

NBEO MICROBIOLOGY 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. **Staphylococcus epidermidis catalase status?**
 - A. Positive
 - B. Negative
 - C. Indeterminate
 - D. Both
2. **Which organism is the etiologic agent of Rocky Mountain Spotted Fever?**
 - A. *Treponema pallidum*
 - B. *Rickettsia rickettsii*
 - C. *Borrelia burgdorferi*
 - D. *Bordetella pertussis*
3. **What clinical feature most strongly suggests *Acanthamoeba* keratitis over bacterial keratitis?**
 - A. Ring infiltrate
 - B. Painless eye redness
 - C. Disproportionate severe pain with minimal exam findings
 - D. Rapid improvement with antibiotics
4. **Which culture method is used to grow *Acanthamoeba* in the laboratory?**
 - A. Thayer Martin agar
 - B. Sabouraud agar
 - C. Chocolate agar
 - D. Non-nutrient agar with heat-killed *E. coli*
5. **Which organism is associated with toxic shock syndrome and is coagulase positive?**
 - A. *Staphylococcus epidermidis*
 - B. *Staphylococcus aureus*
 - C. *Streptococcus pyogenes*
 - D. *Streptococcus pneumoniae*

- 6. How is *Chlamydia trachomatis* ocular infection typically diagnosed?**
- A. Nucleic acid amplification testing (NAAT) of ocular swab or conjunctival sample; serology may support but NAAT is preferred
 - B. Gram stain showing intracellular Gram-negative diplococci
 - C. Viral culture
 - D. Fungal culture
- 7. Which statement about HSV keratitis treatment is true?**
- A. Trifluridine is never used with other antivirals.
 - B. Acyclovir is always used topically for HSV keratitis.
 - C. Fomivirsen is the standard therapy.
 - D. Ganciclovir is commonly used topically in addition to or instead of trifluridine.
- 8. Which gram-negative bacterium is most commonly associated with corneal ulcers in contact lens wearers?**
- A. *Pseudomonas aeruginosa*
 - B. *Haemophilus influenzae*
 - C. *Neisseria meningitidis*
 - D. *Klebsiella pneumoniae*
- 9. Which virus is classically associated with retinitis in AIDS patients?**
- A. Cytomegalovirus (CMV)
 - B. Herpes simplex virus
 - C. Varicella-zoster virus
 - D. HIV retinopathy
- 10. Toxic shock syndrome is primarily associated with which bacteria?**
- A. *Staphylococcus epidermidis*
 - B. *Staphylococcus aureus*
 - C. *Streptococcus pyogenes*
 - D. *Streptococcus pneumoniae*

Answers

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

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Explanations

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1. Staphylococcus epidermidis catalase status?

- A. Positive**
- B. Negative
- C. Indeterminate
- D. Both

The catalase test checks whether an organism makes the enzyme catalase, which breaks down hydrogen peroxide into water and oxygen. Staphylococcus species, including Staphylococcus epidermidis, are catalase-positive, so you'll see immediate bubbling when hydrogen peroxide is added to a colony. That bubbling confirms a positive result and is a reliable way to distinguish Staphylococcus from streptococci, which are catalase-negative. So for Staphylococcus epidermidis, the catalase status is positive. If you ever got a negative result, it would suggest an unusual finding or testing issue, since this species routinely shows a positive catalase reaction.

2. Which organism is the etiologic agent of Rocky Mountain Spotted Fever?

- A. Treponema pallidum
- B. Rickettsia rickettsii**
- C. Borrelia burgdorferi
- D. Bordetella pertussis

Rocky Mountain spotted fever is caused by Rickettsia rickettsii, an obligate intracellular, gram-negative bacterium in the spotted fever group. It is transmitted to humans by ticks, most commonly Dermacentor species. The organism targets endothelial cells, causing vasculitis that leads to the abrupt fever, severe headache, and the characteristic rash that begins on the wrists and ankles and spreads inward. Early recognition and treatment with doxycycline are important for a good outcome. The other organisms listed cause different diseases: Treponema pallidum causes syphilis, Borrelia burgdorferi causes Lyme disease, and Bordetella pertussis causes whooping cough. None of these are the etiologic agent of Rocky Mountain spotted fever.

3. What clinical feature most strongly suggests Acanthamoeba keratitis over bacterial keratitis?

- A. Ring infiltrate
- B. Painless eye redness
- C. Disproportionate severe pain with minimal exam findings**
- D. Rapid improvement with antibiotics

Pain out of proportion to what you can see on exam is the strongest clue for Acanthamoeba keratitis. The organism tends to invade corneal nerves and deeper tissues, so patients often experience severe, disabling pain that seems disproportionate to only mild surface findings early on. In bacterial keratitis, pain typically correlates with visible surface damage and infection signs like epithelial loss, discharge, and redness. Ring infiltrates or other later signs can appear with Acanthamoeba, but they aren't as reliable early indicators. A rapid improvement with antibiotics would argue against Acanthamoeba, so the standout feature is the extreme pain relative to minimal corneal findings.

4. Which culture method is used to grow *Acanthamoeba* in the laboratory?

- A. Thayer Martin agar
- B. Sabouraud agar
- C. Chocolate agar
- D. Non-nutrient agar with heat-killed *E. coli***

Acanthamoeba grows best on non-nutrient agar that is overlaid with heat-killed *E. coli* because the amoebae feed on bacteria, providing a simple, controlled food source without allowing bacterial overgrowth. The non-nutrient surface itself doesn't supply nutrients, so the only growth cue comes from the bacteria the amoebae consume, allowing trophozoites and cysts to develop for observation. Other media are designed to culture bacteria or fungi and don't offer this bacterial food source on a minimal surface, which is why they aren't used for growing *Acanthamoeba*.

5. Which organism is associated with toxic shock syndrome and is coagulase positive?

- A. *Staphylococcus epidermidis*
- B. *Staphylococcus aureus***
- C. *Streptococcus pyogenes*
- D. *Streptococcus pneumoniae*

Toxic shock syndrome is most strongly linked to a bacterium that is coagulase positive and produces a potent superantigen toxin. *Staphylococcus aureus* fits this description because it makes TSST-1, a toxin that acts as a superantigen and triggers a massive release of cytokines, leading to fever, rash, and shock. The coagulase test distinguishes this organism from other common Gram-positive cocci. *Staphylococcus epidermidis* is coagulase negative and typically causes device-related or opportunistic infections rather than toxic shock. *Streptococcus pyogenes* can cause a toxic shock-like syndrome, but it is not coagulase positive, and the classic toxic shock mechanism differs. *Streptococcus pneumoniae* is not associated with toxic shock and is not coagulase positive. So the organism that accounts for both toxic shock syndrome and coagulase positivity is *Staphylococcus aureus*.

6. How is *Chlamydia trachomatis* ocular infection typically diagnosed?

- A. Nucleic acid amplification testing (NAAT) of ocular swab or conjunctival sample; serology may support but NAAT is preferred**
- B. Gram stain showing intracellular Gram-negative diplococci
- C. Viral culture
- D. Fungal culture

Detecting the organism directly from the eye using nucleic acid amplification testing (NAAT) on an ocular swab or conjunctival sample is the best way to diagnose ocular *Chlamydia trachomatis* infection. NAATs target chlamydial DNA or RNA, offering high sensitivity and specificity and working well with small conjunctival specimens to provide rapid, accurate results that guide treatment. Serology can support exposure history but cannot reliably distinguish active ocular infection from past exposure, so it isn't the primary diagnostic tool. Gram stain is not reliable for *Chlamydia* because the organism isn't readily detected that way in routine conjunctival samples, and finding intracellular Gram-negative diplococci would suggest *Neisseria gonorrhoeae* rather than *Chlamydia*. Viral and fungal cultures target other pathogens and do not diagnose chlamydial conjunctivitis.

7. Which statement about HSV keratitis treatment is true?

- A. Trifluridine is never used with other antivirals.
- B. Acyclovir is always used topically for HSV keratitis.
- C. Fomivirsen is the standard therapy.
- D. Ganciclovir is commonly used topically in addition to or instead of trifluridine.**

The key idea is how HSV keratitis is treated with topical antivirals and how newer options fit into practice. Topical ganciclovir has become a common choice for herpetic keratitis because it effectively suppresses the virus and tends to have less surface toxicity than trifluridine. Because of its good tolerability and strong antiviral activity, clinicians often use ganciclovir gel either on its own or in addition to, or in place of, trifluridine depending on the case. Fomivirsen is not a standard therapy for HSV keratitis; it's an antisense treatment used intravitreally for CMV, not HSV keratitis. Acyclovir is not universally used topically for HSV keratitis; many regimens rely on oral or other systemic therapy, with topical acyclovir used less consistently. So the statement that ganciclovir is commonly used topically in addition to or instead of trifluridine is the true one.

8. Which gram-negative bacterium is most commonly associated with corneal ulcers in contact lens wearers?

- A. Pseudomonas aeruginosa**
- B. Haemophilus influenzae
- C. Neisseria meningitidis
- D. Klebsiella pneumoniae

The main idea is that contact lens–related corneal ulcers are most strongly associated with *Pseudomonas aeruginosa* because this organism thrives in moist environments, readily forms biofilms on contact lenses and lens cases, and possesses virulence factors that allow rapid invasion and destruction of corneal tissue. *Pseudomonas aeruginosa* is a gram-negative rod that is commonly found in water and aqueous solutions, making contaminated lenses or lens cases a frequent source. Its ability to form biofilms protects it from disinfection and antibiotics, so infections can progress quickly, leading to a serious, sight-threatening ulcer. The bacterium also produces enzymes and toxins that degrade corneal tissue, amplifying damage if treatment is delayed. Clinically, it tends to cause a sudden, painful, purulent keratitis with rapid progression, which is characteristic in wearers of contact lenses. In the lab, this organism is typically identified as oxidase-positive and a non-lactose fermenter, features that help distinguish it from other gram-negative bacteria. While other bacteria can cause ocular infections, they are not as strongly linked to contact lens–associated keratitis as *Pseudomonas aeruginosa*, making it the most likely culprit in this scenario.

9. Which virus is classically associated with retinitis in AIDS patients?

- A. Cytomegalovirus (CMV)**
- B. Herpes simplex virus
- C. Varicella-zoster virus
- D. HIV retinopathy

Cytomegalovirus retinitis is the classic retinal infection seen in advanced AIDS. When CD4 counts drop, CMV reactivates in the eye and causes a necrotizing, hemorrhagic retinitis that tracks along the retinal vessels. Clinically you often see white, fluffy areas of retinal necrosis with surrounding hemorrhages, sometimes described as a "pizza pie" appearance. It's typically unilateral early and can progress to bilateral disease if not treated, and it's a leading cause of vision loss in AIDS patients without effective antiviral therapy and immune restoration. Other viruses can cause ocular disease, but they're not the hallmark retinitis of AIDS. Herpes simplex or varicella-zoster can infect the eye, but CMV retinitis is the prototypical retinal opportunistic infection in this setting. HIV retinopathy, meanwhile, reflects vascular changes from HIV itself rather than true retinitis.

10. Toxic shock syndrome is primarily associated with which bacteria?

- A. *Staphylococcus epidermidis*
- B. *Staphylococcus aureus***
- C. *Streptococcus pyogenes*
- D. *Streptococcus pneumoniae*

*Toxic shock syndrome is a toxin-mediated illness most commonly caused by *Staphylococcus aureus* producing the toxin TSST-1, a potent superantigen. This toxin bridges MHC class II molecules on antigen-presenting cells with T-cell receptors, triggering a massive, non-specific T-cell activation and a cytokine storm. The result is fever, low blood pressure, a diffuse red rash, and potential multi-organ dysfunction. While *Streptococcus pyogenes* can also cause a toxic shock-like syndrome via its own exotoxins, the classic and most typical association is with *Staphylococcus aureus*. The other organisms listed are not the usual culprits for TSS.*

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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://nbeomicrobiology.examzify.com>

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

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