

BISHOP CLINICAL CHEMISTRY 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. Which type of bone is most rapidly lost in response to hypogonadism and glucocorticoid therapy?**
 - A. Trabecular bone
 - B. Cortical bone
 - C. Compact bone
 - D. Woven bone

- 2. Which sample-related issue can cause a falsely elevated potassium measurement?**
 - A. Lipemia
 - B. Hemolysis
 - C. Lipid interference
 - D. Clotting

- 3. Which test is commonly used to assess fetal lung maturity by evaluating surfactant composition?**
 - A. L/S ratio
 - B. Acetylcholinesterase
 - C. Lamellar body count
 - D. Foam stability

- 4. A reference range can be verified by**
 - A. Testing as few as 20 normal donor specimens
 - B. Literature and vendor material review.
 - C. Using samples from previously tested hospital patients.
 - D. Using pharmacy-provided plasmanate spiked with target analyte concentrations.

- 5. The first step in the event of a spill of a strong base is to**
 - A. Call 911
 - B. Alert and evacuate those in the immediate area out of harm's way
 - C. Throw kitty litter on the spill
 - D. Neutralize with absorbent materials in a spill kit

- 6. Renal clearance is defined as which of the following?**
- A. Volume of plasma from which a substance is removed per unit time
 - B. Volume of urine produced per day
 - C. Amount of creatinine in urine
 - D. Urine concentration of a substance divided by urine volume per unit time
- 7. Increased intravascular hemolysis is indicated by a decrease in which of the following?**
- A. Haptoglobin
 - B. Methemoglobin
 - C. Methemalbumin
 - D. Hemopexin
- 8. A 26-year-old man presents with a 3-cm, right lobe, thyroid nodule and a normal TSH. What is the next test that should be performed?**
- A. FNA of the nodule
 - B. Free T4 level
 - C. Thyroid ultrasound
 - D. Thyroid scan
- 9. What term refers to the movement of buffer ions and solvent relative to a fixed support in electrophoresis?**
- A. Electroendosmosis
 - B. Isoelectric focusing
 - C. Iontophoresis
 - D. Zone electrophoresis
- 10. Hypokalemia may be caused by each of the following EXCEPT**
- A. Acidosis
 - B. Prolonged vomiting or diarrhea
 - C. Hypomagnesemia
 - D. Hyperaldosteronism

Answers

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

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Explanations

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1. Which type of bone is most rapidly lost in response to hypogonadism and glucocorticoid therapy?

- A. Trabecular bone**
- B. Cortical bone
- C. Compact bone
- D. Woven bone

Trabecular (spongy) bone is lost most rapidly because it has a high surface area and undergoes remodeling more quickly than cortical bone. Its lattice of thin plates provides many sites for osteoclast and osteoblast activity, so hormonal and drug-induced changes translate into rapid architectural deterioration there.

Hypogonadism lowers estrogen, which normally suppresses osteoclasts, increasing resorption. Glucocorticoids reduce osteoblast formation and promote osteoblast/osteocyte death while increasing RANKL signaling, further tipping the balance toward resorption. This makes trabecular bone—found in vertebral bodies and the ends of long bones—especially vulnerable, while cortical (compact) bone turns over more slowly. Woven bone is immature and not the typical pattern of adult bone loss.

2. Which sample-related issue can cause a falsely elevated potassium measurement?

- A. Lipemia
- B. Hemolysis**
- C. Lipid interference
- D. Clotting

Potassium is mostly inside cells, especially red blood cells. When a sample is hemolyzed, red cells rupture and release their potassium into the plasma or serum, raising the measured potassium level above the true circulating value. This is the classic reason for a falsely elevated potassium result, and it signals the importance of checking the sample for hemolysis before trusting the result. Lipemic samples mainly interfere with tests that rely on optical measurements, and potassium is measured with an ion-selective electrode, so lipemia typically doesn't cause a false high. Clotting can cause some potassium release from platelets in serum, but the most consistent and common cause of an artifactual elevation is hemolysis.

3. Which test is commonly used to assess fetal lung maturity by evaluating surfactant composition?

- A. L/S ratio**
- B. Acetylcholinesterase
- C. Lamellar body count
- D. Foam stability

Measuring the amount of lecithin relative to sphingomyelin in amniotic fluid is a direct reflection of fetal lung maturity because lecithin (phosphatidylcholine) levels rise as the lungs develop and begin producing surfactant, while sphingomyelin stays relatively constant. When the lecithin-to-sphingomyelin ratio reaches about 2:1, lungs are typically mature, and the risk of neonatal respiratory distress syndrome is lower. This test uses amniotic fluid obtained by amniocentesis and provides a chemical assessment of surfactant composition, not just its presence or function. Other tests either assess different aspects of amniotic fluid or surfactant function rather than composition. Acetylcholinesterase is used to detect rupture of membranes by identifying amniotic fluid in vaginal secretions, not to evaluate surfactant makeup. Lamellar body count reflects surfactant-containing vesicles released by fetal lung cells and can correlate with maturity, but it's a surrogate marker rather than a direct measure of surfactant composition. Foam stability tests the functional ability of surfactant to stabilize air-liquid interfaces, not its chemical composition.

4. A reference range can be verified by

- A. Testing as few as 20 normal donor specimens**
- B. Literature and vendor material review.
- C. Using samples from previously tested hospital patients.
- D. Using pharmacy-provided plasmanate spiked with target analyte concentrations.

Verifying a reference range means confirming that the published interval applies to your own patient population, rather than establishing a new range from scratch. For this purpose, a small, well-chosen sample of normal individuals is enough to check applicability. Testing twenty normal donor specimens is the standard minimal approach. If all twenty results fall within the published reference interval, you can verify that the range works in your setting. If any result lies outside, you would investigate further—options include re-evaluating the range or proceeding to establish a lab-specific reference interval with a properly collected dataset. Why the other options aren't suitable: relying on literature or vendor data doesn't confirm local applicability; using samples from hospital patients may include disease states and non-normal values that aren't representative of the reference population; and using spiked plasma is not a real patient sample and won't reflect natural biological variation needed to verify a reference interval.

5. The first step in the event of a spill of a strong base is to

- A. Call 911
- B. Alert and evacuate those in the immediate area out of harm's way**
- C. Throw kitty litter on the spill
- D. Neutralize with absorbent materials in a spill kit

The first priority in a strong base spill is to protect people. A caustic substance can cause severe skin and eye burns and inhalation hazards, so the immediate action is to alert others and evacuate those in the affected area to keep everyone out of harm's way. Only after the area is secured and people are safe do you bring in the spill plan: notify the proper personnel, isolate the spill, and begin cleanup with the appropriate spill kit and PPE if you've been trained to do so. Eyes and skin should never be exposed to the spill while you're still deciding what to do, so safety of people always comes before containment or neutralization steps. Large or uncontrolled spills require emergency responders, but the critical first move is removing people from exposure.

6. Renal clearance is defined as which of the following?

- A. Volume of plasma from which a substance is removed per unit time**
- B. Volume of urine produced per day
- C. Amount of creatinine in urine
- D. Urine concentration of a substance divided by urine volume per unit time

Renal clearance is the rate at which the kidneys remove a substance from the blood, expressed as the volume of plasma that is completely cleared of that substance per unit time. In practical terms, it equals the excretion rate divided by the plasma concentration: $\text{clearance} = (\text{urine concentration} \times \text{urine flow}) / \text{plasma concentration}$, with units of mL per minute. So the defining idea is the amount of plasma that is cleared of the substance each minute, not just how much urine is produced or how much of the substance is in urine alone. The daily urine volume reflects output, not clearance. The total amount excreted in urine doesn't by itself specify how much plasma was cleared, and dividing urine concentration by urine flow ignores the plasma level, which is essential to determine how much plasma was cleared per unit time.

7. 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.

8. A 26-year-old man presents with a 3-cm, right lobe, thyroid nodule and a normal TSH. What is the next test that should be performed?

- A. FNA of the nodule**
- B. Free T4 level
- C. Thyroid ultrasound
- D. Thyroid scan

The key idea is that once a thyroid nodule is found in a patient who is euthyroid, the most informative step to determine cancer risk is to obtain a tissue diagnosis. A 3-cm solitary nodule has enough size to raise concern for malignancy, so performing a fine-needle aspiration biopsy provides cytology that can differentiate benign from malignant lesions. This direct diagnostic information guides whether to proceed to surgery or continue observation. A normal Free T4 won't change management because thyroid function is already normal (TSH is not driving the issue). Thyroid ultrasound is valuable for characterizing the nodule and planning biopsy, but it does not itself diagnose cancer. A thyroid scan assesses functional status (hot vs cold nodules) and is not diagnostic for malignancy, and is not necessary when TSH is normal.

9. What term refers to the movement of buffer ions and solvent relative to a fixed support in electrophoresis?

- A. Electroendosmosis**
- B. Isoelectric focusing
- C. Iontophoresis
- D. Zone electrophoresis

The movement of buffer ions and solvent relative to a fixed support in electrophoresis is called electroendosmosis. This bulk flow occurs because the solid surface (such as the gel or paper) carries charge at the interface with the buffer, creating an electrical double layer. When an electric field is applied, the counterions in that layer drag the adjacent liquid along, producing a net flow of the buffer and solvent toward a particular electrode. This solvent movement can influence how analytes migrate, sometimes aiding or opposing their travel depending on the system. The other terms describe different phenomena: isoelectric focusing relies on a pH gradient to separate proteins by their isoelectric points; iontophoresis involves moving charged substances into tissues with an electric current; zone electrophoresis is a general approach to forming separated zones of analytes during electrophoresis, not specifically describing the bulk solvent flow.

10. Hypokalemia may be caused by each of the following EXCEPT

A. Acidosis

B. Prolonged vomiting or diarrhea

C. Hypomagnesemia

D. Hyperaldosteronism

Potassium balance depends on how potassium is moved between inside and outside cells and how it's handled by the kidneys and GI tract. Losing potassium through the GI tract, as happens with prolonged vomiting or diarrhea, directly lowers serum potassium – hypokalemia. Low magnesium disrupts the kidney's ability to retain potassium, so reduced Mg leads to potassium wasting and lower serum levels as well. Hyperaldosteronism increases potassium excretion in the distal nephron, producing hypokalemia. Acidosis, however, tends to push potassium out of cells into the bloodstream to balance excess hydrogen ions, which usually raises serum potassium (hyperkalemia) rather than lowering it. Because of this shift, acidosis is not a cause of hypokalemia and is the exception in this scenario.

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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:

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

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