

IMMUNITY, VACCINES, AND CANCER 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

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- 1. Carmustine is primarily used for which condition?**
 - A. Prostate cancer
 - B. Primary and metastatic brain tumors
 - C. Breast cancer
 - D. Leukemia
- 2. When should the first dose of colony-stimulating factors be administered after chemotherapy?**
 - A. Immediately after chemotherapy
 - B. No sooner than 24 hours after chemotherapy, and can be up to 96 hours after.
 - C. One week after
 - D. Two weeks after
- 3. Which vaccine administration route is most commonly associated with a local reaction like soreness at the injection site?**
 - A. Oral
 - B. Intranasal
 - C. Subcutaneous
 - D. Intramuscular
- 4. Guillain-Barre syndrome is best described as?**
 - A. Bacterial infection of the brain
 - B. Viral disease of the lungs
 - C. Autoimmune disorder where the immune system mistakenly attacks peripheral nerves
 - D. Allergic reaction to foods
- 5. Calcineurin inhibitors include which drug?**
 - A. Mycophenolate mofetil
 - B. Sirolimus
 - C. Azathioprine
 - D. Cyclosporine

6. Which characteristic best predicts response to checkpoint inhibitors?

- A. High PD-L1 expression alone.
- B. Low T cell infiltration.
- C. Absence of neoantigens.
- D. High T cell infiltration and IFN-gamma signature.

7. What are T-regulatory cells?

- A. Help suppress or regulate the immune response
- B. Destroy pathogens
- C. Produce antibodies
- D. Activate T cells

8. Natural immunity is defined as

- A. Immunity that is acquired solely through vaccination
- B. Immunity that cannot be enhanced by exposure
- C. Immunity that is partly inherited and partly developed through healthy living.
- D. Immunity that lasts only a few days

9. A positive ANA test most strongly suggests which of the following?

- A. Allergy to pollen
- B. SLE suspicion
- C. Vitamin deficiency
- D. Bacterial infection

10. What constitutes the first line of defense against pathogens?

- A. Skin and mucous membranes
- B. Innate Immunity
- C. Adaptive Immunity
- D. Passive Immunity

Answers

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

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Explanations

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1. Carmustine is primarily used for which condition?

- A. Prostate cancer
- B. Primary and metastatic brain tumors**
- C. Breast cancer
- D. Leukemia

Carmustine is chosen for brain tumors because it can cross the blood–brain barrier. Its lipophilic nitrosourea structure lets it reach tumor cells within the central nervous system, where many chemotherapies cannot penetrate effectively. Once in the CNS, carmustine acts as an alkylating agent, forming cross-links in DNA and interfering with DNA replication and transcription, which leads to tumor cell death. This property makes it particularly useful for primary brain tumors like gliomas and for metastatic tumors in the brain. For the other cancers listed, different agents are typically the mainstay of therapy, so carmustine is not considered the primary drug for those conditions.

2. When should the first dose of colony-stimulating factors be administered after chemotherapy?

- A. Immediately after chemotherapy
- B. No sooner than 24 hours after chemotherapy, and can be up to 96 hours after.**
- C. One week after
- D. Two weeks after

Timing of colony-stimulating factors after chemotherapy is about supporting neutrophil recovery after myelosuppression. The first dose is given after chemotherapy, but not immediately; waiting at least 24 hours allows the cytotoxic effects to peak and the marrow to respond to growth signals. It can be given up to about 96 hours (4 days) after chemotherapy, which provides protection during the period when neutrophil counts are most at risk of dropping. Starting too early (immediately) offers little benefit and can complicate management, while waiting much longer would leave patients exposed to febrile neutropenia during the highest-risk window. Therefore, administering the first dose no sooner than 24 hours and within about 96 hours after chemotherapy best optimizes neutrophil recovery and infection protection.

3. Which vaccine administration route is most commonly associated with a local reaction like soreness at the injection site?

- A. Oral
- B. Intranasal
- C. Subcutaneous
- D. Intramuscular**

Local reactions at the injection site come from tissue injury and local inflammation where the vaccine is deposited. The intramuscular route places the vaccine into muscle tissue, which has more nerve endings and a robust blood supply. The depth of injection causes more mechanical irritation and a stronger local inflammatory response, leading to soreness, warmth, or a tender lump at the site. Adjuvants and the antigen itself can amplify this local reaction. In contrast, vaccines given by mouth or through the nose bypass a localized tissue injection, so you don't see an injection-site soreness. Subcutaneous injections do cause some local soreness, but the tissue affected (fat under the skin) typically produces less soreness than muscle, so the strongest local reaction is more commonly associated with the intramuscular route. That's why IM vaccines are the best answer here.

4. Guillain-Barre syndrome is best described as?

- A. Bacterial infection of the brain
- B. Viral disease of the lungs
- C. Autoimmune disorder where the immune system mistakenly attacks peripheral nerves**
- D. Allergic reaction to foods

Guillain-Barré syndrome is an autoimmune attack on the peripheral nerves. It often follows an infection, and the immune system mistakenly targets the myelin or axons of these nerves, causing rapidly progressive weakness that typically starts in the legs and ascends, along with numbness and loss of reflexes. Because the problem lies in the peripheral nervous system, not the brain or spinal cord, it is not a brain infection or a lung viral disease, and it is not an allergic reaction to foods. The underlying mechanism often involves molecular mimicry, where antibodies or immune cells directed at a prior infection cross-react with nerve components, leading to demyelination and sometimes axonal damage. This understanding helps distinguish it from other neurologic disorders and informs treatment approaches such as IVIG or plasmapheresis to modulate the autoimmune response.

5. Calcineurin inhibitors include which drug?

- A. Mycophenolate mofetil
- B. Sirolimus
- C. Azathioprine
- D. Cyclosporine**

Calcineurin inhibitors block a calcium-activated phosphatase needed for T cell activation. They prevent NFAT from driving IL-2 transcription, so T cells don't proliferate effectively. Cyclosporine achieves this by binding cyclophilin to form a complex that inhibits calcineurin, making it the drug in this list that fits the calcineurin-inhibitor category. The other medications work by different pathways—mycophenolate mofetil blocks purine synthesis; sirolimus inhibits mTOR signaling; azathioprine is a purine analog affecting DNA synthesis. Thus cyclosporine is the drug that fits the calcineurin-inhibitor class.

6. Which characteristic best predicts response to checkpoint inhibitors?

- A. High PD-L1 expression alone.
- B. Low T cell infiltration.
- C. Absence of neoantigens.
- D. High T cell infiltration and IFN-gamma signature.**

The best predictor is a T cell–inflamed tumor microenvironment, indicated by high T cell infiltration and an IFN-gamma–driven gene signature. Checkpoint inhibitors work by lifting the brakes on existing anti-tumor T cells, so tumors that already have robust T cell presence (often CD8+ T cells) and a signaling environment dominated by IFN-gamma are most likely to respond, because there are active T cells that can be reinvigorated to attack cancer cells. The IFN-gamma signature reflects ongoing immune activity, including upregulation of antigen presentation and chemokines that support T cell function, which further enhances the effect of checkpoint blockade. High PD-L1 expression alone isn't enough to predict response because PD-L1 can be upregulated for various reasons and doesn't always correspond to productive T cell activity. A tumor with few T cells—the so-called “cold” tumor—offers little substrate for checkpoint inhibitors to unleash, leading to poor responses. Absence of neoantigens would limit the immune system's ability to recognize cancer cells, also reducing likelihood of response. Thus, the combination of strong T cell infiltration and an IFN-gamma–related program best forecasts responsiveness.

7. What are T-regulatory cells?

- A. Help suppress or regulate the immune response
- B. Destroy pathogens
- C. Produce antibodies
- D. Activate T cells

Regulatory T cells are the subset of T cells that keep the immune system in check by suppressing immune responses and maintaining tolerance. They help prevent excessive inflammation and autoimmunity by dampening the activity of other immune cells through mechanisms such as inhibitory cytokines (like IL-10 and TGF-beta) and surface molecules (such as CTLA-4) that reduce activation signals. This regulatory role means their primary function is to restrain the immune response rather than attack pathogens, produce antibodies, or actively stimulate T cells. Vaccines, infections, and cancer contexts can involve Tregs shaping how strongly the immune system responds.

8. Natural immunity is defined as

- A. Immunity that is acquired solely through vaccination
- B. Immunity that cannot be enhanced by exposure
- C. Immunity that is partly inherited and partly developed through healthy living.
- D. Immunity that lasts only a few days

Natural immunity reflects defenses the body has from birth and can be shaped by how we live. Some aspects are inherited through our genetics, setting a baseline for how the immune system responds. At the same time, healthy living—proper nutrition, adequate sleep, regular activity, stress management, and sensible environmental exposures—helps the immune system function well and stay prepared. This combination means immunity is partly inherited and partly developed through healthy living. Vaccination creates a different kind of immunity (the acquired type), so immunity that is natural isn't limited to what vaccines provide. Also, natural immunity isn't guaranteed to be short-lived; while some immediate defenses act quickly and fade, other aspects can confer longer-lasting readiness, and overall durability can be influenced by ongoing health and living conditions.

9. A positive ANA test most strongly suggests which of the following?

- A. Allergy to pollen
- B. SLE suspicion
- C. Vitamin deficiency
- D. Bacterial infection

Antinuclear antibodies indicate that the immune system is reacting against components inside the cell nucleus. A positive ANA test is most strongly linked to systemic lupus erythematosus because SLE is a classic autoimmune disease where these nuclear-targeting antibodies are common. The test is a sensitive screening tool: many people with SLE have a positive ANA, but it isn't perfectly specific, so clinicians look for matching clinical features and follow with more specific tests (such as anti-dsDNA, anti-Smith, ENA panel, and assessments of complement levels) to confirm the diagnosis. Pollen allergy is driven by IgE and allergic inflammation rather than autoantibodies against nuclear components, so it doesn't align with a positive ANA. Vitamin deficiency and bacterial infection don't characteristically produce a positive ANA as a guiding indicator.

10. What constitutes the first line of defense against pathogens?

A. Skin and mucous membranes

B. Innate Immunity

C. Adaptive Immunity

D. Passive Immunity

The first line of defense consists of physical barriers that block pathogen entry and help prevent infection. Intact skin provides a tough, keratin-rich barrier with tight cell junctions that prevent microbes from slipping between cells. Sweat, oil, and the acidic pH of the skin create hostile conditions for many organisms and release antimicrobial peptides. Mucous membranes line openings to the body and continually produce mucus that traps microbes; cilia in the respiratory and other tracts move this mucus toward the throat to be swallowed or expelled, helping to clear potential invaders. The normal microbiota on skin and mucosal surfaces also competes with pathogens, making it harder for them to establish themselves. While this early barrier is part of the broader innate immune system, the term first line of defense specifically highlights these physical and chemical barriers. In contrast, innate immunity as a whole includes not just barriers but also cells and mechanisms that respond quickly to invaders. Adaptive immunity is the later, specific response that develops after antigen exposure, and passive immunity involves transferred antibodies providing protection without forming a physical barrier.

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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