

AAB MEDICAL TECHNOLOGIST (MT) – CHEMISTRY PRACTICE EXAM (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 compound forms a red-colored complex with Ehrlich's reagent?**
 - A. Urobilinogen
 - B. Creatinine
 - C. Hemoglobin
 - D. Cholesterol
- 2. What does an elevated blood urea nitrogen (BUN) level most often indicate?**
 - A. Liver disease
 - B. Kidney dysfunction
 - C. Thyroid issues
 - D. Anemia
- 3. Which of the following is likely to show the highest elevation in cases of kidney failure?**
 - A. Blood glucose
 - B. Liver enzymes
 - C. Creatinine
 - D. lipo-proteins
- 4. A high alkaline phosphatase level in the presence of other negative liver function tests is indicative of which disorder?**
 - A. Kidney disease
 - B. Bone disorder
 - C. Liver cirrhosis
 - D. Gallbladder disease
- 5. Which condition is characterized by excess sugar in the blood?**
 - A. Hypoglycemia
 - B. Diabetes Mellitus
 - C. Hyperlipidemia
 - D. Hypertension

- 6. Which analyte is used as a prognostic indicator for liver failure?**
- A. Uric acid
 - B. Cortisol
 - C. Blood urea nitrogen
 - D. Ammonia
- 7. A positive test for rheumatoid factor may indicate what condition?**
- A. Diabetes
 - B. Rheumatoid arthritis
 - C. Heart disease
 - D. Liver failure
- 8. Which demographic factors can influence the incidence of hemolysis in blood samples?**
- A. Age and gender
 - B. Dietary habits
 - C. Geographic location
 - D. Physical fitness level
- 9. What is typical for a patient with metabolic alkalosis in terms of arterial blood gas results?**
- A. Decreased pH and decreased HCO_3^-
 - B. Increased pH and decreased pCO_2
 - C. Decreased pH and increased pCO_2
 - D. Increased pH and increased HCO_3^-
- 10. What parameters are measured in a basic metabolic panel (BMP)?**
- A. Only glucose levels
 - B. Electrolytes, blood urea nitrogen, creatinine, glucose, and calcium
 - C. Just cholesterol levels
 - D. Proteins and enzymes

Answers

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

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Explanations

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1. Which compound forms a red-colored complex with Ehrlich's reagent?

- A. Urobilinogen
- B. Creatinine
- C. Hemoglobin
- D. Cholesterol

Urobilinogen is a compound that forms a red-colored complex when it reacts with Ehrlich's reagent. This reagent is a solution of p-dimethylaminobenzaldehyde, which, in the presence of urobilinogen, undergoes a chemical reaction to produce a colored compound. This color change is significant and is often used in clinical laboratories to detect and quantify urobilinogen levels in urine, providing important insights into liver function and hemolysis. In contrast, the other substances listed do not produce a red complex with Ehrlich's reagent. Creatinine is a waste product from muscle metabolism and does not react in the same manner. Hemoglobin is primarily involved in oxygen transport and does not form a red complex under these conditions. Cholesterol is a lipid and does not participate in this specific chemical reaction either. Therefore, the ability of urobilinogen to form a distinguishable red-colored complex with Ehrlich's reagent is a key characteristic that aids in laboratory diagnostics.

2. What does an elevated blood urea nitrogen (BUN) level most often indicate?

- A. Liver disease
- B. Kidney dysfunction
- C. Thyroid issues
- D. Anemia

An elevated blood urea nitrogen (BUN) level is primarily indicative of kidney dysfunction. BUN is a waste product formed from the breakdown of protein, and it is filtered out of the blood by the kidneys. When the kidneys are not functioning properly, they are less able to remove urea from the bloodstream, resulting in increased BUN levels. In the context of kidney health, a rise in BUN can reflect a variety of conditions, including acute or chronic kidney disease, dehydration, or urinary obstruction. Therefore, monitoring BUN levels is essential in assessing kidney function and detecting possible renal impairment. While elevated BUN may also be influenced by factors such as dietary protein intake or liver function, its strongest association remains with kidney health. Other conditions such as liver disease, thyroid issues, and anemia may influence BUN levels indirectly but do not directly correlate with the elevation of BUN in terms of primary causative factors, which is why they are not considered the most common implication of an elevated BUN level.

3. Which of the following is likely to show the highest elevation in cases of kidney failure?

- A. Blood glucose
- B. Liver enzymes
- C. Creatinine**
- D. lipo-proteins

In cases of kidney failure, creatinine levels typically show the most significant elevation. This is due to the fact that creatinine is a waste product generated from muscle metabolism, primarily excreted by the kidneys. When kidney function declines, the ability to clear creatinine from the blood diminishes, resulting in increased serum creatinine levels. Creatinine is commonly used as a marker for kidney health since it directly reflects the filtration capacity of the kidneys. Elevated creatinine levels indicate impaired kidney function and can signal acute or chronic kidney failure. While other substances such as blood glucose, liver enzymes, or lipoproteins may also be affected in various ways during disease processes, they generally do not provide as direct a measure of kidney function as creatinine does. Therefore, in the context of kidney failure, the most reliable indicator of deteriorating renal function is indeed the elevation of creatinine.

4. A high alkaline phosphatase level in the presence of other negative liver function tests is indicative of which disorder?

- A. Kidney disease
- B. Bone disorder**
- C. Liver cirrhosis
- D. Gallbladder disease

A high alkaline phosphatase level alongside other negative liver function tests typically indicates a bone disorder. Alkaline phosphatase is an enzyme found in several tissues throughout the body, with particularly high concentrations in the liver, bones, kidneys, and bile ducts. Elevated levels of this enzyme can often suggest ongoing bone metabolism, particularly in conditions such as Paget's disease, osteoblastic bone tumors, or osteomalacia. When liver function tests (such as AST, ALT, and bilirubin) are normal, it suggests that the liver is not the source of the elevated alkaline phosphatase. In this context, elevated alkaline phosphatase levels can signify increased activity of osteoblasts, the cells responsible for bone formation, often due to a pathological condition affecting the bone. Understanding the context of the enzyme elevation is crucial in differentiating between potential underlying conditions and honing in on the diagnosis of a bone disorder.

5. Which condition is characterized by excess sugar in the blood?

- A. Hypoglycemia
- B. Diabetes Mellitus**
- C. Hyperlipidemia
- D. Hypertension

Diabetes Mellitus is a condition characterized by an inability to properly regulate blood sugar levels, leading to excessive glucose (sugar) in the bloodstream. This can occur due to insufficient insulin production, as seen in Type 1 diabetes, or due to the body's cells becoming resistant to insulin, which is typical of Type 2 diabetes. In Diabetes Mellitus, the elevated blood sugar levels can result in various complications if not managed properly, including damage to blood vessels, nerves, and organs. The primary focus in this condition is on controlling blood glucose levels through lifestyle adjustments, medication, or insulin therapy, to prevent these complications and maintain overall health. Other conditions listed such as hypoglycemia, hyperlipidemia, and hypertension involve different mechanisms and are not directly related to the presence of excess sugar in the blood. Hypoglycemia specifically refers to low blood sugar levels, while hyperlipidemia involves elevated levels of lipids (fats) in the blood, and hypertension relates to high blood pressure, none of which directly indicate an excess of sugar.

6. Which analyte is used as a prognostic indicator for liver failure?

- A. Uric acid
- B. Cortisol
- C. Blood urea nitrogen
- D. Ammonia**

Ammonia is commonly used as a prognostic indicator for liver failure because it is a byproduct of protein metabolism that is normally converted to urea in the liver. In cases of liver dysfunction or failure, the liver's ability to convert ammonia to urea is impaired, resulting in elevated levels of ammonia in the bloodstream. High ammonia levels are associated with hepatic encephalopathy, which indicates worsening liver function and poor prognosis. Monitoring ammonia can provide important insights into the severity of liver impairment and help guide treatment decisions. Other analytes, while they can provide information regarding liver function and overall health, do not serve as specific prognostic indicators for liver failure in the same way. For example, uric acid levels can be elevated due to various conditions but do not specifically correlate with liver failure. Cortisol is primarily related to stress response and adrenal function rather than liver status. Blood urea nitrogen (BUN) can be increased in the setting of liver disease but is less specific for liver function impairment compared to ammonia levels.

7. A positive test for rheumatoid factor may indicate what condition?

- A. Diabetes
- B. Rheumatoid arthritis**
- C. Heart disease
- D. Liver failure

A positive test for rheumatoid factor is typically associated with rheumatoid arthritis, an autoimmune condition characterized by inflammation and damage to the joints. Rheumatoid factor is an antibody that is present in many individuals with this condition and can be used as a marker to assist in diagnosis. High levels of rheumatoid factor in the blood are often found in patients with rheumatoid arthritis, making it a crucial component in the evaluation for this disease. While rheumatoid factor can sometimes be present in other conditions, its strongest association is with rheumatoid arthritis. Conditions such as diabetes, heart disease, and liver failure do not have a direct link to elevated rheumatoid factor levels in the same way that rheumatoid arthritis does. Therefore, the answer indicating rheumatoid arthritis is grounded in the specific clinical significance of rheumatoid factor as a diagnostic tool for this particular autoimmune disorder.

8. Which demographic factors can influence the incidence of hemolysis in blood samples?

- A. Age and gender**
- B. Dietary habits
- C. Geographic location
- D. Physical fitness level

Demographic factors such as age and gender can significantly influence the incidence of hemolysis in blood samples. Age affects hemolysis, as infants and young children may have different blood cell characteristics compared to older adults, which can lead to variations in fragility and susceptibility to hemolysis. For example, newborns often have higher levels of fetal hemoglobin, making their red blood cells less durable in certain situations. Gender can also play a role, as biological differences between males and females, including variations in blood volume, hormone levels, and overall physical health, can impact the stability of red blood cells during sample collection and processing. Hormonal influences can affect red blood cell production and lifespan, contributing to different rates of hemolysis observed in male and female subjects. Understanding these demographic influences assists medical technologists in anticipating and interpreting results more accurately, leading to better patient care. The other factors listed, while they may have some indirect effects on blood integrity, are less directly correlated to the physiological properties of blood as age and gender.

9. What is typical for a patient with metabolic alkalosis in terms of arterial blood gas results?

- A. Decreased pH and decreased HCO_3^-
- B. Increased pH and decreased pCO_2
- C. Decreased pH and increased pCO_2
- D. Increased pH and increased HCO_3^-**

A patient with metabolic alkalosis typically shows an increased pH and increased bicarbonate (HCO_3^-) levels in their arterial blood gas results. This condition arises when there is an excessive loss of hydrogen ions or an accumulation of bicarbonate, leading to a higher pH level in the blood, which indicates alkalinity. In metabolic alkalosis, the body's buffering system responds to the increased bicarbonate, resulting in an elevation of pH. The increase in HCO_3^- contributes to the alkaline state. This is often seen in conditions such as prolonged vomiting, diuretic use, or excessive intake of alkaline substances. The relationship between pH, HCO_3^- , and pCO_2 is essential when interpreting arterial blood gas results. Though pCO_2 is generally decreased in respiratory compensation for metabolic alkalosis, it does not directly affect the diagnosis of the metabolic alkalosis itself. However, the key indicators of metabolic alkalosis are indeed the heightened pH and elevated HCO_3^- levels, solidifying the importance of these components in the assessment of the patient's acid-base status.

10. What parameters are measured in a basic metabolic panel (BMP)?

- A. Only glucose levels
- B. Electrolytes, blood urea nitrogen, creatinine, glucose, and calcium**
- C. Just cholesterol levels
- D. Proteins and enzymes

A basic metabolic panel (BMP) is a widely used blood test that provides crucial information about the body's metabolism. It typically includes a series of tests that measure several key components in the blood, which can help in assessing kidney function, electrolyte balance, and blood sugar levels. The correct answer encompasses the evaluation of electrolytes, which includes sodium, potassium, chloride, and bicarbonate, all of which play vital roles in maintaining fluid balance and other physiological functions. Additionally, the BMP measures blood urea nitrogen (BUN) and creatinine, which are indicators of kidney function. Glucose levels are also included to assess blood sugar levels, important for diagnosing diabetes and monitoring metabolic state. While calcium is sometimes part of a comprehensive metabolic panel (CMP), a BMP typically includes total calcium values as part of routine assessments. This combination of tests provides invaluable insights for a healthcare provider, helping them to detect a variety of conditions and ensure suitable patient care without further unnecessary testing. The other answer choices do not encompass the full range of important parameters included in a BMP, focusing instead on a narrow aspect (like glucose or cholesterol) or on different sets of biomolecules unrelated to the panel's primary purpose.

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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