

TEXAS A&M UNIVERSITY (TAMU) VTPB 221 GREAT DISEASES OF THE WORLD EXAM 2 PRACTICE (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	15

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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. Which disease is associated with the coronavirus, as per the source?**
 - A. Poliomyelitis
 - B. SARS
 - C. Zika
 - D. Rinderpest
- 2. Which diagnostic method detects viral genetic material directly from patient specimens?**
 - A. Serology tests for antibodies
 - B. PCR/RT-PCR
 - C. Viral culture
 - D. Antigen rapid tests
- 3. Which scenario best describes the transmission risk for pneumonic plague?**
 - A. It is transmitted via fleas and causes mild illness.
 - B. It is transmitted by ingestion of contaminated water.
 - C. It is transmitted via respiratory droplets and is highly contagious.
 - D. It is spread by direct skin contact with lesions.
- 4. Which statement about hepatitis B virus survival outside the body is correct?**
 - A. It can survive outside the body for hours but not days.
 - B. It cannot survive outside the body for more than a few seconds.
 - C. It can survive outside the body for days on surfaces and fomites.
 - D. It cannot survive outside the body at all.
- 5. What is the basis and major limitation of the RTS,S malaria vaccine (Mosquirix)?**
 - A. It cures malaria if given after infection.
 - B. It targets circumsporozoite protein to elicit antibodies and cellular responses; provides partial protection with waning efficacy and requires multiple doses.
 - C. It provides complete lifelong immunity after a single dose.
 - D. It targets merozoite surface protein to prevent RBC invasion with full efficacy.

6. Tuberculosis is caused by a

- A. Bacterium
- B. Virus
- C. Fungus
- D. Protozoa

7. What does the mecA gene encode in MRSA?

- A. Beta-lactamase
- B. PBP1a
- C. Altered penicillin-binding protein PBP2a
- D. Efflux pump

8. AIDS is typically diagnosed when the CD4 T-cell count is

- A. 500 cells/ μ L or less
- B. 200 cells/ μ L or less
- C. 50 cells/ μ L or less
- D. 1000 cells/ μ L or less

9. What vaccine is used to prevent typhoid fever?

- A. Smallpox vaccine
- B. Typhoid vaccine
- C. MMR vaccine
- D. Hepatitis B vaccine

10. What is the cornerstone therapy to prevent dehydration in cholera outbreaks?

- A. Intravenous fluids
- B. Probiotics
- C. Antibiotics
- D. Oral rehydration therapy

Answers

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

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Explanations

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1. Which disease is associated with the coronavirus, as per the source?

- A. Poliomyelitis
- B. SARS**
- C. Zika
- D. Rinderpest

Coronaviruses are a group of enveloped RNA viruses that include several human pathogens. SARS, or Severe Acute Respiratory Syndrome, is caused by a coronavirus called SARS-CoV. This disease emerged in 2002–2003 and spread through respiratory droplets, causing fever, cough, and pneumonia in many patients. The other options come from different virus families: poliomyelitis is due to poliovirus, Zika is a flavivirus, and Rinderpest is a morbillivirus affecting cattle. So, the disease associated with the coronavirus is SARS.

2. Which diagnostic method detects viral genetic material directly from patient specimens?

- A. Serology tests for antibodies
- B. PCR/RT-PCR**
- C. Viral culture
- D. Antigen rapid tests

Nucleic acid amplification testing, such as PCR or RT-PCR, directly detects the virus's genetic material in patient specimens. This means you're looking for the actual viral RNA or DNA present in the sample, rather than the body's immune response or viral proteins. For RNA viruses, RT-PCR first converts RNA to DNA and then amplifies specific genome regions, making even small amounts of viral genetic material detectable. This direct genome detection is especially useful for confirming active infection from samples like nasal swabs or saliva. In contrast, serology tests measuring antibodies reflect the immune response and may indicate past exposure rather than current infection. Viral culture identifies viable virus by growing it in cells, which is informative but slower and more resource-intensive. Antigen tests detect viral proteins, not the genome, so they may be faster but generally less sensitive than nucleic acid tests.

3. Which scenario best describes the transmission risk for pneumonic plague?

- A. It is transmitted via fleas and causes mild illness.
- B. It is transmitted by ingestion of contaminated water.
- C. It is transmitted via respiratory droplets and is highly contagious.**
- D. It is spread by direct skin contact with lesions.

Pneumonic plague spreads through respiratory droplets shed in coughs or sneezes, so close contact with an infectious person can readily transmit the disease. This makes it highly contagious compared with other forms of plague, which aren't spread by respiratory droplets. Flea bites cause bubonic plague, not respiratory transmission, so that route isn't characteristic of the pneumonic form. Ingesting contaminated water or touching infected skin lesions aren't typical routes for pneumonic plague, which is why the droplet-based, highly contagious scenario best describes its transmission risk.

4. Which statement about hepatitis B virus survival outside the body is correct?

- A. It can survive outside the body for hours but not days.
- B. It cannot survive outside the body for more than a few seconds.
- C. It can survive outside the body for days on surfaces and fomites.**
- D. It cannot survive outside the body at all.

Hepatitis B virus is unusually stable in the environment and can remain infectious outside the body for days on surfaces and in dried blood. This resilience means that objects and surfaces contaminated with HBV—what we call fomites—can transmit infection long after the blood was deposited, which is why rigorous cleaning, disinfection, and vaccination are important for infection control. The other statements underestimate HBV's environmental persistence: it can survive far longer than hours or seconds, and it is not true that it cannot survive outside the body at all.

5. What is the basis and major limitation of the RTS,S malaria vaccine (Mosquirix)?

- A. It cures malaria if given after infection.
- B. It targets circumsporozoite protein to elicit antibodies and cellular responses; provides partial protection with waning efficacy and requires multiple doses.**
- C. It provides complete lifelong immunity after a single dose.
- D. It targets merozoite surface protein to prevent RBC invasion with full efficacy.

The basis of this vaccine is using a fragment of the Plasmodium falciparum circumsporozoite protein presented on a hepatitis B surface antigen to create virus-like particles that stimulate antibodies and T cell responses against the sporozoite form. The idea is to neutralize sporozoites before they invade liver cells, interrupting the parasite at the very first stage after the mosquito bite and reducing subsequent parasite development. The major limitation is that the protection it provides is partial and wanes over time. Efficacy varies with age and transmission intensity, and the immune protection diminishes, so maintaining decent protection requires a multi-dose schedule over several months and a booster. It does not cure malaria after infection, nor does it confer lifelong sterilizing immunity, and it targets the sporozoite stage rather than merozoites, so it does not prevent all disease or infection. So this option captures both the basis (circumsporozoite protein targeting and eliciting antibodies and cellular responses) and the practical limitation (partial, waning protection that requires multiple doses).

6. Tuberculosis is caused by a

- A. Bacterium**
- B. Virus
- C. Fungus
- D. Protozoa

Tuberculosis is caused by a bacterium. Specifically, it's due to Mycobacterium tuberculosis, a slow-growing, aerobic rod with a waxy cell wall rich in mycolic acids that makes it acid-fast and gives it distinctive lab staining features. This bacterial nature explains why TB is treated with antibiotics over a long course, and why it spreads through airborne droplets from coughing. The other options don't fit because viruses are noncellular parasites that require host cells to replicate, fungi are eukaryotic organisms with different cell walls and growth patterns, and protozoa are single-celled eukaryotes with distinct life cycles.

7. What does the *mecA* gene encode in MRSA?

- A. Beta-lactamase
- B. PBP1a
- C. Altered penicillin-binding protein PBP2a**
- D. Efflux pump

MRSA resists beta-lactam antibiotics because *mecA* encodes PBP2a, an altered penicillin-binding protein with very low affinity for beta-lactams. Beta-lactam drugs block normal PBPs involved in cell wall synthesis, but PBP2a can take over that essential role even when beta-lactams are present, allowing the bacterium to continue building its cell wall. This target-site modification, not drug destruction, is the hallmark of MRSA resistance. The other mechanisms—beta-lactamase enzyme that destroys the antibiotic, a different native PBP like PBP1a, or an efflux pump—do not explain MRSA's characteristic resistance to methicillin.

8. AIDS is typically diagnosed when the CD4 T-cell count is

- A. 500 cells/ μ L or less
- B. 200 cells/ μ L or less**
- C. 50 cells/ μ L or less
- D. 1000 cells/ μ L or less

CD4 T-cell count is a measure of how well the immune system is functioning in someone with HIV. Normal CD4 counts are typically in the hundreds to thousands per microliter (roughly 500–1,500 cells/ μ L). As HIV progresses, CD4 cells decline, and when the count drops to 200 cells/ μ L or lower, the person becomes highly susceptible to opportunistic infections. That level is the standard threshold used to define AIDS in most clinical guidelines. So, the best answer is 200 cells/ μ L or less. Values around 500 or 1,000 can indicate immune compromise but do not meet the AIDS criterion on their own, and a count as low as 50 cells/ μ L, while severely depleted, is not the diagnostic cutoff. Remember, AIDS can also be diagnosed if an AIDS-defining illness is present, even if the CD4 count is higher than 200, but the count threshold specifically marks progression to AIDS.

9. What vaccine is used to prevent typhoid fever?

- A. Smallpox vaccine
- B. Typhoid vaccine**
- C. MMR vaccine
- D. Hepatitis B vaccine

Vaccines are disease-specific, so preventing a particular infection requires the vaccine made for that disease. Typhoid fever is caused by *Salmonella Typhi* and is typically acquired through contaminated food or water; a vaccine designed against *Salmonella Typhi* reduces the risk of illness, which is especially important for travelers to areas where typhoid is common. There are two main forms of the typhoid vaccine: an oral live-attenuated vaccine and an injectable inactivated vaccine that targets the capsule of the bacteria. Both types provide protection for a period of time, and booster doses may be recommended for ongoing risk. The other vaccines listed protect against entirely different diseases—smallpox, measles/mumps/rubella, and hepatitis B—so they do not prevent typhoid fever.

10. What is the cornerstone therapy to prevent dehydration in cholera outbreaks?

- A. Intravenous fluids
- B. Probiotics
- C. Antibiotics
- D. Oral rehydration therapy**

Cholera causes rapid, large losses of water and electrolytes, so the primary goal in an outbreak is to replace those losses quickly. Oral rehydration therapy uses a simple solution of water, salts, and glucose that takes advantage of the sodium-glucose co-transport mechanism in the small intestine, allowing efficient absorption of both water and electrolytes even when the toxin disrupts normal absorption. It's inexpensive, easy to distribute, and can be used at home or in clinics, which makes it incredibly effective for preventing dehydration on a large scale and reducing mortality. Intravenous fluids are crucial for severely dehydrated patients or those who can't drink, but the widespread, preventive approach during outbreaks is oral rehydration therapy. Probiotics haven't proven to prevent dehydration as reliably, and antibiotics may shorten illness duration but don't replace the essential hydration strategy.

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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://tamu-vtpb221exam2.examzify.com>

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

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