

AAB Medical Technologist (MT) – Chemistry Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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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. In a zero-order reaction, what prevents an increase in velocity?
 - A. Low substrate concentration
 - B. All enzyme is bound to substrate
 - C. High enzyme concentration
 - D. Presence of inhibitors
2. Valinomycin is classified as which type of substance?
 - A. Ionophore
 - B. Antibiotic
 - C. Analgesic
 - D. Antioxidant
3. Which statement is true regarding cryoglobulins?
 - A. They are insoluble at all temperatures
 - B. They are temperature-sensitive proteins
 - C. They always indicate renal failure
 - D. They are formed only during acute infections
4. All of the following hormones regulate calcium levels EXCEPT which one?
 - A. Aldosterone
 - B. Parathyroid hormone
 - C. Vitamin D
 - D. Calcitonin
5. A 40-year-old male has a random glucose of 270 mg/dL. This laboratory finding is consistent with which of the following conditions?
 - A. von Gierke disease
 - B. diabetes insipidus
 - C. insulinoma
 - D. diabetes mellitus

6. The enzymatic hydrolysis of triglyceride may be accomplished by what enzyme?
- A. amylase
 - B. cholesterol esterase
 - C. cholesterol oxidase
 - D. lipase
7. What is the normal range for serum sodium levels?
- A. 120-130 mEq/L
 - B. 135-145 mEq/L
 - C. 145-150 mEq/L
 - D. 150-160 mEq/L
8. Gamma-glutamyl transferase is primarily associated with which organ?
- A. Kidneys
 - B. Heart
 - C. Liver
 - D. Lungs
9. Which test is primarily used for the diagnosis of liver dysfunction?
- A. Creatinine
 - B. Gamma-glutamyl transferase
 - C. Lipid profile
 - D. Blood urea nitrogen
10. Which of the following statements about hemolysis is true?
- A. It is always preventable
 - B. Only samples collected from women are affected
 - C. It can cause significant errors in laboratory results
 - D. It improves the quality of serum samples

Answers

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

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Explanations

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1. In a zero-order reaction, what prevents an increase in velocity?

- A. Low substrate concentration
- B. All enzyme is bound to substrate
- C. High enzyme concentration
- D. Presence of inhibitors

In a zero-order reaction, the velocity of the reaction is constant and independent of the substrate concentration. This means that the reaction rate remains the same no matter how much substrate is added, as long as the concentration of substrate is above a certain level. The scenario where all enzyme molecules are bound to substrate is critical because, in this case, all available active sites on the enzyme are occupied. When this saturation occurs, the enzyme cannot process additional substrate molecules, leading to a situation where the reaction rate (velocity) does not increase, irrespective of further increases in substrate concentration. The enzyme is effectively working at its maximum capacity, thus maintaining a constant reaction velocity characteristic of zero-order kinetics. Other scenarios would not have the same effect. Low substrate concentration would typically lead to a faster increase in reaction rate if more substrate were available to bind to the enzyme. A high enzyme concentration could enhance the reaction rate assuming there is substrate available. The presence of inhibitors might lower the overall reaction rate, but it is the saturation of enzyme with substrate that directly causes the zero-order kinetics in the context of this question.

2. Valinomycin is classified as which type of substance?

- A. Ionophore
- B. Antibiotic
- C. Analgesic
- D. Antioxidant

Valinomycin is classified as an ionophore, which is a type of substance that facilitates the transport of ions across lipid membranes. Ionophores are capable of forming stable complexes with specific ions (such as potassium ions) and allowing them to diffuse through cellular membranes, which is critical for various physiological processes. The unique structure of valinomycin allows it to selectively bind potassium ions while effectively excluding other ions, thus influencing cellular ion balance and membrane potential. The classification of valinomycin as an ionophore is significant in the context of its function in biological systems and its applications in biochemical studies. It is utilized in research to study ion transport mechanisms and cellular processes. The association with other classifications, such as antibiotics or antioxidants, does not apply here as valinomycin does not function by inhibiting bacterial growth or protecting against oxidative stress, nor does it serve as pain relief like analgesics do. Understanding valinomycin's role as an ionophore is crucial for studying membrane biophysics and cellular function.

3. Which statement is true regarding cryoglobulins?

- A. They are insoluble at all temperatures
- B. They are temperature-sensitive proteins
- C. They always indicate renal failure
- D. They are formed only during acute infections

Cryoglobulins are temperature-sensitive proteins, which means their solubility is affected by temperature variations. At higher temperatures, such as during warmth in the human body, cryoglobulins are soluble. However, when exposed to lower temperatures, such as those found in cooler environments, they can precipitate out of solution and form clumps. This temperature-dependent behavior is what makes them clinically significant, as it can lead to a variety of symptoms and conditions, particularly affecting the skin and blood circulation. Considering the other statements, cryoglobulins are not insoluble at all temperatures; they can dissolve in warm conditions. They do not always indicate renal failure, as their presence can be associated with a range of conditions, including certain infections and autoimmune disorders. Furthermore, cryoglobulins are not strictly formed only during acute infections; they can also be seen in chronic inflammatory states and other contexts as well. This highlights the importance of understanding cryoglobulins' properties and related pathologies without oversimplifying their associations.

4. All of the following hormones regulate calcium levels EXCEPT which one?

- A. Aldosterone
- B. Parathyroid hormone
- C. Vitamin D
- D. Calcitonin

Aldosterone is a hormone primarily involved in the regulation of sodium and potassium levels in the body, rather than calcium levels. It functions mainly by increasing the reabsorption of sodium in the kidneys, which in turn affects fluid balance and blood pressure. In contrast, parathyroid hormone, vitamin D, and calcitonin are directly involved in the regulation of calcium homeostasis. Parathyroid hormone increases calcium levels in the blood by stimulating osteoclast activity, increasing intestinal absorption of calcium, and promoting renal reabsorption of calcium. Vitamin D also plays a crucial role by enhancing calcium absorption in the intestines and facilitating mobilization of calcium from bone. Calcitonin, produced by the thyroid gland, decreases blood calcium levels by inhibiting osteoclast activity and promoting calcium deposition in bone. Therefore, while parathyroid hormone, vitamin D, and calcitonin are all critical in maintaining calcium balance, aldosterone does not play a direct role in this regulation, making it the correct answer to the question.

5. A 40-year-old male has a random glucose of 270 mg/dL. This laboratory finding is consistent with which of the following conditions?

- A. von Gierke disease
- B. diabetes insipidus
- C. insulinoma
- D. diabetes mellitus

The laboratory finding of a random glucose level of 270 mg/dL is indicative of hyperglycemia, which is a hallmark of diabetes mellitus. In this condition, the body's ability to produce or respond to insulin is impaired, leading to elevated blood glucose levels. Diabetes mellitus can be classified into several types, primarily Type 1 and Type 2 diabetes, both of which can present with high blood sugar levels. A reading of 270 mg/dL surpasses the normal glucose range and aligns with diagnostic criteria for diabetes, particularly in the context of symptoms or risk factors present in a middle-aged individual like the 40-year-old male in the scenario. While the other conditions mentioned could involve glucose metabolism or its regulation, they typically do not present with such consistently elevated random glucose levels. For instance, von Gierke disease involves glycogen storage disorders affecting glucose release in the liver, diabetes insipidus pertains to vasopressin (antidiuretic hormone) dysfunction and would not directly influence blood glucose levels, and insulinoma, while it can lead to hypoglycemia due to excess insulin secretion, does not reflect a condition characterized by high glucose levels like diabetes mellitus does.

6. The enzymatic hydrolysis of triglyceride may be accomplished by what enzyme?

- A. amylase
- B. cholesterol esterase
- C. cholesterol oxidase
- D. lipase

The enzymatic hydrolysis of triglycerides is primarily facilitated by the enzyme lipase. Lipase acts specifically on the ester bonds of triglycerides, breaking them down into free fatty acids and glycerol. This process is crucial for the digestion and absorption of dietary fats in the gastrointestinal tract. Amylase is an enzyme that breaks down carbohydrates, specifically starch, into simpler sugars, which does not contribute to the hydrolysis of lipids. Cholesterol esterase works on cholesterol esters, but not on triglycerides directly; its primary role is to hydrolyze the ester bond in cholesterol esters instead. Cholesterol oxidase is involved in the oxidation of cholesterol, and does not play a role in the hydrolysis of triglycerides either. Therefore, lipase is the correct answer as it directly facilitates the hydrolysis of triglycerides, making it an essential enzyme in lipid metabolism.

7. What is the normal range for serum sodium levels?

- A. 120-130 mEq/L
- B. 135-145 mEq/L
- C. 145-150 mEq/L
- D. 150-160 mEq/L

The normal range for serum sodium levels is essential in assessing a patient's electrolyte balance and overall health. Serum sodium levels reflect the amount of sodium in the blood and are crucial for maintaining fluid balance, nerve function, and muscle contraction. The correct range of 135-145 mEq/L is established based on extensive clinical research and is widely accepted in medical practice. Values within this range indicate that the body's sodium and fluid levels are well-regulated, contributing to normal physiological functions. Deviations from this range can lead to conditions such as hyponatremia (low sodium) or hypernatremia (high sodium), which can cause significant health issues. In contrast, ranges such as 120-130 mEq/L, 145-150 mEq/L, and 150-160 mEq/L would indicate abnormalities. For instance, a range of 120-130 mEq/L suggests hyponatremia, which can lead to symptoms like confusion, seizures, and even coma if severe. Likewise, levels above 145 mEq/L can signify hypernatremia, which may result in increased thirst, confusion, and potential damage to body organs. Therefore, understanding and recognizing the normal sodium level range is crucial for medical technologists in interpreting

8. Gamma-glutamyl transferase is primarily associated with which organ?

- A. Kidneys
- B. Heart
- C. Liver
- D. Lungs

Gamma-glutamyl transferase (GGT) is an enzyme that plays a significant role in the metabolism of glutathione and the transfer of amino acids across cellular membranes. It is primarily found in the liver, making it a key marker for liver function assessment. Elevated levels of GGT in the blood can indicate liver diseases, such as hepatitis, cirrhosis, or liver tumors, as well as biliary obstruction and alcoholic liver disease. While GGT can be found in smaller amounts in other organs, its highest concentration is in the liver, which makes it an important enzyme for diagnosing and monitoring liver health. In clinical practice, GGT is often measured in conjunction with other liver enzymes to provide a comprehensive evaluation of liver function.

9. Which test is primarily used for the diagnosis of liver dysfunction?

- A. Creatinine
- B. Gamma-glutamyl transferase**
- C. Lipid profile
- D. Blood urea nitrogen

Gamma-glutamyl transferase (GGT) is a specific enzyme that is particularly useful in evaluating liver function and diagnosing liver disorders. Elevated levels of GGT in the blood can indicate liver damage, cholestasis, and biliary obstructions. It reflects hepatobiliary function and can detect alcohol abuse or liver disease, making it a crucial marker in assessing liver health. Creatinine, while important for evaluating kidney function, does not provide information about liver function. The lipid profile measures cholesterol and triglycerides, which relate to cardiovascular risk factors rather than liver health. Blood urea nitrogen (BUN) is also primarily associated with kidney function and does not indicate liver dysfunction directly. Therefore, GGT is the most relevant test when assessing liver function and diagnosing liver-related issues.

10. Which of the following statements about hemolysis is true?

- A. It is always preventable
- B. Only samples collected from women are affected
- C. It can cause significant errors in laboratory results**
- D. It improves the quality of serum samples

Hemolysis refers to the breakdown of red blood cells, leading to the release of hemoglobin and other intracellular components into the plasma or serum. This phenomenon can interfere with laboratory test results, making option C true. When hemolysis occurs, it can cause significant analytical errors, particularly in tests that measure electrolytes, enzymes, and certain proteins. For instance, elevated potassium levels may occur due to the release of potassium from red blood cells, leading to potentially inaccurate assessments and clinical decisions. Understanding hemolysis is crucial for laboratory professionals, as they must be vigilant in preventing it during blood collection and handling. Factors that can contribute to hemolysis include improper venipuncture techniques, using small needles, or vigorous shaking of samples. The other options do not accurately reflect the nature of hemolysis. It is not always preventable due to various factors that may contribute to it during specimen collection and processing. Additionally, hemolysis affects samples from all individuals, not just those collected from women. Lastly, hemolysis does not improve the quality of serum samples; in fact, it typically degrades sample quality, complicating the interpretation of laboratory tests.

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://aabmtchemistry.examzify.com>

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

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