INTRODUCTION & TAXONOMY OF IMMUNOLOGY 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. What happens to neutrophils when released into the bloodstream?

A. They remain in the bloodstream indefinitely

B. They circulate for about 5 days and die unless activated

C. They immediately become macrophages

D. They are destroyed in the liver

2. Which intracellular receptors are stimulated by peptidoglycan when bacteria invade macrophages?

A. RIG-I receptors

B. CD14

C. NOD receptors

D. MyD88

3. What does the respiratory burst pathway produce?

A. Hydrogen peroxide

B. Superoxide

C. Both hydrogen peroxide and superoxide

D. None

4. Which type of neutrophil granule can be released into the extracellular space?

A. Large granules

B. Small granules

C. Both

D. Neither

5. Which cell is an antigen-presenting cell?

A. Neutrophils

B. Macrophages

C. Erythrocytes

D. Platelets

6. Natural killer cells lack which property that is common to T and B cells?

A. Memory (immunologic memory)

B. Antigen presentation via MHC

C. Ability to kill target cells

D. Cytotoxic granules

7. In natural killer cells, antibody-dependent cellular cytotoxicity is mediated by binding of which receptor to the Fc portion of IgG?

A. CD3

B. CD28

C. CD56

D. CD16

8. Which molecule is described as an endogenous pyrogen in the notes?

A. LPS

B. IL-1

C. TNF-α

D. Interferon-γ

9. Where are basophils and mast cells located?

A. Basophils: Tissue; Mast cells: Bloodstream

B. Basophils: Lymph nodes; Mast cells: Spleen

C. Basophils: Bloodstream; Mast cells: Tissue

D. Basophils: Bone marrow; Mast cells: Brain

10. Chediak-Higashi Syndrome involves a failure of which cellular process?

A. Chronic granulomatous disease

B. Severe combined immunodeficiency

C. Chediak-Higashi Syndrome

D. X-linked agammaglobulinemia

Answers

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

Explanations

1. What happens to neutrophils when released into the bloodstream?

A. They remain in the bloodstream indefinitely

B. They circulate for about 5 days and die unless activated

C. They immediately become macrophages

D. They are destroyed in the liver

Neutrophils are short lived first responders released from the bone marrow into the bloodstream. They do not stay there indefinitely; after a brief circulation period they die by programmed cell death unless they are recruited to tissues and activated during an inflammatory response. They do not differentiate into macrophages—monocytes are the cells that become macrophages in tissues. After death, neutrophils are cleared by phagocytes in organs such as the liver and spleen. The key idea is their limited lifespan in circulation and their fate as dying cells that are removed, rather than persisting indefinitely in blood or transforming into another cell type.

2. Which intracellular receptors are stimulated by peptidoglycan when bacteria invade macrophages?

A. RIG-I receptors

B. CD14

C. NOD receptors

D. MyD88

The key idea is that peptidoglycan fragments inside the cytosol are detected by NOD-like receptors in macrophages. When bacteria invade, fragments such as muramyl dipeptide and iE-DAP can reach the cytoplasm and are recognized by NOD2 and NOD1, respectively. This recognition activates RIP2 and triggers NF-κB and MAPK signaling, leading to inflammatory cytokine production. Other receptors listed aren't cytosolic peptidoglycan sensors: RIG-I detects viral RNA in the cytoplasm, CD14 is a co-receptor for LPS recognition with TLR4 on the cell surface or endosomes, and MyD88 is an adaptor used by various TLRs and the IL-1 receptor rather than a direct peptidoglycan sensor.

3. What does the respiratory burst pathway produce?

A. Hydrogen peroxide

B. Superoxide

C. Both hydrogen peroxide and superoxide

D. None

In the respiratory burst, phagocytes activate NADPH oxidase to transfer electrons to oxygen, creating superoxide radicals. These reactive oxygen species are the core weapons for killing engulfed microbes. Superoxide can be converted by superoxide dismutase into hydrogen peroxide, so hydrogen peroxide is produced as well. In neutrophils, hydrogen peroxide can further fuel myeloperoxidase to form hypochlorous acid, enhancing killing. Because both superoxide and hydrogen peroxide are generated along the burst, the best answer is that both are produced.

4. Which type of neutrophil granule can be released into the extracellular space?

A. Large granules

B. Small granules

C. Both

D. Neither

Neutrophil degranulation involves granules of different sizes, and their release paths reflect their typical roles in antimicrobial defense. The smaller, secondary (specific) granules are the ones most readily mobilized to the plasma membrane and released into the extracellular space during activation. Their contents, such as lactoferrin and other antimicrobial proteins, act outside the cell to help control microbes in the surrounding environment. In contrast, the larger primary (azurophilic) granules are primarily directed toward the phagosome, delivering their enzymes inside the phagocytic vacuole rather than into the extracellular space. So the granules that can be released extracellularly are the smaller, secondary granules.

5. Which cell is an antigen-presenting cell?

A. Neutrophils

B. Macrophages

C. Erythrocytes

D. Platelets

Antigen presentation to T cells requires a cell that processes pathogens and displays peptide fragments on MHC molecules to activate T cells. Macrophages are professional antigen-presenting cells: they engulf pathogens, process the antigens, and present peptide fragments on MHC class II to CD4+ T helper cells, while also providing necessary costimulatory signals to fully activate the T cells and coordinate the immune response. Neutrophils mainly fast-acting phagocytes and are not efficient APCs; erythrocytes and platelets do not present antigens via MHC.

6. Natural killer cells lack which property that is common to T and B cells?

A. Memory (immunologic memory)

B. Antigen presentation via MHC

C. Ability to kill target cells

D. Cytotoxic granules

Memory (immunologic memory) is the property that T and B cells share but NK cells do not. T and B lymphocytes form the adaptive immune response, and after first exposure they create memory cells that enable faster, stronger responses upon re-exposure. NK cells are part of the innate system and respond quickly without prior sensitization, lacking that antigen-specific memory. That's why memory is the distinguishing feature. The other options describe things NK cells can do (kill target cells using cytotoxic granules) or are not exclusively shared by T and B cells (antigen presentation via MHC is something B cells can do as APCs but T cells do not present, and NK cells are not defined by presenting antigens).

7. In natural killer cells, antibody-dependent cellular cytotoxicity is mediated by binding of which receptor to the Fc portion of IgG?

A. CD3

B. CD28

C. CD56

D. CD16

Natural killer cells mediate antibody-dependent cellular cytotoxicity by recognizing the Fc portion of bound IgG through a specific Fc receptor. The receptor that binds the Fc region of IgG is CD16, also known as FcγRIII. When IgG on the surface of a target cell engages CD16 on an NK cell, activating signals trigger the NK cell to release cytotoxic granules (perforin and granzymes) and destroy the target. The other receptors listed are not Fc receptors: CD3 is part of the T-cell receptor complex, CD28 is a co-stimulatory molecule on T cells, and CD56 is an NK cell marker not responsible for binding IgG Fc.

8. Which molecule is described as an endogenous pyrogen in the notes?

A. LPS

B. IL-1

C. TNF-α

D. Interferon-γ

Endogenous pyrogens are host-made signaling molecules that raise the hypothalamic temperature set-point to produce fever. Among these, IL-1 is the classic endogenous pyrogen produced by activated macrophages in response to infection. It acts on the hypothalamus to stimulate COX-2, which increases prostaglandin E2 levels and raises the body's temperature set-point, resulting in fever. While bacterial components like LPS can trigger fever by inducing endogenous pyrogens, LPS itself is an exogenous pyrogen. TNF-α can also contribute to fever, and interferon-γ activates macrophages and has various immune roles, but the notes describe IL-1 specifically as the endogenous pyrogen.

9. Where are basophils and mast cells located?

A. Basophils: Tissue; Mast cells: Bloodstream

B. Basophils: Lymph nodes; Mast cells: Spleen

C. Basophils: Bloodstream; Mast cells: Tissue

D. Basophils: Bone marrow; Mast cells: Brain

Basophils circulate in the bloodstream, while mast cells reside in tissues. Basophils are produced in the bone marrow and travel in blood, moving to sites of inflammation when needed. Mast cells mature and stay in tissues, especially at sites like the skin, mucosal surfaces, and around blood vessels, ready to release histamine and other mediators locally. This arrangement explains why the correct pairing is basophils in the bloodstream and mast cells in tissue, whereas placing basophils in tissue or mast cells in places like the brain or lymphoid organs doesn't fit their typical locations.

10. Chediak-Higashi Syndrome involves a failure of which cellular process?

A. Chronic granulomatous disease

B. Severe combined immunodeficiency

C. Chediak-Higashi Syndrome

D. X-linked agammaglobulinemia

The key process affected is lysosome trafficking and the fusion of phagosomes with lysosomes in phagocytes. Chediak-Higashi Syndrome results from mutations that disrupt the regulation of lysosome size and movement, so phagosomes do not properly mature into phagolysosomes. This leads to giant lysosomal granules in neutrophils and other cells, impaired microbial killing, and related issues like partial albinism from melanosome trafficking defects. The other conditions involve different problems (such as the respiratory burst, lymphocyte development, or B cell maturation) rather than a failure of lysosome fusion and trafficking.

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://introtaxonomyofimmunology.examzify.com

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