CAMLPR HISTOLOGY PRACTICE TEST (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

1. There appears to be debris and splinters of bone in a stained tissue. What is the most likely cause?

A. Contaminated embedding medium

B. Bone dust

C. Air bubbles

D. Processing artifacts

2. What structure is present at the apical surface of the respiratory epithelium?

A. Microvilli

B. Goblet cells

C. Respiratory cilia

D. Basal bodies

3. Which feature increases absorptive surface area in the small intestine epithelium?

A. Stereocilia

B. Cilia

C. Flagella

D. Microvilli

4. Not using iron hematoxylin can contribute to pale nuclear staining in Masson Trichrome. Which choice correctly states this cause?

A. Not using iron hematoxylin

B. Overoxidized iron hematoxylin

C. Not enough time in nuclear stain

D. Increase washing

5. What does the Periodic Acid Schiff stain demonstrate, and which tissues are used as controls for glycogen and basement membranes?

A. Demonstrates glycogen and glycoproteins; use adipose tissue for glycogen.

B. Demonstrates glycogen (neutral carbohydrates), neutral mucins, basement membranes and fungi; use liver or cervix for glycogen and use kidney for basement membrane.

C. Demonstrates lipids; use adipose tissue

D. Demonstrates nucleic acids; use bone marrow

6. Purkinje layer is a layer of neurons that is part of which structure?

A. Cerebellum

B. Cerebrum

C. Hypothalamus

D. Midbrain

7. What thickness should tissue be cut on?

A. 3-4mm

B. 1-2mm

C. 0.5-1mm

D. 5-6mm

8. Identify the organ shown.

A. Colon

B. Small intestine

C. Esophagus

D. Stomach

9. Which types of muscle tissue are present in the sample?

A. Smooth, Cardiac, and Skeletal

B. Smooth only

C. Cardiac and Skeletal

D. Smooth and Cardiac

10. How should gastrointestinal tract biopsy tissues be oriented during embedding?

A. On end, diagonal.

B. Flat on their side.

C. On end, completely vertical.

D. Flat with epithelium on top.

Answers

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

Explanations

1. There appears to be debris and splinters of bone in a stained tissue. What is the most likely cause?

A. Contaminated embedding medium

B. Bone dust

C. Air bubbles

D. Processing artifacts

Recognizing artifacts from bone particles in tissue sections. Debris and splinters of bone seen in a stained slide most often come from bone dust generated during sectioning of bone-containing tissue. As the microtome blade cuts through mineralized bone, tiny bone fragments and powder can be carried into the section and remain embedded in the paraffin block, then stain along with the tissue. This is more specific than broad processing artifacts or issues like air bubbles, and it wouldn't be explained by contaminated embedding medium unless those contaminants were bone-like particles. To prevent this, samples containing bone should be properly decalcified and cleaned of obvious bone fragments before embedding, and the cutting equipment should be checked for bone dust accumulation.

2. What structure is present at the apical surface of the respiratory epithelium?

A. Microvilli

B. Goblet cells

C. Respiratory cilia

D. Basal bodies

Motile cilia on the apical surface drive mucociliary clearance. In the respiratory tract, the epithelium is lined with pseudostratified ciliated columnar cells interspersed with goblet cells, and the coordinated beating of these cilia propels mucus toward the pharynx to remove debris and pathogens. Microvilli are associated with absorptive surfaces and are not the characteristic feature of this epithelium. Goblet cells secrete mucus but are not apical projections themselves. Basal bodies anchor the cilia at the base inside the cell, not on the surface. Therefore, the structure present at the apical surface is the respiratory cilia.

3. Which feature increases absorptive surface area in the small intestine epithelium?

A. Stereocilia

B. Cilia

C. Flagella

D. Microvilli

Absorptive surface area in the small intestine is increased by microvilli, tiny fingerlike projections on the apical surface of enterocytes that form the brush border. These microscopic extensions extend the cell membrane, boosting the area available for nutrient contact and housing digestive enzymes, which makes absorption much more efficient. Stereocilia are long immotile extensions found in other tissues, cilia are motile and move mucus or fluids along surfaces, and flagella propel cells like sperm; none of these primarily serve nutrient absorption in the intestinal lining.

4. Not using iron hematoxylin can contribute to pale nuclear staining in Masson Trichrome. Which choice correctly states this cause?

A. Not using iron hematoxylin

B. Overoxidized iron hematoxylin

C. Not enough time in nuclear stain

D. Increase washing

Nuclear staining in Masson Trichrome comes from the iron hematoxylin step, which deposits a blue black color in the nuclei and provides the necessary contrast against the rest of the tissue. If you skip using iron hematoxylin, there's no strong nuclear chromogen to bind DNA, so the nuclei appear pale while the other structures pick up their colors from the subsequent dyes. This direct absence of the nuclear stain explains the pale nuclear appearance, making the lack of iron hematoxylin the best explanation.

5. What does the Periodic Acid Schiff stain demonstrate, and which tissues are used as controls for glycogen and basement membranes?

A. Demonstrates glycogen and glycoproteins; use adipose tissue for glycogen.

B. Demonstrates glycogen (neutral carbohydrates), neutral mucins, basement membranes and fungi; use liver or cervix for glycogen and use kidney for basement membrane.

C. Demonstrates lipids; use adipose tissue

D. Demonstrates nucleic acids; use bone marrow

The Periodic Acid Schiff stain targets carbohydrates, turning them magenta after oxidation to create aldehyde groups that react with Schiff reagent. This makes neutral glycogen, neutral mucins, basement membranes (which are rich in glycoproteins), and fungal cell walls readily visible. The best answer notes that PAS demonstrates glycogen, neutral carbohydrates including mucins, basement membranes, and fungi. For controls, liver (or cervix) is a reliable positive control for glycogen because these tissues contain abundant glycogen, while kidney provides a strong positive control for basement membranes due to the prominent glomerular basement membrane. Choices that assign staining to lipids or nucleic acids are not correct because PAS is specific for carbohydrates, whereas lipids are shown with lipid stains (like Sudan stains) and nucleic acids with other methods (such as Feulgen staining).

6. Purkinje layer is a layer of neurons that is part of which structure?

A. Cerebellum

B. Cerebrum

C. Hypothalamus

D. Midbrain

The Purkinje layer is a single, distinct row of large Purkinje neurons located in the cerebellar cortex of the cerebellum. In the cerebellar cortex, there are three layers: the molecular layer, the Purkinje cell layer, and the granular layer. Purkinje cells have extensive dendrites that extend into the molecular layer to receive inputs, while their axons project to the deep cerebellar nuclei, providing the primary inhibitory output from the cerebellar cortex via GABA. This unique arrangement and function are specific to the cerebellum, so the Purkinje layer belongs to the cerebellum, not the cerebrum, hypothalamus, or midbrain.

7. What thickness should tissue be cut on?

A. 3-4mm

B. 1-2mm

C. 0.5-1mm

D. 5-6mm

Tissue must be cut into extremely thin sections so light can pass through and detail can be seen clearly under a microscope. For standard paraffin-embedded tissue used in light microscopy, the target thickness is about 3 to 5 micrometers (μm). To put that in perspective, 1 mm is 1000 μm, so these sections are thousands of times thinner than a millimeter. The tiny thickness is what lets you resolve cellular features after staining; if the sections were thicker, light scatter would blur details and stains wouldn't yield sharp contrast. For frozen sections, you'd still be in the micrometer range (roughly 5–20 μm), and for electron microscopy you'd cut even thinner (tens of nanometers). So the key idea is: very thin sections, typically around 3–5 μm for light microscopy.

8. Identify the organ shown.

A. Colon

B. Small intestine

C. Esophagus

D. Stomach

The key idea is recognizing mucosal features that distinguish parts of the GI tract. The image shows a mucosa lined by simple columnar epithelium with many goblet cells and straight tubular glands (crypts of Lieberkühn), with no villi protruding into the lumen. This combination—numerous mucus-secreting goblet cells and absence of villi—is characteristic of the colon (large intestine). In the small intestine you'd expect villi and a different pattern of glands; in the esophagus the lining would be stratified squamous epithelium; in the stomach you'd see gastric glands with parietal and chief cells. Thus, the organ shown is the colon.

9. Which types of muscle tissue are present in the sample?

A. Smooth, Cardiac, and Skeletal

B. Smooth only

C. Cardiac and Skeletal

D. Smooth and Cardiac

Muscle tissues have distinct microscopic features that let you tell them apart. Skeletal muscle fibers are long and cylindrical with multiple nuclei located at the periphery and clear cross-striations. Cardiac muscle is striated as well but shows branched fibers with one or two central nuclei and intercalated discs connecting cells. Smooth muscle lacks striations entirely and is made of spindle-shaped cells with a single central nucleus, typical of walls of hollow organs. If the sample displays all three patterns—striated skeletal fibers with peripheral nuclei, striated cardiac fibers with intercalated discs, and non-striated smooth muscle fibers—then all three muscle tissue types are present.

10. How should gastrointestinal tract biopsy tissues be oriented during embedding?

A. On end, diagonal.

B. Flat on their side.

C. On end, completely vertical.

D. Flat with epithelium on top.

Placing gastrointestinal biopsy tissues flat on their side during embedding optimizes how the mucosal architecture appears in the final sections. When these small samples are laid on their side, the mucosal surface is oriented so that the microtome cuts produce cross-sections through the epithelium, glands (crypts), and underlying layers in a consistent plane. This makes it easier to evaluate key features such as gland architecture, villous structure (in the small bowel), lamina propria, and the muscularis mucosae, and it reduces distortions or tangential cuts that can obscure pathology. Choosing other orientations often leads to sections that slice mucosa obliquely or longitudinally, which can truncate or distort glands and epithelium and hinder accurate assessment of inflammatory or architectural changes. Flat with the epithelium on top, or placing the tissue end-on or vertically, tends to provide less reliable cross-sectional views of the mucosa, increasing artifact and making interpretation more difficult. Therefore, flat on their side is the preferred method.

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://camlprhistology.examzify.com

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