

# ASCP Specialist in Hematology (SH) 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. What is the primary defect in Factor V Leiden mutation?**
  - A. Increased platelets**
  - B. Defective clot lysis**
  - C. Increased pro-coagulation**
  - D. Impaired hemostasis**
  
- 2. In chronic myelogenous leukemia (CML), which feature is typically absent?**
  - A. JAK2 mutation**
  - B. Excess proliferation in myelocytic lines**
  - C. Presence of atypical megakaryocytes**
  - D. Marked marrow fibrosis**
  
- 3. What is the primary treatment for iron deficiency anemia?**
  - A. Intravenous iron administration**
  - B. Oral iron supplements**
  - C. Blood transfusions**
  - D. Vitamin B12 injections**
  
- 4. Which parasite is associated with Schüffner's dots in a blood smear?**
  - A. Plasmodium falciparum**
  - B. Plasmodium ovale**
  - C. Plasmodium vivax**
  - D. Plasmodium malariae**
  
- 5. What is the primary function of erythrocytes?**
  - A. To regulate body temperature**
  - B. To transport oxygen and carbon dioxide**
  - C. To produce antibodies for immune defense**
  - D. To produce hormones**

- 6. Which blood group system is associated with hemolytic disease of the newborn?**
- A. Abo blood group system**
  - B. Rh (Rhesus) blood group system**
  - C. Kell blood group system**
  - D. Lewis blood group system**
- 7. What is the primary function of erythrocytes in the human body?**
- A. Transport oxygen and carbon dioxide**
  - B. Produce antibodies for immune response**
  - C. Facilitate blood clotting**
  - D. Regulate blood pressure**
- 8. What is the term for the aggregation of platelets at the site of vascular injury?**
- A. Secondary hemostasis**
  - B. Coagulation**
  - C. Fibrinolysis**
  - D. Primary hemostasis**
- 9. What is the most specific test for detecting Factor V Leiden mutation?**
- A. Activated Protein C Resistance (APC) clot-based assay**
  - B. Factor V Mutation Assay**
  - C. Antithrombin antigen assay**
  - D. Complete blood count**
- 10. Complaints of pain in patients with sickle cell disease are most likely associated with which condition?**
- A. Hemolytic anemia**
  - B. Infection**
  - C. Vaso-occlusive crisis**
  - D. Aplastic crisis**

## **Answers**

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

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## **Explanations**

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## 1. What is the primary defect in Factor V Leiden mutation?

- A. Increased platelets
- B. Defective clot lysis
- C. Increased pro-coagulation**
- D. Impaired hemostasis

In the case of Factor V Leiden mutation, the primary defect lies in the mutation that causes a resistance to activated protein C (APC), a key protein in the regulation of coagulation. This leads to an increased tendency for clotting because activated protein C normally functions to inactivate Factor V and Factor VIII, both of which amplify the clotting process. When there is resistance to activated protein C due to the mutation, this regulatory pathway is disrupted, resulting in an increased pro-coagulation state. As a result, individuals with Factor V Leiden are at a higher risk for thrombosis as clots are not adequately regulated and can form excessively. Other options may address aspects of hemostasis but do not accurately describe the primary defect associated with Factor V Leiden. For example, while increased platelets can contribute to thrombotic conditions, they are not the direct issue stemming from the Factor V Leiden mutation itself. Defective clot lysis might be a secondary consequence of persistent clotting but does not encapsulate the initial defect. Impaired hemostasis is too general and can refer to various disorders, but the defining feature of Factor V Leiden is specifically its role in promoting pro-coagulation.

## 2. In chronic myelogenous leukemia (CML), which feature is typically absent?

- A. JAK2 mutation**
- B. Excess proliferation in myelocytic lines
- C. Presence of atypical megakaryocytes
- D. Marked marrow fibrosis

In chronic myelogenous leukemia (CML), the JAK2 mutation is typically not present, which is why this option is correct. CML is characterized primarily by the presence of the Philadelphia chromosome, which results from a translocation between chromosomes 9 and 22, leading to the BCR-ABL fusion gene. This fusion gene drives the neoplastic proliferation of myeloid cells, but it is distinct from the JAK2 mutations that are associated with other myeloproliferative neoplasms, such as polycythemia vera or essential thrombocythemia. In CML, patients exhibit significant myelocytic proliferation, which includes a high number of immature and mature granulocytes. Additionally, atypical megakaryocytes may be present in the bone marrow, reflecting the dysregulation of hematopoiesis that occurs in this disease. Marked marrow fibrosis can also be observed in advanced stages or specific cases of CML known as "blast crisis." Therefore, detection of the JAK2 mutation is not a feature that aligns with the pathology of CML, reinforcing why its absence is characteristic of this condition.

### 3. What is the primary treatment for iron deficiency anemia?

- A. Intravenous iron administration
- B. Oral iron supplements**
- C. Blood transfusions
- D. Vitamin B12 injections

The primary treatment for iron deficiency anemia is oral iron supplements. This approach is favored because it effectively replenishes iron stores in the body and is generally well tolerated by patients. Oral iron, such as ferrous sulfate, is taken regularly over a period of months to restore hemoglobin levels and improve symptoms associated with anemia. Intravenous iron administration is typically reserved for cases where oral supplementation is not effective or when the patient cannot tolerate it, such as in those with gastrointestinal disorders or significant malabsorption. Blood transfusions are generally not used for routine treatment of iron deficiency anemia; they may be necessary in severe cases or when immediate elevation of hemoglobin is needed. Vitamin B12 injections are specific for treating deficiencies related to vitamin B12 rather than iron deficiency anemia, making them irrelevant in this context. Therefore, oral iron supplements remain the first-line treatment, providing a practical and effective means to address the underlying deficiency in most patients.

### 4. Which parasite is associated with Schüffner's dots in a blood smear?

- A. *Plasmodium falciparum*
- B. *Plasmodium ovale*
- C. *Plasmodium vivax***
- D. *Plasmodium malariae*

Schüffner's dots are small, red granules seen in the cytoplasm of red blood cells that are infected by certain species of malaria parasites. Specifically, they are associated with *Plasmodium vivax* and *Plasmodium ovale*. These dots represent the presence of hemozoin, which is a byproduct of hemoglobin breakdown by the parasite, and are a key morphological feature when identifying these species in a blood smear. *Plasmodium vivax* is known to cause benign tertian malaria and is characterized by the presence of these dots along with larger, more swollen red blood cells when compared to uninfected cells. Identification of Schüffner's dots can help differentiate *P. vivax* from other malaria species, as they are not typically found in infections of *Plasmodium falciparum* or *Plasmodium malariae*. *Plasmodium falciparum* tends to show more irregularly shaped and denser parasitic forms without the presence of Schüffner's dots, while *Plasmodium malariae* usually has different morphological characteristics altogether. Understanding these microscopic features is fundamental for accurate diagnosis and treatment of malaria.

**5. What is the primary function of erythrocytes?**

- A. To regulate body temperature
- B. To transport oxygen and carbon dioxide**
- C. To produce antibodies for immune defense
- D. To produce hormones

The primary function of erythrocytes, or red blood cells, is to transport oxygen from the lungs to the tissues throughout the body and carry carbon dioxide from the tissues back to the lungs for exhalation. This vital role is accomplished through the protein hemoglobin, which binds oxygen in the lungs and releases it in the surrounding tissues where it's needed for cellular respiration. Erythrocytes are specialized for this task due to their biconcave shape, which provides a large surface area for gas exchange and allows them to deform as they pass through narrow capillaries. In addition to their role in gas transport, erythrocytes also play a part in maintaining acid-base balance (pH) in the blood. Their efficient functioning is crucial for sustaining metabolic processes and overall cellular health, underlining why their primary role is centered around the transport of oxygen and carbon dioxide.

**6. Which blood group system is associated with hemolytic disease of the newborn?**

- A. Abo blood group system
- B. Rh (Rhesus) blood group system**
- C. Kell blood group system
- D. Lewis blood group system

The Rh (Rhesus) blood group system is strongly associated with hemolytic disease of the newborn (HDN), particularly in cases where an Rh-negative mother gives birth to an Rh-positive baby. This condition occurs when the mother's immune system recognizes the Rh-positive fetal red blood cells as foreign and produces antibodies against them. If these antibodies cross the placenta, they can attack the fetal red blood cells, leading to hemolysis, which can result in anemia, jaundice, and, in severe cases, fetal hydrops or even stillbirth. The Rh factor is critical in this scenario because the presence or absence of the D antigen (part of the Rh system) is what primarily triggers the immune response. While other blood group systems, such as ABO, can also cause hemolytic disease, the Rh system is the most well-known and significant contributor to this condition. This is due to its ability to produce a more intense immune reaction and the higher likelihood of sensitization in Rh-negative mothers who have previously had an Rh-positive child or have experienced an Rh-positive blood transfusion.

**7. What is the primary function of erythrocytes in the human body?**

- A. Transport oxygen and carbon dioxide**
- B. Produce antibodies for immune response**
- C. Facilitate blood clotting**
- D. Regulate blood pressure**

Erythrocytes, commonly known as red blood cells, have a primary function that revolves around the transport of gases within the bloodstream. They are specifically designed to carry oxygen from the lungs to tissues throughout the body and to return carbon dioxide from the tissues back to the lungs for exhalation. The presence of hemoglobin, a vital protein found in erythrocytes, is crucial for this function as it binds to oxygen and carbon dioxide, enabling efficient gas exchange. This transport mechanism is essential for maintaining cellular respiration and overall metabolic processes, making it a critical function of erythrocytes in supporting the body's need for oxygen and the removal of carbon dioxide. The other options, while they describe important physiological functions in the body, do not pertain to the primary role of erythrocytes. For instance, the production of antibodies is a function of leukocytes, while blood clotting is managed primarily by platelets, and blood pressure regulation involves a complex interplay of different bodily systems, including the vascular and endocrine systems.

**8. What is the term for the aggregation of platelets at the site of vascular injury?**

- A. Secondary hemostasis**
- B. Coagulation**
- C. Fibrinolysis**
- D. Primary hemostasis**

The aggregation of platelets at the site of vascular injury is known as primary hemostasis. This is the initial response to vascular damage, where platelets rapidly adhere to the exposed subendothelial structures via specific receptors and, upon activation, release various substances that enhance aggregation and attract more platelets to the site. This process is crucial for forming a temporary plug that helps to seal small breaches in the vascular system and prevents excessive bleeding. In the context of hemostasis, this phase is clearly distinct from secondary hemostasis, which involves the complex cascade of coagulation factors leading to the formation of a stable fibrin clot. While coagulation is critical for effective hemostatic function, it follows the initial platelet aggregation and is often referred to as secondary hemostasis. Fibrinolysis, on the other hand, is the process by which the fibrin clot is dissolved after the vascular integrity is restored, completely separate from the aggregation phase that defines primary hemostasis. Understanding these phases helps clarify the sequential events in the overall hemostatic process following injury to the blood vessel.

**9. What is the most specific test for detecting Factor V Leiden mutation?**

- A. Activated Protein C Resistance (APC) clot-based assay**
- B. Factor V Mutation Assay**
- C. Antithrombin antigen assay**
- D. Complete blood count**

The most specific test for detecting Factor V Leiden mutation is the Factor V Mutation Assay. This test directly identifies the specific genetic change in the Factor V gene responsible for the Leiden mutation, which is a single-point mutation that affects protein function and contributes to an increased risk of thrombosis. Unlike other tests, the Factor V Mutation Assay employs molecular techniques, such as polymerase chain reaction (PCR) and DNA sequencing, to confirm the presence of the mutation at the DNA level. This level of specificity is crucial for definitive diagnosis since it can distinguish Factor V Leiden from other forms of activated protein C resistance that may not be related to the mutation. In contrast, while the Activated Protein C Resistance assay can indicate a problem with the protein's function, it does not specifically identify the mutation itself and can yield false positives or negatives due to other factors. The Antithrombin antigen assay measures the levels of antithrombin but is unrelated to Factor V Leiden detection. A complete blood count provides general information about blood cells but does not offer any insight into specific genetic mutations associated with thrombotic risk.

**10. Complaints of pain in patients with sickle cell disease are most likely associated with which condition?**

- A. Hemolytic anemia**
- B. Infection**
- C. Vaso-occlusive crisis**
- D. Aplastic crisis**

In sickle cell disease, patients frequently experience pain due to vaso-occlusive crises. This condition occurs when sickle-shaped red blood cells obstruct small blood vessels, leading to a decrease in blood flow and oxygen delivery to tissues. This ischemic event causes significant pain, often referred to as a "crisis," as it can affect various parts of the body, including bones, joints, and organs. The pathophysiology behind this pain involves the sickling of red blood cells under low oxygen conditions, which encourages further blockages and creates a cycle of pain and tissue damage. This acute pain is a hallmark of sickle cell disease and can vary in severity, duration, and frequency among patients. While hemolytic anemia, infection, and aplastic crisis can also be present in patients with sickle cell disease, they do not directly correlate with the spontaneous episodes of pain that characterize vaso-occlusive crises, making the latter the most relevant association regarding the complaints of pain.

## 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://ascpspecialistinhematology.examzify.com>**

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

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