

QUALIFICATION IN IMMUNOHISTOCHEMISTRY (QIHC) PRACTICE EXAM (SAMPLE)

STUDY GUIDE



Prepare with structure. Pass with confidence



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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. In order for the Primary Antibody to be a good selection, it must provide which combination?**
 - A. High sensitivity and high specificity.
 - B. High affinity with low specificity.
 - C. Low sensitivity with high specificity.
 - D. Moderate sensitivity and specificity.
- 2. Which enzymes are used for intercellular antigen exposure?**
 - A. Pepsin and Bromelin
 - B. Trypsin and Pepsin
 - C. Proteinase K and Trypsin
 - D. Bromelin alone
- 3. Which of the following are common counterstains used in immunohistochemistry?**
 - A. Mayer Hematoxylin, Methyl Green, Nuclear Fast Red
 - B. Eosin Y, Aniline Blue
 - C. Safranin O, Fast Green
 - D. Crystal Violet, Carbol Fuchsin
- 4. In the ABC method, Secondary antibodies are conjugated with Biotin.**
 - A. True
 - B. False
 - C. Not specified
 - D. Not applicable
- 5. Chromogen for enzyme beta-galactosidase is which of the following?**
 - A. X-Gal - turquoise
 - B. DAB - brown
 - C. AEC - red
 - D. Fast Red - red

- 6. Which cell type is responsible for producing antibodies?**
- A. B lymphocytes.
 - B. T lymphocytes.
 - C. Neurons.
 - D. Erythrocytes.
- 7. What is the primary purpose of blocking steps in IHC?**
- A. To prevent non-specific binding
 - B. To enhance antigen retrieval
 - C. To label antibodies with enzymes
 - D. To dissolve tissue sections
- 8. The link between tissue-bound primary Ab and the avidin-biotin-peroxidase complex is formed by which interaction?**
- A. Biotin-Streptavidin
 - B. Primary Ab-Ag direct
 - C. DAB reaction
 - D. Fluorescent tag
- 9. What is the basic principle of the ABC Method?**
- A. Direct enzyme conjugation of primary Abs
 - B. Biotin-streptavidin- peroxidase amplification; Secondary Abs conjugated with Biotin; Avidin-Biotin link; 2 Biotin molecules required
 - C. Fluorescence-labeled detection only
 - D. No amplification
- 10. Which combination represents the panel for Metastatic Carcinoma?**
- A. CK7, CK20, TTF-1
 - B. CK7, CK20
 - C. CK20, TTF-1
 - D. CK7, CK20, TTF-1

Answers

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

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Explanations

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1. In order for the Primary Antibody to be a good selection, it must provide which combination?

- A. High sensitivity and high specificity.**
- B. High affinity with low specificity.
- C. Low sensitivity with high specificity.
- D. Moderate sensitivity and specificity.

In selecting a primary antibody for immunohistochemistry, the goal is to detect the target antigen reliably and accurately. High sensitivity means the antibody can reveal the antigen even when it's present at low levels, ensuring true positives aren't missed. High specificity means the antibody binds mainly to the intended antigen with little cross-reactivity to other proteins, which minimizes background staining and false positives. Together, these two qualities give a clear, trustworthy signal that truly reflects the presence of the target. If specificity is low, you'll get a lot of misleading staining from other proteins; if sensitivity is low, you'll miss genuine signal. Moderate levels won't maximize detection or accuracy. Hence, high sensitivity and high specificity is the best combination.

2. Which enzymes are used for intercellular antigen exposure?

- A. Pepsin and Bromelin**
- B. Trypsin and Pepsin
- C. Proteinase K and Trypsin
- D. Bromelin alone

Intercellular antigen exposure relies on proteolytic enzymes to digest the proteins that mask epitopes between cells, freeing the sites for antibody access. Pepsin and bromelin (bromelain) are proteases commonly used for enzymatic antigen retrieval because they gently digest a broad range of extracellular and intercellular proteins without destroying the epitopes of many antigens. Pepsin, active in acidic conditions, helps reveal epitopes shielded by protein matrices, while bromelain digests a variety of proteins in the tissue's intercellular spaces, expanding the set of antigens that can be exposed. Using them together provides a balanced digestion that can unmask intercellular epitopes more effectively than some other enzymes. Other enzyme options can be either too harsh or too specific, risking over-digestion or failing to reveal certain intercellular epitopes. For example, trypsin is a strong protease that may degrade epitopes, and proteinase K is broad and aggressive, which can destroy delicate targets. Bromelain alone might not reveal all required epitopes.

3. Which of the following are common counterstains used in immunohistochemistry?

- A. Mayer Hematoxylin, Methyl Green, Nuclear Fast Red**
- B. Eosin Y, Aniline Blue
- C. Safranin O, Fast Green
- D. Crystal Violet, Carbol Fuchsin

In immunohistochemistry, a counterstain provides visible contrast to the chromogenic signal and helps define tissue architecture, especially the nuclei. A good nuclear counterstain is compatible with the chromogen and highlights nuclei without masking the specific stain. Mayer Hematoxylin stains nuclei blue and is a classic choice; Methyl Green offers a green nuclear stain often used in certain IHC protocols; Nuclear Fast Red gives pinkish-red nuclei and can provide strong contrast alongside brown DAB signal. Together, these three are common nuclear counterstains used in IHC to delineate nuclei and overall tissue context. The other options mix stains that are not standard nuclear counterstains in IHC—such as eosin-like stains that color cytoplasm, or stains used for other histology techniques that don't provide the same crisp nuclear contrast or compatibility with chromogenic IHC signals.

4. In the ABC method, Secondary antibodies are conjugated with Biotin.

- A. True
- B. False
- C. Not specified
- D. Not applicable

The ABC method relies on biotinylated secondary antibodies. After the primary antibody binds the target, the secondary antibody that recognizes the primary is conjugated with biotin. Then an avidin- or streptavidin-enzyme complex is applied, which binds to the biotin on the secondary antibody. This setup amplifies the signal because avidin has multiple binding sites and multiple biotin interactions can occur, leading to strong enzymatic labeling and visualization. While there are variations that use direct enzyme labeling or different detection steps, the classic ABC approach centers on biotinylated secondary antibodies, making the statement true.

5. Chromogen for enzyme beta-galactosidase is which of the following?

- A. X-Gal - turquoise
- B. DAB - brown
- C. AEC - red
- D. Fast Red - red

Chromogenic detection uses enzyme-substrate pairs to mark where the target is located. For beta-galactosidase, the best substrate is X-Gal, which the enzyme hydrolyzes to produce an insoluble turquoise (blue) pigment at the site of the target. The other chromogens are paired with different enzymes: DAB and AEC are substrates for horseradish peroxidase, giving brown or red signals, while Fast Red is typically used with alkaline phosphatase to yield red. Therefore, X-Gal yielding turquoise is the correct pairing for beta-galactosidase.

6. Which cell type is responsible for producing antibodies?

- A. B lymphocytes.
- B. T lymphocytes.
- C. Neurons.
- D. Erythrocytes.

B lymphocytes are responsible for producing antibodies. When a B cell encounters its specific antigen and receives help from other immune cells, it can differentiate into a plasma cell that secretes large amounts of antibodies. These antibodies circulate and bind to their targets, neutralizing pathogens or marking them for destruction by other parts of the immune system. T lymphocytes regulate the response and can kill infected cells but do not produce antibodies. Neurons are nerve cells and erythrocytes are red blood cells, neither of which makes antibodies.

7. What is the primary purpose of blocking steps in IHC?

- A. To prevent non-specific binding**
- B. To enhance antigen retrieval
- C. To label antibodies with enzymes
- D. To dissolve tissue sections

Blocking steps are used to prevent non-specific binding of antibodies to tissue components. Tissues contain many sites that can attract antibodies besides the target antigen, leading to background staining that hides the specific signal. Applying blocking agents such as serum from the secondary antibody's host, BSA, casein, or commercial blockers saturates those non-specific sites so the antibodies bind mainly to the intended antigen. This greatly improves specificity and the clarity of the staining. Endogenous enzyme activity can also be blocked to avoid unwanted color development, but that's a separate consideration from blocking non-specific binding. Antigen retrieval, on the other hand, serves to unmask epitopes, not to reduce non-specific binding, and blocking is not about labeling antibodies or dissolving tissue.

8. The link between tissue-bound primary Ab and the avidin-biotin-peroxidase complex is formed by which interaction?

- A. Biotin-Streptavidin**
- B. Primary Ab-Ag direct
- C. DAB reaction
- D. Fluorescent tag

The linking event is the binding between biotin and streptavidin. In the ABC (avidin-biotin-peroxidase) system, a biotinylated secondary antibody sits on the tissue-bound primary antibody. Then streptavidin conjugated to peroxidase binds tightly to that biotin, bringing the enzyme right to the antigen site. The extremely high affinity of the biotin-streptavidin interaction provides a robust bridge that enables the chromogenic reaction to reveal the target. Other options describe the substrate reaction or a different detection modality (direct labeling or fluorescence) and do not serve as the bridging link between the tissue-bound antibody and the detection complex.

9. What is the basic principle of the ABC Method?

- A. Direct enzyme conjugation of primary Abs
- B. Biotin-streptavidin- peroxidase amplification; Secondary Abs conjugated with Biotin; Avidin-Biotin link; 2 Biotin molecules required**
- C. Fluorescence-labeled detection only
- D. No amplification

The main idea behind the ABC method is signal amplification using the strong biotin-avidin (or streptavidin) interaction to bring enzyme activity to the antigen site. After the primary antibody binds its target, a biotinylated secondary antibody attaches to the primary. Then an avidin-biotin-peroxidase complex is applied, which binds to the biotin on the secondary. Because avidin (or streptavidin) can bind multiple biotin units and the secondary antibody can present several biotin groups, multiple peroxidase enzymes accumulate at the same location. When a chromogen is added, the enzyme catalyzes a color reaction, producing a much stronger signal than direct enzyme conjugation would. This amplification makes the method particularly sensitive and is why this approach is favored over non-amplified or non-enzymatic detection.

10. Which combination represents the panel for Metastatic Carcinoma?

- A. CK7, CK20, TTF-1
- B. CK7, CK20
- C. CK20, TTF-1
- D. CK7, CK20, TTF-1**

Determining the origin of a metastatic carcinoma often relies on a panel of markers that can distinguish between typical primary sites. CK7 and CK20 patterns help categorize carcinomas into broad groups: many lung, breast, ovarian, and some pancreatic or gynecologic cancers are CK7 positive, while colorectal cancers are often CK20 positive. TTF-1 adds a specific signal for tumors of the lung and thyroid, helping to pinpoint a lung or thyroid origin when present. Using all three markers together provides the most information from a single test. The CK7/CK20 profile gives you a broad framework for possible primaries, and TTF-1 positivity specifically points toward lung (or thyroid) origin, which is crucial when the primary site is unknown. If any one marker were missing, you'd lose part of that discriminating power: you might miss colorectal-type metastasis without CK20, misinterpret a lung-origin lesion without TTF-1, or lack helpful context without CK7. Therefore, including CK7, CK20, and TTF-1 offers the most informative initial panel for metastatic carcinomas.

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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://qihc.examzify.com>

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

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