

AAB MEDICAL TECHNOLOGIST (MT) – HEMATOLOGY PRACTICE EXAM (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE**

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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 stain is known to stain both specific and nonspecific granules in myelogenous cells?**
 - A. Prussian blue stain
 - B. Giemsa stain
 - C. Hematoxylin and eosin
 - D. Wright's stain
- 2. Which measurement reflects an average volume of red cells in a given specimen?**
 - A. HCT
 - B. MCV
 - C. MCHC
 - D. RBC
- 3. Most chronic lymphocytic leukemias are neoplasms of which subset of lymphocytes?**
 - A. T cells
 - B. B cells
 - C. NK cells
 - D. Follicular helper T cells
- 4. Which vitamin K-dependent factor is involved in the common pathway of coagulation?**
 - A. Factor I
 - B. Factor II
 - C. Factor XIII
 - D. Factor VIII
- 5. An increased osmotic fragility is typically seen in which type of hemolytic anemia?**
 - A. Thalassemia
 - B. Hereditary spherocytosis
 - C. Hemolytic disease of the newborn
 - D. Sickle cell anemia

- 6. Which hemoglobins are differentiated by the Kleihauer-Betke technique?**
- A. Hb-A from Hb-S
 - B. Hb-A1 from Hb-F
 - C. Hb-C from Hb-D
 - D. Hb-F from Hb-A2
- 7. A cerebrospinal fluid has 285 RBCs counted in the 5 RBC squares after being diluted in a Unopette (1:100). What is the calculated RBC count per microliter?**
- A. 1,025,000
 - B. 1,425,000
 - C. 2,000,000
 - D. 850,000
- 8. In which type of anemia are RBCs normocytic and normochromic, with decreased RBCs, hemoglobin, and hematocrit, and increased indirect bilirubin?**
- A. Ineffective erythropoiesis
 - B. Iron deficiency anemia
 - C. Hemolytic anemia
 - D. Vitamin B12 deficiency anemia
- 9. Any cell that passes through the aperture will momentarily increase the resistance of the electrical flow between the electrodes, generating a pulse. This principle is known as what?**
- A. Fluid dynamics
 - B. Chemical impedance
 - C. Electrical impedance
 - D. Conduction resistance
- 10. Which determination provides a reliable assessment of effective erythropoiesis in the bone marrow?**
- A. Hemoglobin concentration
 - B. Reticulocyte count
 - C. White blood cell count
 - D. MCHC

Answers

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

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Explanations

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1. Which stain is known to stain both specific and nonspecific granules in myelogenous cells?

- A. Prussian blue stain**
- B. Giemsa stain
- C. Hematoxylin and eosin
- D. Wright's stain

The correct choice for identifying a stain that affects both specific and nonspecific granules in myelogenous cells is the Giemsa stain. Giemsa stain is widely used in hematology for the visualization of blood cells and provides comprehensive differentiation of cellular components. It effectively stains various granules, allowing for the identification of myelogenous lineage. This stain highlights the different cellular components, including both the specific granules (such as those found in neutrophils) and nonspecific granules, thus offering detailed insight into the morphology of myeloid cells. Other stains, such as Prussian blue, are primarily used to detect iron deposits, while hematoxylin and eosin are more general stains that don't specifically target granules in myelogenous cells. Wright's stain is similar to Giemsa but does not provide the same depth of granule differentiation as Giemsa, making it less effective for this specific application. This characteristic makes Giemsa stain particularly valuable in clinical settings for diagnosing hematological disorders.

2. Which measurement reflects an average volume of red cells in a given specimen?

- A. HCT
- B. MCV**
- C. MCHC
- D. RBC

The measurement that reflects the average volume of red blood cells in a given specimen is the Mean Corpuscular Volume (MCV). MCV is calculated by dividing the total volume of red blood cells (measured by hematocrit) by the number of red blood cells in a given volume of blood. This provides an average volume of individual red blood cells, expressed in femtoliters (fL). A higher MCV indicates larger red blood cells, which can be associated with conditions such as macrocytic anemia, while a lower MCV may suggest microcytic anemia. This metric is crucial in diagnosing various hematological disorders and guiding treatment decisions. Understanding MCV helps hematologists and clinical laboratory professionals interpret a complete blood count (CBC) effectively, as it aids not only in determining the size of the red blood cells but also in identifying potential underlying causes of different types of anemia. Other measurements, such as hematocrit (HCT), mean corpuscular hemoglobin concentration (MCHC), and red blood cell count (RBC), serve different purposes, focusing on total volume, cellular hemoglobin concentration, and the number of red blood cells, respectively.

3. Most chronic lymphocytic leukemias are neoplasms of which subset of lymphocytes?

- A. T cells
- B. B cells**
- C. NK cells
- D. Follicular helper T cells

Chronic lymphocytic leukemia (CLL) is primarily associated with the abnormal proliferation of B cells, a type of lymphocyte. In CLL, these B cells typically exhibit specific characteristics such as the expression of certain surface markers, which helps distinguish them from other types of lymphocytes. B cells are responsible for producing antibodies and are a crucial part of the adaptive immune response. In CLL, the accumulation of abnormal B cells occurs, which can lead to a variety of complications, including affecting the body's ability to fight infections and causing other hematological issues due to the overcrowding of the bone marrow and alterations in normal blood cell production. Understanding the specific lineage of the cells involved in CLL is essential for diagnosis and treatment, making the identification of B cells as the primary neoplastic population significant in the context of this leukemia type.

4. Which vitamin K-dependent factor is involved in the common pathway of coagulation?

- A. Factor I
- B. Factor II**
- C. Factor XIII
- D. Factor VIII

Vitamin K is essential for the synthesis of certain clotting factors, specifically Factor II (Prothrombin), Factor VII, Factor IX, and Factor X. Among these, Factor II is a key player in the common pathway of coagulation, which is where intrinsic and extrinsic pathways converge. Once activated, prothrombin (Factor II) is converted into thrombin, which then plays a central role in converting fibrinogen (Factor I) into fibrin, facilitating the formation of a stable blood clot. Understanding the role of Vitamin K in the synthesis of these factors is crucial in recognizing the mechanisms of coagulation and the importance of Factor II in the clotting cascade.

5. An increased osmotic fragility is typically seen in which type of hemolytic anemia?

- A. Thalassemia
- B. Hereditary spherocytosis**
- C. Hemolytic disease of the newborn
- D. Sickle cell anemia

An increased osmotic fragility is a hallmark of hereditary spherocytosis, which is a condition characterized by the presence of spherocytes—spherical red blood cells that are less stable and more prone to lysis in hypotonic solutions compared to normal red blood cells. In hereditary spherocytosis, the defect in the red blood cell membrane leads to decreased surface area relative to volume, causing these cells to be rigid and less able to withstand osmotic pressure changes. When red blood cells are subjected to hypotonic solutions, they swell and undergo hemolysis if their membrane integrity is compromised. The spherocytes' altered membrane composition and shape result in an increased susceptibility to osmotic stress, reflecting in higher osmotic fragility. In contrast, thalassemia primarily involves defects in hemoglobin synthesis, leading to microcytic anemia but not significantly affecting osmotic fragility. Hemolytic disease of the newborn is associated with immune-mediated destruction of red blood cells but does not present with similar osmotic fragility patterns as hereditary spherocytosis. Sickle cell anemia, while also a hemolytic anemia, is characterized by the polymerization of hemoglobin S under low-oxygen conditions, affecting red cell shape and leading to vaso

6. Which hemoglobins are differentiated by the Kleihauer-Betke technique?

- A. Hb-A from Hb-S
- B. Hb-A1 from Hb-F**
- C. Hb-C from Hb-D
- D. Hb-F from Hb-A2

The Kleihauer-Betke test is a specialized laboratory technique used primarily to differentiate between fetal hemoglobin (Hb-F) and adult hemoglobin (Hb-A). This technique is particularly useful in situations involving maternal-fetal hemorrhage, where it is critical to ascertain the presence and amount of fetal blood in the maternal circulation. In the context of the provided choice, the distinction between Hb-A1 and Hb-F is key. Hb-F has a higher affinity for oxygen compared to Hb-A, which is why it remains stable through the Kleihauer-Betke staining process, enabling the differentiation between fetal and adult hemoglobin types. This capability is crucial for assessing cases of potential bleeding complications during pregnancy and ensuring proper maternal and fetal care. The other options do not pertain to the Kleihauer-Betke technique, which is specifically designed for the identification of the fetal hemoglobin type in relation to adult hemoglobin. Therefore, the correct identification of Hb-F from Hb-A1 through the Kleihauer-Betke method illustrates the technique's specialized application in hematology.

7. A cerebrospinal fluid has 285 RBCs counted in the 5 RBC squares after being diluted in a Unopette (1:100). What is the calculated RBC count per microliter?

- A. 1,025,000
- B. 1,425,000**
- C. 2,000,000
- D. 850,000

To determine the calculated RBC count per microliter from the cerebrospinal fluid sample, you can follow this method. First, note that the RBC count obtained from the counting chamber was 285 RBCs counted in the 5 squares of the hemocytometer after a dilution of 1:100 using a Unopette. When using a hemocytometer, the standard volume that each square represents is known. In this case, the total volume counted in the 5 squares can be calculated based on the total volume of the dilution and the dilution factor. Since each of the 5 squares represents 1/20 of the total counting area of a standard hemocytometer and given that the volume per square is 0.1 mm^3 , the total volume counted is $5 \times 0.1 \text{ mm}^3 = 0.5 \text{ mm}^3$ (or $0.5 \text{ }\mu\text{L}$). Next, because the sample was diluted 1:100, you need to multiply the number of RBCs counted by this factor to account for the dilution. The total RBC count in the original sample can be calculated as follows: Total RBC count per $\mu\text{L} = (\text{Count in hemocytometer}) \times (\text{Dilution Factor}) / (\text{Volume})$

8. In which type of anemia are RBCs normocytic and normochromic, with decreased RBCs, hemoglobin, and hematocrit, and increased indirect bilirubin?

- A. Ineffective erythropoiesis
- B. Iron deficiency anemia
- C. Hemolytic anemia**
- D. Vitamin B12 deficiency anemia

In hemolytic anemia, red blood cells (RBCs) are typically normocytic and normochromic due to the nature of the condition. In this type of anemia, the body's production of RBCs is adequate; however, there is an increased destruction of these cells. This destruction leads to a decrease in the overall number of RBCs, hemoglobin, and hematocrit levels, resulting in anemia. The increase in indirect bilirubin is particularly indicative of hemolytic anemia. When RBCs are broken down, hemoglobin is released and subsequently broken down into bilirubin. Since the liver can become overwhelmed with this process, the bilirubin accumulates, causing an increase in indirect bilirubin levels in the bloodstream. In contrast, other forms of anemia involve different mechanisms. For example, ineffective erythropoiesis results in abnormal RBCs being produced, often leading to macrocytic cells and decreased hemoglobin or hematocrit due to inadequate production, not destruction. Iron deficiency anemia typically presents with microcytic, hypochromic red blood cells, and vitamin B12 deficiency anemia generally leads to macrocytic cells as well, with distinctive neurologic symptoms due to deficiency in B12, rather than a hemol

9. Any cell that passes through the aperture will momentarily increase the resistance of the electrical flow between the electrodes, generating a pulse. This principle is known as what?

- A. Fluid dynamics
- B. Chemical impedance
- C. Electrical impedance**
- D. Conduction resistance

The principle described in the question refers to the concept of electrical impedance, which is a measure of how much a circuit resists the flow of electrical current when a voltage is applied. In the context of hematology, this principle is often utilized in automated cell counters, where cells passing through an aperture disrupt an electric field, causing a change in resistance that generates a measurable pulse. This pulse is directly proportional to the size of the cell and is used for counting and analyzing cells in a sample. Electrical impedance encompasses both resistive and reactive components, making it a more comprehensive concept than simply resistance alone. It is significant in various applications, including medical diagnostics, where the physical properties of cells can be inferred from changes in electrical impedance as they move through a defined area. In summary, the generation of a pulse from changes in electrical flow due to cellular passage through an aperture exemplifies the principles of electrical impedance, aligning with how automated hemocytometers operate in hematology practices.

10. Which determination provides a reliable assessment of effective erythropoiesis in the bone marrow?

- A. Hemoglobin concentration
- B. Reticulocyte count**
- C. White blood cell count
- D. MCHC

The reticulocyte count is a critical measure for assessing effective erythropoiesis, which refers to the production of red blood cells in the bone marrow. Reticulocytes are immature red blood cells that are released into the bloodstream from the bone marrow. An increased reticulocyte count indicates that the bone marrow is actively producing red blood cells in response to a stimulating factor, such as anemia or blood loss. Conversely, a low reticulocyte count may suggest inadequate bone marrow response or impaired erythropoiesis. In clinical practice, evaluating the reticulocyte count is essential in diagnosing and monitoring conditions related to anemia, as it reflects the bone marrow's response to the systemic demand for red blood cells. Using this measure provides insights into whether the body is effectively producing new red blood cells and can help direct further investigation into the underlying causes of a patient's clinical condition. Other tests, such as hemoglobin concentration, white blood cell count, and mean corpuscular hemoglobin concentration (MCHC), provide valuable information about the blood but do not directly assess the bone marrow's production of erythrocytes. Hemoglobin concentration reflects the amount of hemoglobin in the blood and is influenced by various factors, while the white blood cell count assesses immune response.

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://aabmthematology.examzify.com>

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

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