

ASCP Specialist in Hematology (SH) Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

This is a sample study guide. To access the full version with hundreds of 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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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!

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Questions

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- 1. Which of the following methods is NOT typically used for identifying hemoglobin variants?**
 - A. Sodium metabisulfite solubility test**
 - B. High performance liquid chromatography (HPLC)**
 - C. Citrate agar electrophoresis**
 - D. Alkaline electrophoresis**

- 2. Which blood component plays a key role in the immune response?**
 - A. Red blood cells**
 - B. Platelets**
 - C. Leukocytes**
 - D. Serum**

- 3. What is the primary cause of secondary polycythemia?**
 - A. Genetic mutation**
 - B. Decreased erythropoietin production**
 - C. Increased erythropoietin levels due to hypoxia or tumors**
 - D. Bone marrow disorders**

- 4. In what type of patients would you expect to see a “left shift” in the white blood cell differential?**
 - A. In patients experiencing chronic inflammation**
 - B. In patients with allergies**
 - C. In patients with acute infection or stress**
 - D. In patients recovering from chemotherapy**

- 5. Which laboratory test is commonly used to evaluate iron status in patients?**
 - A. Complete blood count**
 - B. Serum ferritin**
 - C. Prothrombin time**
 - D. Blood glucose test**

6. Which cell type is primarily responsible for the production of antibodies?

- A. T cells**
- B. B cells**
- C. Macrophages**
- D. Natural killer cells**

7. Why is a drop of albumin added to the cerebrospinal fluid sample before cytocentrifugation?

- A. Enhance staining of the elements**
- B. Preserve the integrity of the cells**
- C. Increases the fluid volume for a monolayer**
- D. Dilute the sample**

8. What type of blood cells are primarily affected in aplastic anemia?

- A. White blood cells only**
- B. Red blood cells only**
- C. Platelets only**
- D. All types of blood cells (red cells, white cells, and platelets)**

9. What type of inheritance pattern is seen with sickle cell disease?

- A. Autosomally dominant**
- B. Autosomal recessive**
- C. X-linked dominant**
- D. Incomplete dominant**

10. Which condition is often associated with the presence of abnormal basophils in the blood?

- A. Systemic lupus erythematosus**
- B. Chronic myeloproliferative disorders**
- C. Iron overload syndrome**
- D. Leukopenia**

Answers

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

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Explanations

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1. Which of the following methods is NOT typically used for identifying hemoglobin variants?

- A. Sodium metabisulfite solubility test**
- B. High performance liquid chromatography (HPLC)**
- C. Citrate agar electrophoresis**
- D. Alkaline electrophoresis**

The sodium metabisulfite solubility test is not typically used for identifying hemoglobin variants because its primary purpose is to screen for sickle cell disease. This test works by reducing hemoglobin S, leading to the precipitation of sickled cells, which makes it effective for detecting the presence of sickle hemoglobin but not for differentiating between various hemoglobin variants. On the other hand, high performance liquid chromatography (HPLC), citrate agar electrophoresis, and alkaline electrophoresis are established techniques for identifying and quantifying different hemoglobin variants. HPLC separates hemoglobin types based on their chemical properties and has high sensitivity and specificity for variant detection. Citrate agar electrophoresis enables separation of different hemoglobins based on their charge and size under specific pH conditions, while alkaline electrophoresis achieves separation based on the charge of the hemoglobin at a higher pH. These methods provide detailed insights into hemoglobin composition, making them suitable for variant identification.

2. Which blood component plays a key role in the immune response?

- A. Red blood cells**
- B. Platelets**
- C. Leukocytes**
- D. Serum**

Leukocytes, or white blood cells, are integral to the immune response, serving as the body's primary defense mechanism against infections, foreign invaders, and other threats. They are responsible for identifying, attacking, and destroying pathogens such as bacteria, viruses, and fungi. Leukocytes encompass various cell types, including lymphocytes (such as T cells and B cells), neutrophils, monocytes, eosinophils, and basophils. Each of these cell types has specific functions, such as producing antibodies, orchestrating inflammatory responses, and directly attacking infected or malignant cells. In contrast, red blood cells primarily carry oxygen and carbon dioxide throughout the body, and platelets are essential for blood clotting rather than immune defense. Serum contains antibodies and other proteins that can assist in the immune process, but it is the leukocytes that actively perform the immune functions necessary for protecting the body from infections and diseases.

3. What is the primary cause of secondary polycythemia?

- A. Genetic mutation
- B. Decreased erythropoietin production
- C. Increased erythropoietin levels due to hypoxia or tumors**
- D. Bone marrow disorders

Secondary polycythemia is predominantly caused by increased levels of erythropoietin, which often occur as a compensatory response to chronic hypoxia or due to the presence of certain tumors. In situations where there is inadequate oxygenation of tissues, such as chronic obstructive pulmonary disease (COPD), high altitude living, or certain heart conditions, the body responds by stimulating the kidneys to produce more erythropoietin. This hormone promotes the production of red blood cells in the bone marrow, ultimately leading to an increase in red blood cell mass and therefore, polycythemia. Additionally, certain tumors, like renal cell carcinoma, can also secrete erythropoietin ectopically, resulting in high levels of this hormone independently of hypoxic conditions. The presence of increased erythropoietin is a hallmark of secondary polycythemia, thus directly linking it to the underlying causes associated with hypoxia or proliferative neoplasms. Other causes listed, such as genetic mutations, decreased erythropoietin production, and bone marrow disorders, do not adequately explain the mechanism behind secondary polycythemia, as they lead to different forms of polycythemia or other hematological conditions. Understanding this distinction is crucial for

4. In what type of patients would you expect to see a "left shift" in the white blood cell differential?

- A. In patients experiencing chronic inflammation
- B. In patients with allergies
- C. In patients with acute infection or stress**
- D. In patients recovering from chemotherapy

A "left shift" in the white blood cell differential refers to the presence of an increased number of immature white blood cells, particularly neutrophils, in circulation. This phenomenon is commonly observed in conditions characterized by an acute inflammatory response, primarily due to infection or significant physiological stress. In cases of acute infection, the body rapidly responds to the presence of pathogens by increasing the production and release of white blood cells from the bone marrow. As the infection progresses, there is not only a rise in the total number of white blood cells but also a relative increase in immature forms, such as band neutrophils. This state signifies that the body is trying to mobilize its defenses quickly to combat the infectious agent, hence the term "left shift," which is a reference to how these cells are positioned on the white blood cell differential chart. For acute infection or stress, this response is essential as it indicates an active fight against potential threats, showcasing the body's efforts to maintain homeostasis. While chronic inflammation and allergies can lead to various changes in white blood cell counts and types, they typically do not present with a classic "left shift" as seen in acute processes. Similarly, during recovery from chemotherapy, the bone marrow is regaining its normal function, which may

5. Which laboratory test is commonly used to evaluate iron status in patients?

- A. Complete blood count**
- B. Serum ferritin**
- C. Prothrombin time**
- D. Blood glucose test**

Serum ferritin is a widely used laboratory test for assessing iron status in patients. Ferritin is a protein that stores iron in the body, and its serum levels reflect the amount of stored iron. When determining iron deficiency or iron overload, serum ferritin levels provide critical insights. Low levels of ferritin indicate depleted iron stores, suggesting iron deficiency anemia, while elevated levels can suggest conditions such as hemochromatosis or inflammatory responses. In contrast, a complete blood count provides information about various blood components, such as hemoglobin, hematocrit, and red blood cell indices, but it does not specifically assess iron status. Prothrombin time measures the time it takes for blood to clot and is primarily used to evaluate coagulation factors rather than iron levels. The blood glucose test measures blood sugar levels and is not related to iron evaluation. Therefore, serum ferritin is specifically designed to assess iron levels in the body, making it the optimal choice for evaluating iron status in patients.

6. Which cell type is primarily responsible for the production of antibodies?

- A. T cells**
- B. B cells**
- C. Macrophages**
- D. Natural killer cells**

B cells are the primary cell type responsible for the production of antibodies. These lymphocytes develop from stem cells in the bone marrow and undergo a process of maturation that enables them to produce specific antibodies against antigens. When B cells encounter an antigen, they can differentiate into plasma cells, which are specialized for secreting large quantities of antibodies. These antibodies play a critical role in the immune response by binding to specific pathogens, neutralizing them, and marking them for destruction by other immune cells. This process is a key aspect of the adaptive immune system, which is characterized by its ability to remember past infections and enhance the response upon subsequent exposures to the same pathogen. In contrast, T cells are primarily involved in cell-mediated immunity and do not produce antibodies. Macrophages function mainly as antigen-presenting cells and participate in phagocytosis, while natural killer cells are involved in the destruction of infected or cancerous cells rather than in antibody production. The specialized role of B cells in antibody synthesis is crucial for the immune defense and contributes significantly to the body's ability to recognize and fight infections.

7. Why is a drop of albumin added to the cerebrospinal fluid sample before cytocentrifugation?

- A. Enhance staining of the elements**
- B. Preserve the integrity of the cells**
- C. Increases the fluid volume for a monolayer**
- D. Dilute the sample**

Adding a drop of albumin to the cerebrospinal fluid (CSF) sample before cytocentrifugation primarily serves to preserve the integrity of the cells. The presence of albumin helps to create a protective environment for the cellular components during the processing of the CSF. This is particularly important because CSF is often low in cellularity, making it crucial to maintain the viability and morphology of any cells present. When centrifuged, albumin contributes to minimizing damage to the cells by preventing them from sticking to one another or to the slides, allowing for clearer visualization and analysis post-centrifugation. The other options, while they touch on related concepts, do not accurately describe the primary reason for the inclusion of albumin in this context. While enhancing staining or increasing fluid volume might seem relevant to processing samples, they do not reflect the fundamental protective role that albumin plays in preserving cell integrity during cytocentrifugation. Likewise, dilution of the sample does not align with the purpose of maintaining cell morphology and viability, as dilution could potentially compromise the concentration and visibility of cells necessary for accurate assessment.

8. What type of blood cells are primarily affected in aplastic anemia?

- A. White blood cells only**
- B. Red blood cells only**
- C. Platelets only**
- D. All types of blood cells (red cells, white cells, and platelets)**

Aplastic anemia is characterized by the failure of the bone marrow to produce sufficient blood cells, which can affect all hematopoietic lineages. The condition leads to a significant reduction in the production of red blood cells, white blood cells, and platelets, resulting in pancytopenia. In this disorder, the bone marrow is typically hypoplastic or even aplastic, which means it contains fewer blood-forming stem cells to produce all types of blood cells—erythrocytes (red blood cells), leukocytes (white blood cells), and thrombocytes (platelets). The lack of red blood cells can cause anemia, leading to fatigue and weakness. The decrease in white blood cells increases the risk of infections, while the reduction in platelets can lead to bleeding and bruising. Thus, the impact of aplastic anemia is systemic, affecting the production of all major blood components, making the correct answer encompass all types of blood cells.

9. What type of inheritance pattern is seen with sickle cell disease?

- A. Autosomally dominant**
- B. Autosomal recessive**
- C. X-linked dominant**
- D. Incomplete dominant**

Sickle cell disease follows an autosomal recessive inheritance pattern, which is characterized by the requirement of two copies of the mutated gene for the disease to manifest. In sickle cell disease, the gene responsible is that coding for the beta-globin chain of hemoglobin. When an individual inherits two mutated alleles (one from each parent), they have the disease and display the characteristic symptoms due to the production of abnormal hemoglobin (hemoglobin S). Individuals who inherit only one mutated allele and one normal allele are carriers (known as having sickle cell trait) but usually do not exhibit symptoms of the disease. This pattern of inheritance is also significant because it shows how the disease can skip generations—carriers do not have the disease but can pass the mutated gene to their offspring. This distinguishes it from autosomal dominant inheritance, where only one copy of the mutated gene is sufficient for the disease to occur, and from X-linked inheritance, where the gene is located on the X chromosome and predominantly affects males.

10. Which condition is often associated with the presence of abnormal basophils in the blood?

- A. Systemic lupus erythematosus**
- B. Chronic myeloproliferative disorders**
- C. Iron overload syndrome**
- D. Leukopenia**

Abnormal basophils in the blood are often associated with chronic myeloproliferative disorders, which include conditions like chronic myeloid leukemia (CML), polycythemia vera, essential thrombocythemia, and myelofibrosis. In these disorders, there is an overproduction of one or more types of blood cells in the bone marrow, including basophils. This leads to an increase in basophil counts, and they may exhibit abnormalities in morphology or function. In chronic myeloproliferative disorders, the presence of abnormal basophils can indicate dysregulation in hematopoiesis due to genetic mutations, such as the BCR-ABL fusion protein found in CML. This aberration leads to the characteristic symptoms of these disorders, including splenomegaly and hyperviscosity. The key aspect is that basophils, which are normally present in low numbers in the peripheral blood, can become numerous and display atypical features, signifying a pathological process. Conditions like systemic lupus erythematosus, iron overload syndrome, and leukopenia do not typically present with the significant abnormal basophil profile seen in chronic myeloproliferative disorders. Instead,

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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