AAB Medical Technologist (MT) – Microbiology Practice Exam (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

Table of Contents

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. Which of the following is true about Moraxella catarrhalis?

A. It is a Gram-positive cocci

B. It is often found in hospital-acquired infections

C. It is oxidase-negative

D. It frequently colonizes the upper respiratory tract

2. Which of the following is a small, nonmotile, coccobacillus that grows in egg yolk sacs?

A. Chlamydia

B. Rickettsia

C. Escherichia

D. Bordetella

3. Which stain is used to stain acid-fast bacilli?

A. Gram stain

B. Kinyoun stain

C. Schaeffer-Fulton stain

D. Giemsa stain

4. What is the most likely identity of a bile-esculin positive, beta-hemolytic streptococcus that grows in 6.5% NaCl?

A. Streptococcus pneumoniae

B. Streptococcus agalactiae

C. Enterococcus

D. Streptococcus pyogenes

5. Which of the following viruses is classified as a DNA virus?

A. Influenza virus

B. Herpesviridae

C. HIV

D. Hepatitis C virus

6. In terms of motility, how does Listeria monocytogenes behave?

A. It is completely immotile

B. It is motile at room temperature

C. It exhibits flagellar motility in blood

D. It is motile only in the presence of specific nutrients

7. Potassium tellurite medium produces what color colonies of C. diphtheriae?

A. Yellow

B. Gray-black

C. White

D. Red

8. What alternate method is used to sterilize media that cannot be heated?

A. Radiation

B. Filtration

C. Incineration

D. Steam sterilization

9. Which type of agar is primarily used to cultivate Neisseria species?

A. Columbia agar

B. Bile esculin agar

C. Thayer-Martin agar

D. Nutrient agar

10. Which of the following species of Bordetella are urease-positive and oxidase-positive?

A. B. bronchiseptica

B. B. parapertussis

C. B. pertussis

D. B. avium

Answers

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

Explanations

1. Which of the following is true about Moraxella catarrhalis?

A. It is a Gram-positive cocci

B. It is often found in hospital-acquired infections

C. It is oxidase-negative

D. It frequently colonizes the upper respiratory tract

Moraxella catarrhalis is indeed known for its ability to frequently colonize the upper respiratory tract. This bacterium is a common inhabitant, particularly in children, and can be found in the nasopharynx without necessarily causing disease. However, when it does lead to infections, it is often associated with respiratory conditions such as otitis media and sinusitis. The prevalence of Moraxella catarrhalis in the upper respiratory tract highlights its role as part of the normal flora, while also indicating its potential to act as an opportunistic pathogen under certain circumstances such as in immunocompromised individuals or those with underlying health issues. This dual behavior as a commensal organism that can also play a role in infections makes it particularly noteworthy in clinical microbiology and patient care. Understanding its prevalence and role in the upper respiratory tract helps healthcare professionals anticipate potential infections and treat them effectively when they arise.

2. Which of the following is a small, nonmotile, coccobacillus that grows in egg yolk sacs?

A. Chlamydia

B. Rickettsia

C. Escherichia

D. Bordetella

The correct choice is Rickettsia, which are small, nonmotile coccobacilli known for their unique growth requirements and characteristics. Rickettsiae are obligate intracellular pathogens, meaning they can only grow and reproduce inside the cells of a host. They are typically cultivated in embryonated eggs, particularly in the yolk sac, allowing for the production of infectious agents while ensuring the maintenance of their specific growth conditions. The morphology of Rickettsia as coccobacilli is also an important point; they are approximately the size of bacteria that are both spherical and rod-shaped, which fits the description. Their classification and lifestyle, alongside their growth in egg yolk sacs, particularly aligns them with the question's criteria regarding growth environments. Other bacteria in the choices do have distinct characteristics: Chlamydia is also an obligate intracellular pathogen but typically shows a different cellular morphology and is not specifically mentioned to grow in yolk sacs. Escherichia coli is a motile bacillus commonly found in the intestines and does not require special environments like egg yolk sacs for growth. Bordetella, while nonmotile, is primarily known for its involvement in diseases such as whooping cough and generally grows in different

3. Which stain is used to stain acid-fast bacilli?

A. Gram stain

B. Kinyoun stain

C. Schaeffer-Fulton stain

D. Giemsa stain

The Kinyoun stain is specifically designed for the identification of acid-fast bacilli, such as Mycobacterium tuberculosis, the causative agent of tuberculosis. This staining method is an adaptation of the Ziehl-Neelsen stain, which employs heat to facilitate the penetration of the dye into the waxy cell wall of acid-fast bacteria. In the Kinyoun method, a detergent is used instead of heat, making it a "cold" stain. In terms of results, acid-fast bacilli will appear bright red against a green or blue background, signifying their distinctive mycolic acid-rich cell wall. This unique characteristic is crucial for diagnosing infections caused by mycobacterial species. Other staining techniques mentioned are not suitable for this purpose. For instance, the Gram stain is primarily used to differentiate between Gram-positive and Gram-negative bacteria based on cell wall structure. The Schaeffer-Fulton stain is used for staining spores, particularly in certain bacterial species. The Giemsa stain is typically employed for blood smears and parasites but does not provide the specificity required for acid-fast organisms. Thus, the Kinyoun stain is the correct choice for staining acid-fast bacilli.

4. What is the most likely identity of a bile-esculin positive, beta-hemolytic streptococcus that grows in 6.5% NaCl?

A. Streptococcus pneumoniae

B. Streptococcus agalactiae

C. Enterococcus

D. Streptococcus pyogenes

The correct answer is Enterococcus, primarily because of its ability to grow in high concentrations of sodium chloride (6.5% NaCl) and its bile-esculin positive reaction. Enterococci, which include species like Enterococcus faecalis and Enterococcus faecium, are known for their resilience in harsh environments, including elevated sodium chloride concentrations. Furthermore, being bile-esculin positive indicates that this organism can hydrolyze esculin in the presence of bile salts, a characteristic shared by Enterococcus. This differentiates it from other beta-hemolytic streptococci, which do not exhibit the same level of tolerance or the same biochemical capabilities. In this case, the ability to grow in such high salt concentrations is a distinctive feature that sets Enterococcus apart from organisms like Streptococcus pneumoniae, Streptococcus agalactiae, and Streptococcus pyogenes, which cannot tolerate this condition. Thus, identifying the organism as Enterococcus aligns well with both its growth characteristics and biochemical test results.

5. Which of the following viruses is classified as a DNA virus?

A. Influenza virus

B. Herpesviridae

C. HIV

D. Hepatitis C virus

Herpesviridae is classified as a DNA virus, which distinguishes it from the other options provided. This family of viruses contains double-stranded DNA and is known for causing various diseases, including herpes simplex, varicella-zoster (chickenpox), and Epstein-Barr virus (mononucleosis). The hallmark of DNA viruses in general is their replication strategy, where the viral genome is transcribed into mRNA within the host cell nucleus. In contrast, the other viruses listed are classified as RNA viruses. For example, influenza virus is known as an orthomyxovirus and contains a segmented single-stranded RNA genome. Similarly, HIV is a retrovirus with a single-stranded RNA genome and utilizes reverse transcription to integrate into the host genome. Hepatitis C virus also has a single-stranded RNA genome and follows a different replication pathway. Thus, Herpesviridae stands out as the only option that belongs to the DNA virus classification, highlighting its unique characteristics and implications for viral replication and pathogenesis. This understanding is crucial for medical technologists working in microbiology labs, as it informs diagnosis and treatment approaches for viral infections.

6. In terms of motility, how does Listeria monocytogenes behave?

A. It is completely immotile

B. It is motile at room temperature

C. It exhibits flagellar motility in blood

D. It is motile only in the presence of specific nutrients

Listeria monocytogenes is a motile bacterium at room temperature due to its unique flagellar structure. Specifically, it possesses a peritrichous arrangement of flagella, which allows it to swim in liquid environments. The optimal temperature for its motility is typically around 30°C to 37°C, which corresponds with conditions found in both the laboratory and human body. This motility is crucial for its pathogenicity, as it enables the bacterium to move within host tissues and evade the immune response. While Listeria can exhibit some motility at higher temperatures, it is most often studied and known for its motility at room temperature, which highlights this characteristic. Understanding the temperature-dependent nature of Listeria's motility can help in both clinical diagnostics and treatment strategies.

7. Potassium tellurite medium produces what color colonies of C. diphtheriae?

A. Yellow

B. Gray-black

C. White

D. Red

Potassium tellurite medium is specifically designed for the isolation of Corynebacterium diphtheriae, the bacterium that causes diphtheria. When C. diphtheriae grows on this medium, it reduces the tellurite present in the medium, resulting in the formation of gray-black colonies. This contrasting color is a key characteristic used in laboratory identification of the organism. The formation of gray-black colonies is due to the production of tellurium granules, which indicate the presence of C. diphtheriae and are an important diagnostic feature. The other colors mentioned in the choices do not correspond with the growth characteristics of C. diphtheriae in potassium tellurite medium. Yellow, white, or red colonies would typically suggest the presence of other microbial species or suggest that the medium is not selective for C. diphtheriae. Thus, recognizing the distinct gray-black coloration is vital for microbiological diagnostics involving this pathogen.

8. What alternate method is used to sterilize media that cannot be heated?

A. Radiation

B. Filtration

C. Incineration

D. Steam sterilization

Filtration is a suitable method for sterilizing media that cannot withstand heat. This technique involves passing the liquid media through a filter that has pores small enough to effectively remove microorganisms, including bacteria and fungi. By using filtration, the integrity of the media is maintained without exposing it to high temperatures that might degrade its components or alter its properties. This method is particularly useful for sterilizing heat-sensitive solutions like certain culture media, enzymes, and serum. The effectiveness of filtration ensures that contaminants are eradicated, and sterile conditions are achieved while preserving the biologically active ingredients of the medium. Other methods, such as radiation, can also be effective for sterilization but may not be suitable for all types of media or components, particularly those that may degrade under exposure to such energy. Incineration and steam sterilization, on the other hand, involve high temperatures that would not be appropriate for sterilizing heat-sensitive media. Thus, filtration stands out as the ideal alternative method in this context.

9. Which type of agar is primarily used to cultivate Neisseria species?

A. Columbia agar

B. Bile esculin agar

C. Thayer-Martin agar

D. Nutrient agar

Thayer-Martin agar is specifically formulated to support the growth of Neisseria species, particularly Neisseria gonorrhoeae and Neisseria meningitidis. This selective medium contains antibiotics, such as vancomycin, colistin, and nystatin, which inhibit the growth of competing flora present in clinical specimens, allowing the fastidious Neisseria species to thrive. The presence of the enriched components, such as hemoglobin and nutrient supplements, further aids in the recovery of these organisms, which require specific nutrients for optimal growth. Other types of agar listed, such as Columbia agar, Bile esculin agar, and Nutrient agar, do not provide the necessary environment or selective conditions required to isolate Neisseria species effectively. While they may support the growth of various bacteria, they lack the specific formulation needed to enhance the growth of Neisseria and suppress other bacterial species.

10. Which of the following species of Bordetella are urease-positive and oxidase-positive?

A. B. bronchiseptica

B. B. parapertussis

C. B. pertussis

D. B. avium

Bordetella bronchiseptica is the species that is both urease-positive and oxidase-positive. This characteristic helps differentiate it from other Bordetella species. Bordetella bronchiseptica is commonly associated with respiratory diseases in animals, especially in dogs, and is recognized for its ability to produce urease, which hydrolyzes urea to ammonia, an important function in certain clinical settings, particularly in the context of infections. In contrast, Bordetella parapertussis does not exhibit these enzymatic reactions, and Bordetella pertussis, the causative agent of whooping cough, is known to be urease-negative and oxidase-negative. Bordetella avium, which primarily affects birds, also lacks these enzymatic activities. Understanding these biochemical properties is crucial in microbiological diagnosis and distinguishes Bordetella species based on their metabolic profiles.

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://aabmtmicrobiology.examzify.com

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