

CLINICAL CHEMISTRY II PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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

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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 is the final digestion product of proteins by protease?**
 - A. Nucleotides
 - B. Peptides
 - C. Amino acids
 - D. Glucose
- 2. What is the significance of a monoclonal protein spike (M-spike) on serum protein electrophoresis?**
 - A. An M-spike suggests a monoclonal gammopathy (e.g., MGUS, multiple myeloma) and prompts further immunofixation and clinical workup.
 - B. An M-spike confirms bacterial infection.
 - C. An M-spike rules out plasma cell disorders.
 - D. An M-spike indicates liver failure.
- 3. What is the reported accuracy of multitarget stool DNA testing for detecting colorectal cancer?**
 - A. 92%
 - B. 70%
 - C. 90%
 - D. 95%
- 4. Which excretion route is described as elimination via stool via hepatic and biliary pathways?**
 - A. Urine (renal)
 - B. Stool (hepatic, biliary)
 - C. Exhalation (pulmonary)
 - D. Sweat
- 5. What is the first step in evaluating suspected celiac disease?**
 - A. Serology
 - B. Endoscopy
 - C. Biopsy
 - D. Gluten challenge

- 6. What is the difference between selective and non-selective proteinuria, and which diseases are associated with each?**
- A. Selective proteinuria primarily loses albumin with minimal loss of larger proteins, often seen in early diabetic nephropathy.
 - B. Selective proteinuria includes albumin and larger proteins, typical of nephrotic-range proteinuria.
 - C. Non-selective proteinuria only occurs with diabetic nephropathy.
 - D. Selective proteinuria occurs only in nephrotic syndrome.
- 7. What is the rationale for using CRP instead of ESR in acute inflammatory assessment?**
- A. CRP provides a rapid measure of current inflammation and responds quickly to treatment.
 - B. ESR rises rapidly and better reflects current inflammatory activity.
 - C. CRP levels are influenced by many factors beyond inflammation and may not reflect acute changes.
 - D. CRP rises slowly over days and is stable during acute inflammation.
- 8. Which excretion route involves expelling drug via the lungs?**
- A. Exhalation (pulmonary)
 - B. Urine (renal)
 - C. Stool (hepatic, biliary)
 - D. Sweat
- 9. Which Westgard rule indicates systematic error manifested as a consistent shift across controls?**
- A. 2-2s
 - B. 1-3s
 - C. 4-1s
 - D. 1-2s
- 10. Which of the following is a positive acute-phase reactant?**
- A. Albumin
 - B. Transferrin
 - C. CRP
 - D. Antithrombin

Answers

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

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Explanations

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1. What is the final digestion product of proteins by protease?

- A. Nucleotides
- B. Peptides
- C. Amino acids**
- D. Glucose

Proteases break peptide bonds in proteins to release the building blocks of proteins, amino acids. In digestion, proteins are first cleaved into smaller peptides, but these are then further degraded by other enzymes into free amino acids that can be absorbed by the intestinal lining. Nucleotides come from nucleic acids, not proteins. Peptides are intermediate products, not the final digestion products. Glucose comes from carbohydrate digestion. Therefore, the final digestion product of proteins by protease is amino acids.

2. What is the significance of a monoclonal protein spike (M-spike) on serum protein electrophoresis?

- A. An M-spike suggests a monoclonal gammopathy (e.g., MGUS, multiple myeloma) and prompts further immunofixation and clinical workup.**
- B. An M-spike confirms bacterial infection.
- C. An M-spike rules out plasma cell disorders.
- D. An M-spike indicates liver failure.

A monoclonal protein spike on serum protein electrophoresis signals a monoclonal gammopathy, meaning a single clone of plasma cells or B cells is producing a uniform immunoglobulin. This finding is important because it points toward plasma cell-related disorders such as MGUS or multiple myeloma, and it triggers specific follow-up tests to characterize the protein and guide further clinical workup. Immunofixation electrophoresis is performed to identify the precise heavy and light chain of the monoclonal protein (for example, IgG kappa), along with additional assessments like quantitative immunoglobulins and free light chains, and often imaging or bone marrow evaluation if a malignant process is suspected. It does not indicate bacterial infection or liver failure, and rather than ruling out plasma cell disorders, it prompts targeted evaluation for them.

3. What is the reported accuracy of multitarget stool DNA testing for detecting colorectal cancer?

- A. 92%**
- B. 70%
- C. 90%
- D. 95%

A multitarget stool DNA test is designed to detect colorectal cancer by combining DNA methylation markers with occult blood testing, boosting the signal from cancer in stool. The figure most often reported for its ability to detect colorectal cancer is about 92% sensitivity, meaning it correctly identifies roughly 92 of 100 cancers in screening populations. This level of sensitivity is higher than many single-marker stool tests, though the test's specificity sits in the mid-80s, so there are some false positives. So the commonly cited accuracy for detecting colorectal cancer with this test is 92%.

4. Which excretion route is described as elimination via stool via hepatic and biliary pathways?

- A. Urine (renal)
- B. Stool (hepatic, biliary)**
- C. Exhalation (pulmonary)
- D. Sweat

Elimination through the hepatic and biliary pathways refers to how substances are processed by the liver, secreted into bile, and then carried into the intestine to be excreted in the stool. This route is distinct from renal excretion (into urine), exhalation (through the lungs for volatile substances), or sweat (through skin). The liver conjugates and secretes certain substances into bile via transporters, so larger or more polar compounds end up in the feces after biliary excretion. Sometimes these substances can undergo enterohepatic recirculation, but the end result is elimination in stool.

5. What is the first step in evaluating suspected celiac disease?

- A. Serology**
- B. Endoscopy
- C. Biopsy
- D. Gluten challenge

Screening with serology is done first because antibody testing is noninvasive, sensitive, and helps decide whether invasive confirmation is needed. The most useful initial test is a tissue transglutaminase IgA (tTG-IgA) assay, ideally with a check of total IgA to catch any IgA deficiency that could mask a positive result. A positive serology result strongly indicates celiac disease and leads to confirmation by an intestinal biopsy obtained during upper endoscopy, which shows the characteristic villous atrophy and crypt changes. If IgA deficiency is present, IgG-based tests (such as tTG-IgG or DGP-IgG) are used instead. Gluten challenge is not the first step; it's reserved for specific scenarios where the diagnosis remains uncertain after initial testing or when a patient has been on a gluten-free diet.

6. What is the difference between selective and non-selective proteinuria, and which diseases are associated with each?

- A. Selective proteinuria primarily loses albumin with minimal loss of larger proteins, often seen in early diabetic nephropathy.**
- B. Selective proteinuria includes albumin and larger proteins, typical of nephrotic-range proteinuria.
- C. Non-selective proteinuria only occurs with diabetic nephropathy.
- D. Selective proteinuria occurs only in nephrotic syndrome.

The difference hinges on how the glomerular filtration barrier handles proteins. When the barrier retains most larger proteins but lets mainly albumin pass, the pattern is selective proteinuria. If proteins of various sizes, including larger ones like IgG, leak into the urine, the pattern is non-selective proteinuria. This reflects how much the filtration barrier's selectivity is preserved. In early diabetic nephropathy, the initial leakage tends to be primarily albumin, with only minimal loss of larger proteins, so the pattern is selective proteinuria. As kidney damage advances, the barrier becomes less selective and non-selective proteinuria appears, with a broader range of proteins seen in the urine. Associations to keep in mind: selective proteinuria is classically seen with conditions like early diabetic nephropathy and, in other contexts, minimal change disease where albumin loss predominates. Non-selective proteinuria is more typical of broader glomerular injury in diseases such as diabetic nephropathy at a later stage, membranous nephropathy, and focal segmental glomerulosclerosis, where there is leakage of multiple protein types. The other statements conflict with the pattern because selective proteinuria does not involve a lot of larger proteins; non-selective is not restricted to diabetic nephropathy and selective proteinuria is not limited to nephrotic syndrome.

7. What is the rationale for using CRP instead of ESR in acute inflammatory assessment?

- A. CRP provides a rapid measure of current inflammation and responds quickly to treatment.
- B. ESR rises rapidly and better reflects current inflammatory activity.
- C. CRP levels are influenced by many factors beyond inflammation and may not reflect acute changes.
- D. CRP rises slowly over days and is stable during acute inflammation.**

In acute inflammation, you want a marker that reflects real-time changes in activity and responds quickly to treatment. CRP fits that need because it is produced by the liver in response to inflammatory cytokines (especially IL-6) and rises within hours, commonly peaking within a day or two. It has a relatively short half-life, so levels fall rapidly when the inflammation resolves or effective therapy is started. This rapid kinetics makes CRP a useful, timely indicator of current inflammatory activity and a good tool for monitoring response to treatment. ESR behaves differently. It is influenced by factors like fibrinogen levels, anemia, age, sex, and even pregnancy. Because these factors and the mechanism of erythrocyte sedimentation respond slowly, ESR rises and falls over a longer time frame—days to weeks. That slower, less specific trajectory means ESR is less suitable for assessing acute changes and quick treatment responses. So, the rationale for using CRP in acute inflammatory assessment is its rapid rise in response to inflammation, quick change with treatment, and overall better suitability for tracking acute activity, whereas ESR tends to lag and be affected by non-inflammatory factors.

8. Which excretion route involves expelling drug via the lungs?

A. Exhalation (pulmonary)

B. Urine (renal)

C. Stool (hepatic, biliary)

D. Sweat

Exhalation of a drug occurs when the substance is volatile enough to move from the blood into the alveoli and be breathed out unchanged. This pulmonary route is the primary elimination path for volatile compounds, such as volatile anesthetics, and for drugs with low blood solubility that readily transfer to the air in the lungs. The rate of this excretion depends on how volatile the drug is and on the amount of ventilation—the more rapid the breathing, the faster the drug is eliminated through the lungs. In contrast, many drugs are eliminated mainly by the kidneys into the urine after being metabolized or conjugated, or by the liver into the bile and then into the stool. Sweat is a minor route that can contribute to excretion for some substances but is not the main pathway for most drugs. Therefore, expelling a drug via the lungs is best described as exhalation (pulmonary).

9. Which Westgard rule indicates systematic error manifested as a consistent shift across controls?

A. 2-2s

B. 1-3s

C. 4-1s

D. 1-2s

Systematic error shows up as a persistent bias in the process, a shift in the mean that appears across successive control measurements. When two consecutive control results both exceed the same 2-standard-deviation boundary on the same side, that pattern is unlikely due to random fluctuation and indicates the process has shifted. This is why this rule is the go-to for detecting a consistent bias across controls. In contrast, an isolated outlier beyond 3 SD points to a random spike, four consecutive results beyond 1 SD on the same side suggest a longer drifting trend, and a single result beyond 2 SD on either side is only a warning of possible issue. The two-in-a-row pattern specifically flags a true, repeatable shift in the process, i.e., systematic error.

10. Which of the following is a positive acute-phase reactant?

A. Albumin

B. Transferrin

C. CRP

D. Antithrombin

Positive acute-phase reactants are proteins produced by the liver whose levels rise during inflammation. C-reactive protein is a classic example: its production is upregulated by inflammatory cytokines (like IL-6), causing rapid increases in the blood within hours and peaking within a day or two, then falling as the inflammation resolves. This makes CRP a sensitive marker for inflammation and infection. Albumin and transferrin behave oppositely—they decrease during the acute-phase response, so they are negative acute-phase reactants. Antithrombin isn't considered a classic acute-phase reactant; its levels can change in illness due to factors like consumption or loss, but it's primarily a coagulation inhibitor rather than a marker of the acute-phase response. Hence, CRP is the positive acute-phase reactant.

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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