

AMERICAN WATER COLLEGE PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. What effect does excess nitrogen in water have?**
 - A. Improves drinking water quality
 - B. Promotes algae growth
 - C. Enhances fish reproduction
 - D. Increases water clarity
- 2. Under what conditions is hydrogen sulfide gas typically produced?**
 - A. Aerobic conditions
 - B. Neutrooxic conditions
 - C. Anaerobic conditions
 - D. Under high-pressure conditions
- 3. Which of the following describes the relationship between colloids and electrical charge in water?**
 - A. Most colloids have a positive charge
 - B. Colloids easily settle at the bottom of tanks
 - C. Most colloids have a negative charge and repel each other
 - D. Colloids dissolve completely in water
- 4. What advantage does an Aire Drive unit provide on an RBC?**
 - A. Increased shaft torque
 - B. Thicker biomass
 - C. Higher dissolved oxygen in the tank
 - D. Reduced noise levels
- 5. What can cause foaming in an anaerobic digester?**
 - A. Underfeeding
 - B. Inadequate mixing
 - C. Overfeeding
 - D. Both B and C

- 6. Which process involves adding chemicals to enhance coagulation and sedimentation?**
- A. Primary treatment
 - B. Enhanced primary treatment
 - C. Advanced secondary treatment
 - D. Filtration
- 7. What percentage of suspended solid removal can be achieved without chemical addition in primary clarification?**
- A. 25% to 35%
 - B. 50% to 65%
 - C. 70% to 80%
 - D. 90% to 95%
- 8. What is the primary role of coagulants in water treatment?**
- A. To purify water
 - B. To create larger particles from smaller ones
 - C. To speed up water flow
 - D. To reduce water temperature
- 9. What is bulking in the context of waste water treatment?**
- A. Rapid cleaning of reactor vessels
 - B. Clouds of sludge that fail to settle properly
 - C. Excessive nutrient removal from water
 - D. Formation of sludge layer in a stabilization pond
- 10. How soon must lab analysis of pH, temperature, and dissolved oxygen be performed after sample collection?**
- A. Within 5 minutes
 - B. Within 15 minutes
 - C. Within 30 minutes
 - D. Within 10 minutes

Answers

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

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Explanations

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1. What effect does excess nitrogen in water have?

- A. Improves drinking water quality
- B. Promotes algae growth**
- C. Enhances fish reproduction
- D. Increases water clarity

Excess nitrogen in water typically plays a significant role in promoting algae growth, a process known as eutrophication. When nitrogen levels are too high, it becomes a nutrient that fuels the rapid growth of algae in aquatic environments. This can lead to harmful algal blooms, which can produce toxins detrimental to aquatic life, impact water quality, and interfere with recreational activities. The phenomenon occurs because nitrogen is one of the key nutrients that plants and algae use for growth. In natural environments, a balance of nutrients is essential; however, when nitrogen (often sourced from agricultural runoff, wastewater, and fertilizers) is in surplus, it disrupts this balance, leading to excessive algae proliferation. The subsequent decay of the algae can deplete oxygen levels in the water, resulting in dead zones where aquatic life cannot thrive. In contrast, enhancing drinking water quality, improving fish reproduction, and increasing water clarity would generally stem from balanced nutrient levels, not from an excess of nitrogen. Hence, the correct choice emphasizes the significant impact of nitrogen on aquatic ecosystems by fostering algal overgrowth rather than supporting healthier water conditions.

2. Under what conditions is hydrogen sulfide gas typically produced?

- A. Aerobic conditions
- B. Neutrooxic conditions
- C. Anaerobic conditions**
- D. Under high-pressure conditions

Hydrogen sulfide (H_2S) gas is typically produced under anaerobic conditions, which means in environments where there is little to no oxygen present. This is common in various natural settings, such as when organic matter decomposes in waterlogged soils, swamps, or stagnant water bodies, where bacteria break down sulfur-containing compounds in the absence of oxygen. These anaerobic bacteria utilize sulfate as an electron acceptor in the metabolic process, resulting in the production of hydrogen sulfide as a byproduct. In contrast, aerobic conditions involve the presence of oxygen, which allows for the oxidation of sulfur compounds rather than their reduction, thereby preventing H_2S formation. Neutrooxic conditions are not a recognized term and do not describe a specific type of environmental influence on gas production. High-pressure conditions might influence the solubility of gases but are not a primary factor in the production of hydrogen sulfide. Thus, anaerobic conditions are essential and the correct context for hydrogen sulfide production.

3. Which of the following describes the relationship between colloids and electrical charge in water?

- A. Most colloids have a positive charge
- B. Colloids easily settle at the bottom of tanks
- C. Most colloids have a negative charge and repel each other**
- D. Colloids dissolve completely in water

The correct choice highlights that most colloids possess a negative charge and tend to repel each other. This characteristic is crucial in understanding how colloids behave in water. The negative charges on colloidal particles create an electrostatic repulsion that prevents them from aggregating or settling out of suspension easily. This stability is important in various applications, including water treatment processes, where maintaining the dispersion of particles is necessary to prevent clarity issues or unwanted sedimentation. In practical scenarios, the repulsive forces help keep colloidal particles suspended, allowing for effective filtration and treatment rather than having them quickly settle, which would occur if they were positively charged or neutral. Understanding this attribute of colloids aids in predicting their behavior in different water treatment scenarios, highlighting the significance of charge in influencing colloidal stability.

4. What advantage does an Aire Drive unit provide on an RBC?

- A. Increased shaft torque
- B. Thicker biomass
- C. Higher dissolved oxygen in the tank**
- D. Reduced noise levels

An Aire Drive unit enhances the performance of a Rotating Biological Contactor (RBC) by promoting higher dissolved oxygen levels in the treatment tank. This is critical for the effective operation of biological treatment processes, as oxygen is necessary for the aerobic bacteria that break down organic pollutants. The Aire Drive unit introduces air into the system, creating a turbulent environment that aids in the mixing of wastewater and enhances the transfer of oxygen into the liquid. This results in a more efficient biological degradation process, which can significantly improve the overall effectiveness of the RBC system in treating wastewater. Other options, while they may have some relevance to the functioning of an RBC, do not specifically address the unique contribution of an Aire Drive unit. For instance, increased shaft torque pertains more to mechanical performance rather than biological efficiency, thicker biomass refers to the mass of microorganisms but does not directly tie to the Aire Drive's function, and reduced noise levels, while possibly true, do not reflect the primary operational advantage provided by increased oxygen availability. Thus, higher dissolved oxygen in the tank is the most accurate advantage attributed to an Aire Drive unit in the context of RBC systems.

5. What can cause foaming in an anaerobic digester?

- A. Underfeeding
- B. Inadequate mixing
- C. Overfeeding
- D. Both B and C**

Foaming in an anaerobic digester can result from both inadequate mixing and overfeeding. When mixing is inadequate, it can lead to uneven distribution of materials and localized high concentrations of substrate. This condition may promote the growth of certain microorganisms that produce excessive gas and foam as a byproduct of their metabolism. Proper mixing is essential in an anaerobic digester to ensure that all feed materials are evenly distributed and that gas bubbles are released efficiently without accumulating. Overfeeding, on the other hand, introduces too much substrate into the digester relative to the microbial population's processing capacity. This overload can lead to increased gas production, which may contribute to foaming as the excess gas is released. An overloaded system can also disrupt the balance of microbial communities, leading to inefficient digestion and the buildup of foam. Both inadequate mixing and overfeeding disrupt the optimal conditions needed in the anaerobic digestion process, causing conditions that favor foaming. Therefore, recognizing the impact of these factors is critical for maintaining the stability and efficiency of anaerobic digesters.

6. Which process involves adding chemicals to enhance coagulation and sedimentation?

- A. Primary treatment
- B. Enhanced primary treatment**
- C. Advanced secondary treatment
- D. Filtration

Enhanced primary treatment involves adding chemicals to improve the processes of coagulation and sedimentation. In this context, coagulation is the process by which small particles clump together, while sedimentation refers to the settling of these larger particles out of the water. By enhancing these processes, the treatment can effectively remove a significant amount of suspended solids and some dissolved substances from the water. The addition of chemicals, such as coagulants, assists in aggregating smaller particles, leading to more efficient removal during sedimentation. This process is particularly important in wastewater treatment facilities, as it helps to prepare the water for subsequent treatment steps and ultimately leads to better water quality outcomes. Enhanced primary treatment is designed to optimize physical and chemical processes, thereby increasing the effectiveness of the primary treatment stage. Other processes listed focus on different stages of wastewater treatment or are intended for different objectives; for instance, primary treatment generally involves physical processes without the addition of chemicals. Advanced secondary treatment is designed for biological processes to further treat the effluent after primary treatment, and filtration usually deals with removing remaining particles without the chemical enhancement aspect that enhanced primary treatment involves.

7. What percentage of suspended solid removal can be achieved without chemical addition in primary clarification?

- A. 25% to 35%
- B. 50% to 65%**
- C. 70% to 80%
- D. 90% to 95%

In primary clarification, the process primarily relies on physical separation mechanisms rather than chemical reactions, which allow for the removal of suspended solids from wastewater. Typically, primary clarifiers are designed to facilitate gravity separation, where solids settle to the bottom of the tank, forming sludge, while lighter materials, including oils and greases, rise to the surface as scum. Achieving a suspended solid removal percentage of 50% to 65% is consistent with what is commonly expected in primary clarification processes without the use of chemical additives. This range reflects the effectiveness of physical processes such as sedimentation in removing particles that are large enough or dense enough to settle out. While higher removal rates can be achieved with enhanced treatment methods or the addition of chemicals for coagulation and flocculation, these methods are not utilized in conventional primary clarification without chemicals. Therefore, the range of 50% to 65% accurately portrays the capability of primary clarifiers under typical operational conditions, emphasizing that while effective, primary clarification has its limits concerning the overall removal efficiency of suspended solids.

8. What is the primary role of coagulants in water treatment?

- A. To purify water
- B. To create larger particles from smaller ones**
- C. To speed up water flow
- D. To reduce water temperature

The primary role of coagulants in water treatment is to create larger particles from smaller ones. In the water treatment process, coagulants are chemicals that induce coagulation, which is the process of aggregating small particles such as silt, clay, and organic matter into larger clusters known as flocs. This aggregation occurs due to the neutralization of charges on the particles, allowing them to come together and form larger masses that can be more easily removed from the water during subsequent filtration. This process is crucial in improving water clarity and quality, as it helps in effectively removing suspended solids and contaminants, leading to cleaner and safer drinking water. The formation of flocs allows for better settling during sedimentation or more efficient capture during filtration. In this context, the other options do not accurately reflect the primary function of coagulants. While purifying water is a broader goal of water treatment, it does not specifically describe the action of coagulants. Speeding up water flow and reducing water temperature are not related to the coagulation process at all. Therefore, the focus on the creation of larger particles succinctly captures the essential role that coagulants play in the treatment of water.

9. What is bulking in the context of waste water treatment?

- A. Rapid cleaning of reactor vessels
- B. Clouds of sludge that fail to settle properly**
- C. Excessive nutrient removal from water
- D. Formation of sludge layer in a stabilization pond

Bulking in wastewater treatment refers specifically to the phenomenon where clouds or flocs of sludge do not settle properly within the treatment process, leading to an undesirable state where the solids remain suspended in the liquid. When bulking occurs, it can result in poor clarity of the treated water and can negatively impact the efficiency of the treatment system. This issue is often caused by factors such as the presence of filamentous bacteria, which can promote the formation of these large, fluffy flocs that are less dense and do not settle well. Effective management of bulking is crucial for maintaining optimal performance in wastewater treatment facilities. Recognizing bulking and its implications helps operators take necessary steps, such as adjusting operational parameters or addressing the microbial community in the treatment system, to achieve better settling characteristics and overall treatment efficiency. The other options do not accurately describe bulking. Rapid cleaning of reactor vessels focuses on maintenance rather than settling characteristics, excessive nutrient removal pertains to nutrient dynamics in the water rather than floc behavior, and the formation of sludge layers in a stabilization pond relates more to the stratification of waste rather than the settling properties associated with bulking.

10. How soon must lab analysis of pH, temperature, and dissolved oxygen be performed after sample collection?

- A. Within 5 minutes
- B. Within 15 minutes**
- C. Within 30 minutes
- D. Within 10 minutes

The correct timeframe for conducting lab analysis of pH, temperature, and dissolved oxygen after sample collection is within 15 minutes. This requirement is essential to ensure the accuracy and reliability of the water quality measurements, as these parameters can change rapidly once the sample is taken from its original environment. Dissolved oxygen levels, for instance, can decrease due to biological activity, and changes in temperature can alter the solubility of gases in water. Similarly, pH can shift when samples are exposed to air or light. Therefore, performing analyses quickly helps to minimize these alterations, allowing for a more accurate reflection of the sample's original conditions at the time of collection. Delaying the analysis beyond this recommended window may lead to misinterpretation of the water quality and potential issues concerning regulatory compliance or overall water management practices.

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://americanwatercollege.examzify.com>

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

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