism**
  - D. Sample hemolysis**
  
- 2. Salicylic acid in a patient with gastric achlorhydria is given a standard dose. Which is the predicted serum concentration relative to normal?**
  - A. Less than expected**
  - B. Greater than expected**
  - C. No change**
  - D. Absorbed completely**
  
- 3. Increased intravascular hemolysis is indicated by a decrease in which of the following?**
  - A. Haptoglobin**
  - B. Methemoglobin**
  - C. Methemalbumin**
  - D. Hemopexin**
  
- 4. In reference interval transference studies, what is the primary purpose?**
  - A. Verify a reference interval**
  - B. Establish a reference interval**
  - C. Require as many as 120 normal donors**
  - D. Use a 68% reference limit for acceptability**
  
- 5. Using the Henderson-Hasselbalch equation, give the ratio of salt to weak acid for a Veronal buffer with apH of 8.6 and apKa of 7.43.**
  - A. 14.7/1**
  - B. 1/8.6**
  - C. 1.17/1**
  - D. 1/4.3**

- 6. Which immunoglobulin is provided to a newborn by the mother?**
- A. IgG**
  - B. IgD**
  - C. IgM**
  - D. IgA**
- 7. Several enzymatic triglyceride methods measure the production or consumption of which substance?**
- A. NADH**
  - B. Fatty acids**
  - C. Glycerol**
  - D. Diacetyl lutidine**
- 8. Given the lipid results Total cholesterol 400 mg/dL; triglycerides 300 mg/dL; HDL-C 100 mg/dL, what is the LDL-C?**
- A. 240 mg/dL**
  - B. 160 mg/dL**
  - C. 200 mg/dL**
  - D. 300 mg/dL**
- 9. In the context of OGTT timing, which combination of measurements is described by the 2012 ADA guidelines?**
- A. Fasting, 1 hour, and 2 hours**
  - B. Fasting, 60 minutes, and 120 minutes**
  - C. 30, 60, 90, and 120 minutes**
  - D. Fasting, 30, 60, 90, and 120 minutes**
- 10. Of the following statements concerning procainamide, which is TRUE?**
- A. The primary toxicity of procainamide is bone marrow suppression.**
  - B. Procainamide is an antibiotic.**
  - C. N-Acetylprocainamide is an active product of procainamide metabolism.**
  - D. All of these are true.**

## Answers

SAMPLE

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

SAMPLE

## **Explanations**

SAMPLE

**1. Hyperkalemia may be caused by each of the following EXCEPT**

- A. Alkalosis**
- B. Acute or chronic renal failure**
- C. Hypoaldosteronism**
- D. Sample hemolysis**

Hyperkalemia occurs when potassium is not adequately excreted or is shifted from inside cells into the extracellular space. Acute or chronic renal failure reduces the kidneys' ability to excrete potassium, leading to accumulation. Hypoaldosteronism decreases potassium secretion in the distal nephron, also raising serum potassium. Hemolyzed samples release potassium from red blood cells, producing a falsely elevated measured value. Alkalosis, on the other hand, drives potassium into cells, reducing serum potassium and tending toward hypokalemia, not hyperkalemia. So alkalosis is not a cause of hyperkalemia.

**2. Salicylic acid in a patient with gastric achlorhydria is given a standard dose. Which is the predicted serum concentration relative to normal?**

- A. Less than expected**
- B. Greater than expected**
- C. No change**
- D. Absorbed completely**

The amount of salicylic acid that shows up in the blood after a standard dose depends on how much of the drug is in the non-ionized form, which is the form that crosses membranes readily. Salicylic acid is a weak acid with a pKa around 3, so in the highly acidic stomach most of it is non-ionized and absorbed well. If gastric pH is raised (gastric achlorhydria), the equilibrium shifts toward the ionized form, which does not cross membranes as easily. That reduces absorption and lowers the resulting serum concentration compared with normal gastric acidity. So the predicted serum concentration is less than expected.

**3. Increased intravascular hemolysis is indicated by a decrease in which of the following?**

- A. Haptoglobin**
- B. Methemoglobin**
- C. Methemalbumin**
- D. Hemopexin**

Haptoglobin is the first-line scavenger of free hemoglobin in the plasma. When intravascular hemolysis occurs, large amounts of hemoglobin spill into the bloodstream. Haptoglobin binds this free hemoglobin to form stable haptoglobin-hemoglobin complexes that are cleared by the liver. This binding capacity is limited, so as hemolysis continues, the circulating haptoglobin becomes exhausted, leading to a decreased haptoglobin level. That drop is a hallmark of intravascular destruction. The other substances aren't as reliable indicators in this context. Methemoglobin is an oxidized form of hemoglobin; its levels don't specifically reflect hemolysis. Methemalbumin can form during hemolysis but is not the standard marker used to indicate intravascular destruction. Hemopexin binds free heme and can also be depleted in significant hemolysis, but the classic, most direct clue clinicians look for is the fall in haptoglobin due to its consumption by binding free hemoglobin.

**4. In reference interval transference studies, what is the primary purpose?**

- A. Verify a reference interval**
- B. Establish a reference interval**
- C. Require as many as 120 normal donors**
- D. Use a 68% reference limit for acceptability**

The main idea is to verify a reference interval in your lab rather than create a new one. In transference studies, you take an interval that was established elsewhere (another lab or instrument) and check whether it applies to your own population and method. You do this by testing a small group of healthy individuals with the same assay; if most results fall within the published interval, you can adopt it for your lab. If they don't, a local interval may need to be established, which requires a larger sample, typically around 120 healthy donors, and a formal method to derive the 95% central range. The 68% limit is not the standard used for reference intervals; the conventional goal is the 95% central interval.

5. Using the Henderson-Hasselbalch equation, give the ratio of salt to weak acid for a Veronal buffer with a pH of 8.6 and a pKa of 7.43.

- A. 14.7/1
- B. 1/8.6
- C. 1.17/1
- D. 1/4.3

In this buffer calculation, the Henderson-Hasselbalch relation is  $\text{pH} = \text{pKa} + \log\left(\frac{[\text{A}^-]}{[\text{HA}]}\right)$ , so the ratio of salt (conjugate base) to weak acid is  $\frac{[\text{A}^-]}{[\text{HA}]} = 10^{(\text{pH} - \text{pKa})}$ . Here pH is 8.6 and pKa is 7.43, giving a difference of 1.17. Raising 10 to 1.17 yields about 14.8, so the salt-to-weak-acid ratio is approximately 14.8:1. The option that expresses roughly 14.7 to 1 is therefore the correct choice. The other options reflect incorrect uses of the difference or misinterpretations of the exponent (for example, using 1.17 as the ratio, or taking a reciprocal).

6. Which immunoglobulin is provided to a newborn by the mother?

- A. IgG
- B. IgD
- C. IgM
- D. IgA

Maternal antibodies reach the newborn primarily to supply systemic protection through the placenta. Immunoglobulin G is the only class transferred in significant amounts across the placenta, via specific receptors, giving the infant passive systemic immunity at birth. In contrast, IgM is too large to cross the placental barrier, so it does not provide fetal systemic immunity. IgA appears in breast milk and helps protect the newborn's mucosal surfaces after birth, but it does not establish systemic immunity. IgD mainly serves as a B-cell receptor and isn't a meaningful source of maternal antibodies for the newborn. So the immunoglobulin provided to a newborn by the mother is IgG.

7. Several enzymatic triglyceride methods measure the production or consumption of which substance?

- A. NADH
- B. Fatty acids
- C. Glycerol
- D. Diacetyl lutidine

Enzymatic triglyceride assays measure the glycerol released when triglycerides are hydrolyzed. Lipase first breaks triglycerides into glycerol and free fatty acids. The glycerol then enters a specific enzyme cascade: glycerol is phosphorylated by glycerol kinase to glycerol-3-phosphate, which is oxidized by glycerol-3-phosphate oxidase to generate hydrogen peroxide. The hydrogen peroxide is detected through a colorimetric reaction, so the signal reflects how much glycerol was present, and thus how much triglyceride was in the sample. Fatty acids are not directly measured in this approach, and NADH is only a cofactor in the detection steps rather than the primary analyte, while diacetyl lutidine is not involved in this triglyceride measurement pathway.

**8. Given the lipid results Total cholesterol 400 mg/dL; triglycerides 300 mg/dL; HDL-C 100 mg/dL, what is the LDL-C?**

- A. 240 mg/dL**
- B. 160 mg/dL**
- C. 200 mg/dL**
- D. 300 mg/dL**

The calculation uses the Friedewald equation:  $\text{LDL-C} = \text{total cholesterol} - \text{HDL-C} - (\text{triglycerides}/5)$ , valid when triglycerides are under 400 mg/dL and the patient is fasting. Here, triglycerides are 300 mg/dL, so  $\text{triglycerides}/5 = 60 \text{ mg/dL}$ . Then  $\text{LDL-C} = 400 - 100 - 60 = 240 \text{ mg/dL}$ . So the LDL-C is 240 mg/dL. This method is appropriate because TG is below the 400 mg/dL threshold; if TG were higher, the equation wouldn't be reliable and direct LDL measurement or alternative calculations would be needed.

**9. In the context of OGTT timing, which combination of measurements is described by the 2012 ADA guidelines?**

- A. Fasting, 1 hour, and 2 hours**
- B. Fasting, 60 minutes, and 120 minutes**
- C. 30, 60, 90, and 120 minutes**
- D. Fasting, 30, 60, 90, and 120 minutes**

The main idea being tested is which time points are used to sample glucose during the oral glucose tolerance test according to the 2012 ADA guidelines. After a standardized glucose load, glucose is measured at fasting, then at one hour, and again at two hours. The one-hour measurement adds sensitivity by capturing early post-load glucose handling that may not be evident at the fasting or two-hour marks, while the two-hour value remains the key datum for assessing whether glucose tolerance is normal, impaired, or diabetic. The other timing patterns either omit the one-hour sample or include additional post-load times not described in the 2012 ADA guidelines for the standard diagnostic OGTT, so they don't fit the guideline-described protocol.

**10. Of the following statements concerning procainamide, which is TRUE?**

- A. The primary toxicity of procainamide is bone marrow suppression.**
- B. Procainamide is an antibiotic.**
- C. N-Acetylprocainamide is an active product of procainamide metabolism.**
- D. All of these are true.**

Procainamide is a class IA antiarrhythmic that is metabolized in the liver by N-acetylation to N-acetylprocainamide (NAPA), an active metabolite with its own antiarrhythmic activity. This means the metabolite contributes to the overall effect of the drug, and in some patients—especially slow acetylators—NAPA can accumulate and influence both efficacy and toxicity. That makes the statement about N-Acetylprocainamide being an active product true. The other points aren't correct: procainamide is not an antibiotic, and while bone marrow suppression can occur, it is not regarded as the primary toxicity of the drug (a lupus-like syndrome is a more characteristic adverse effect with long-term use).

## 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](mailto:hello@examzify.com).**

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

**<https://bishopclinicalchem.examzify.com>**

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

SAMPLE