

Canadian Society for Medical Laboratory Science (CSMLS) 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

- 1. What is dehydration?**
 - A. Process of adding water**
 - B. Removal of water**
 - C. Loss of water**
 - D. Storing of water**
- 2. What causes the appearance of holes in a blood smear?**
 - A. Dirty slide**
 - B. Air bubbles**
 - C. Over-diluted sample**
 - D. Incorrect staining**
- 3. Which additive is found in a red stoppered evacuated tube?**
 - A. EDTA**
 - B. SPS**
 - C. None**
 - D. Sodium heparin**
- 4. Which of the following tests is most commonly performed on a skin puncture sample?**
 - A. HCT**
 - B. pH**
 - C. PKU**
 - D. PTT**
- 5. Which component of blood is responsible for clotting?**
 - A. Erythrocytes**
 - B. Leukocytes**
 - C. Platelets**
 - D. Plasma**
- 6. What is the name of the fluid portion of a blood specimen after it has been collected with an anticoagulant?**
 - A. Fibrin**
 - B. Fibrinogen**
 - C. Plasma**
 - D. Serum**

- 7. Which is not a standard sized flask?**
- A. 25ml**
 - B. 500ml**
 - C. 85ml**
 - D. 1000ml**
- 8. Which body system is primarily responsible for hormone production and regulation?**
- A. Nervous system**
 - B. Endocrine system**
 - C. Urinary system**
 - D. Muscular system**
- 9. What is the most critical part of a biological safety cabinet?**
- A. Location in the laboratory**
 - B. High efficiency particulate air filter**
 - C. Personal protective equipment**
 - D. Power source available**
- 10. Which tablet is used for bilirubin detection in urine?**
- A. Clinitest**
 - B. SSA**
 - C. Acetest**
 - D. Ictotest**

Answers

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

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Explanations

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1. What is dehydration?

A. Process of adding water

B. Removal of water

C. Loss of water

D. Storing of water

Dehydration is best defined as the removal of water from a substance or system. This process can occur in various biological and chemical contexts, such as when moisture is extracted from food during preservation or when cells lose water due to various physiological conditions. In laboratory settings, understanding dehydration is crucial as it affects sample integrity, chemical reactions, and biological processes. The concepts related to the other options, such as adding water or storing water, involve hydration processes, which are the opposite of dehydration. Loss of water, while similar in meaning, does not encompass the systematic removal process implied by the term 'dehydration.' Storing water goes against the concept of dehydration, which emphasizes the absence or removal of water. Thus, calling dehydration the removal of water captures its essence in scientific terms.

2. What causes the appearance of holes in a blood smear?

A. Dirty slide

B. Air bubbles

C. Over-diluted sample

D. Incorrect staining

The appearance of holes in a blood smear can indeed be caused by a dirty slide. When preparing a blood smear, the glass slide must be clean to ensure that the cells spread evenly and are visible for analysis. Any residue, debris, or contaminants on the slide can interfere with the integrity of the sample, leading to the formation of voids or "holes" where red blood cells are either absent or poorly distributed. This can create a misleading representation of the blood composition, affecting the diagnostic process. In contrast, the other factors listed typically do not produce the same appearance of holes. Air bubbles might cause localized areas of disruption, but they would not create empty spaces in the same way as a dirty slide would. An over-diluted sample could result in a sparse distribution of cells, but not necessarily visible holes. Incorrect staining mainly affects the coloration of the cells rather than causing actual gaps in the smear. Thus, a dirty slide is the primary factor leading to the observation of holes in a blood smear.

3. Which additive is found in a red stoppered evacuated tube?

- A. EDTA
- B. SPS
- C. None**
- D. Sodium heparin

The correct answer indicates that a red stoppered evacuated tube typically does not contain any additive. This type of tube is primarily designed for serum collection, allowing the blood to clot naturally before the serum is separated by centrifugation. When blood is collected in a tube without additives, it results in serum that is free from anticoagulants or other substances that may interfere with the tests performed on the serum. In contrast, tubes with additives such as EDTA, SPS, or sodium heparin serve specific purposes. EDTA is commonly found in purple stoppered tubes and is used for hematology tests because it prevents coagulation. SPS is an additive in yellow stoppered tubes and is mainly used for blood cultures to inhibit the activity of certain antibiotics, while sodium heparin, contained in green stoppered tubes, is an anticoagulant used for various chemistry tests requiring plasma. Therefore, recognizing the characteristics and uses of different tube types and their additives is essential for proper sample collection and testing in a laboratory setting.

4. Which of the following tests is most commonly performed on a skin puncture sample?

- A. HCT
- B. pH
- C. PKU**
- D. PTT

The most commonly performed test on a skin puncture sample is the phenylketonuria (PKU) screening test. This test is particularly important for newborns and young infants, as it identifies defects in the metabolism of phenylalanine, an amino acid that, if not properly metabolized, can lead to serious neurological issues. Since skin puncture samples, often collected via heel prick in infants, require a limited volume of blood, PKU testing is well-suited for this method. It is a quick, cost-effective, and essential screening tool to ensure that infants are healthy and developing normally. In contrast, tests such as hematocrit (HCT), which measures the proportion of blood volume that is occupied by red blood cells, can be performed using venous blood samples for greater accuracy and reliability. Similarly, pH testing typically requires a more controlled environment and accurate sample handling, making it less suitable for skin punctures. Prothrombin time (PTT), a test that assesses blood clotting ability, is generally performed on larger venous blood samples to accurately determine coagulation factors, thereby ruling it out as a common application for skin puncture specimens.

5. Which component of blood is responsible for clotting?

- A. Erythrocytes**
- B. Leukocytes**
- C. Platelets**
- D. Plasma**

The component of blood responsible for clotting is platelets. Platelets, also known as thrombocytes, are small, disc-shaped cell fragments that play a crucial role in hemostasis, which is the process of stopping bleeding. When a blood vessel is injured, platelets quickly adhere to the site of injury and to each other, forming a temporary plug. This aggregation helps to minimize blood loss and sets the stage for further clotting processes, which involve coagulation factors present in the plasma. Erythrocytes, or red blood cells, primarily function to transport oxygen and carbon dioxide between the lungs and tissues. They do not play a direct role in the clotting process. Leukocytes, or white blood cells, are primarily involved in the immune response and also do not contribute to clot formation. Plasma is the liquid component of blood that carries cells and proteins; it contains clotting factors, but it is the platelets that are directly involved in the initial stages of clot formation.

6. What is the name of the fluid portion of a blood specimen after it has been collected with an anticoagulant?

- A. Fibrin**
- B. Fibrinogen**
- C. Plasma**
- D. Serum**

The fluid portion of a blood specimen collected with an anticoagulant is known as plasma. When blood is drawn into a tube containing an anticoagulant, it prevents the blood from clotting, allowing the liquid component to remain in its natural state. Plasma consists mainly of water, but it also contains proteins, electrolytes, nutrients, hormones, and waste products. In contrast, serum is the liquid portion of blood that is obtained after coagulation has occurred, meaning that the blood has clotted and the clot (which contains fibrin) has been removed. Fibrin and fibrinogen are associated with the coagulation process; fibrin is the protein that forms the structural basis of blood clots, while fibrinogen is the soluble plasma protein that is converted into fibrin during clotting. Since the question specifically refers to a specimen treated with an anticoagulant, the correct term is plasma.

7. Which is not a standard sized flask?

- A. 25ml
- B. 500ml
- C. 85ml**
- D. 1000ml

The flask sizes mentioned, including 25ml, 500ml, and 1000ml, are all standard sizes commonly used in laboratory settings for various applications in chemistry and biological sciences. Standardized flasks often come in sizes that are convenient for measuring, mixing, and preparing solutions, which aids in maintaining consistency across experiments. In contrast, 85ml is not a commonly recognized standard size for laboratory flasks. While it is possible to have flasks of that volume, it does not align with the typical volumetric sizes used in educational or professional laboratories. Therefore, the distinction of being "not a standard sized flask" accurately applies to 85ml, as it does not fit within the conventional series of flask sizes that are predominantly utilized.

8. Which body system is primarily responsible for hormone production and regulation?

- A. Nervous system
- B. Endocrine system**
- C. Urinary system
- D. Muscular system

The endocrine system is primarily responsible for hormone production and regulation in the body. It consists of a network of glands that secrete hormones directly into the bloodstream. These hormones act as chemical messengers that regulate various physiological processes, including metabolism, growth and development, tissue function, sexual function, reproduction, sleep, and mood. Hormones play a crucial role in maintaining homeostasis, which is the body's stable internal environment. For instance, the endocrine system includes glands such as the pituitary, thyroid, adrenal glands, and pancreas, each of which produces specific hormones that influence different organs and systems. In contrast, the nervous system primarily transmits signals rapidly across short distances through electrical impulses and neurotransmitters, not hormone production. The urinary system is primarily responsible for waste removal and fluid balance, while the muscular system focuses on movement and support of the body. These systems, while vital, do not play the central role in hormone synthesis and management that the endocrine system does.

9. What is the most critical part of a biological safety cabinet?

- A. Location in the laboratory**
- B. High efficiency particulate air filter**
- C. Personal protective equipment**
- D. Power source available**

The most critical part of a biological safety cabinet is the high-efficiency particulate air (HEPA) filter. This filter plays a vital role in ensuring a sterile environment by capturing airborne contaminants that may pose a risk to laboratory personnel and the integrity of the experiment. The HEPA filter is designed to trap at least 99.97% of particles that are 0.3 micrometers in diameter, which includes most microorganisms and cellular debris. This capability is essential in protecting both the user from potential exposure to hazardous biological agents and the samples being handled from contamination. The effectiveness of a biological safety cabinet hinges significantly on the HEPA filter, as it is responsible for filtering the air that enters the cabinet and providing a sterile work environment. Therefore, the presence and proper functioning of this filter are paramount in maintaining safety protocols in the laboratory setting.

10. Which tablet is used for bilirubin detection in urine?

- A. Clinitest**
- B. SSA**
- C. Acetest**
- D. Ictotest**

The Ictotest is specifically designed for the detection of bilirubin in urine. It utilizes a highly sensitive color reaction that occurs when bilirubin is present, allowing for the accurate identification of this indicator of liver function and potential hemolysis. The test employs a reagent tablet that clinically transforms when it interacts with bilirubin in the urine, making it a reliable choice for this particular analysis. In contrast, Clinitest is primarily used for the qualitative determination of glucose in urine, whereas SSA (sulfosalicylic acid) is used in the assessment of proteinuria, and Acetest is for detecting ketones in urine. Thus, while these other tests serve specific and valuable purposes in clinical laboratory settings, they are not suitable for bilirubin detection, reinforcing why the Ictotest is the appropriate answer for this question.

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://csmls.examzify.com>

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