TCEQ Class B Surface Water License Practice Test (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

Sample study guide. For the full version with hundreds of questions, visit: https://tceqclassbsurfacewater.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. Which of the following describes chlorine's effect on metals when wet?

A. It enhances their durability

B. It is neutral to most metals

C. It can be corrosive to most metals

D. It forms protective coatings on metals

2. Which of the following are common coagulants used in water treatment?

A. Calcium carbonate and magnesium sulfate

B. Sodium chloride and alum

C. Alum, ferric sulfate, and ferrous sulfate

D. Chlorine and ozone

3. What factors determine the rate of disinfection?

A. Temperature and pH level

B. Chlorine concentration and contact time

C. Water flow rate and chlorine dosage

D. Type of pathogens present

4. What is the impact of insufficient mixing during floc formation?

A. Enhances floc strength

B. Results in poor floc formation

C. Results in stable floc

D. Improves settling

5. As turbidity levels decrease, what becomes more effective?

A. Filtration

B. Ozonation

C. Chlorine disinfection

D. Coagulation

SAMPLE

6. Before putting a filter into service, what is the minimum required backwashing expansion of sand?

A. 1%

B. 3%

C. 5%

D. 10%

7. If short filter runs are occurring due to high head loss, what should be reduced?

A. Backwash frequency

B. Filter aid dosage like polyelectrolytes

C. Water temperature

D. Influent flow rate

8. What is a standard solution?

A. A solution with an unknown strength

B. A solution of known strength or concentration

C. A solution used for emergency purposes

D. A solution used in filtration processes

9. What would be the best definition of temporary hardness in water?

A. Hardness that can be removed by boiling

B. Hardness that cannot be removed

C. Hardness caused by sulphates

D. Hardness that remains regardless of treatment

10. What should the backwash water velocity be in a filtration system?

A. 10 to 15 ft/second

B. 15 to 25 ft/second

C. 5 to 10 ft/second

D. 20 to 30 ft/second

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Which of the following describes chlorine's effect on metals when wet?

A. It enhances their durability

B. It is neutral to most metals

C. It can be corrosive to most metals

D. It forms protective coatings on metals

Chlorine, when present in wet environments, can significantly react with metals, leading to corrosion. This is particularly relevant because chlorine is a strong oxidizing agent, which means it can easily strip electrons from metal atoms, resulting in the deterioration of the metal's surface. This corrosive effect is especially pronounced in common metals such as steel and aluminum, as they tend to form chlorides in the presence of moisture, further accelerating the corrosion process. In contrast, other options highlight potential non-corrosive or protective effects that do not generally occur with chlorine exposure. While some protective coatings can form under specific conditions, the overall interaction of chlorine in moisture tends to lead to damaging effects on metals, making the identification of its corrosive nature crucial for managing metal materials in aquatic environments. Understanding this corrosive action is essential for any professional dealing with water treatment and metal materials in facilities, ensuring the longevity and effectiveness of infrastructure.

2. Which of the following are common coagulants used in water treatment?

A. Calcium carbonate and magnesium sulfate

B. Sodium chloride and alum

C. Alum, ferric sulfate, and ferrous sulfate

D. Chlorine and ozone

In water treatment, coagulants play a crucial role in improving water quality by removing suspended solids and facilitating the aggregation of smaller particles into larger flocs that can be easily removed. Common coagulants include alum, ferric sulfate, and ferrous sulfate. Alum (aluminum sulfate) is one of the most widely used coagulants due to its effectiveness in neutralizing the charges on particles and promoting floc formation. Ferric sulfate is another effective coagulant, providing both coagulation and additional benefits, such as aiding in disinfection and removing color from water. Ferrous sulfate can also serve a similar purpose, assisting in the removal of contaminants through coagulation processes. The selection of specific coagulants depends on the water quality and treatment goals, but alum and the iron-based coagulants are prominent in conventional treatment processes. The other options do not represent common coagulants. Calcium carbonate and magnesium sulfate are primarily used for different water treatment processes, such as pH adjustment or hardness control rather than coagulation. Sodium chloride is typically utilized for water softening and not as a coagulant. Chlorine and ozone are strong disinfectants used for sterilization rather than for coagulation. Thus, the presence of alum, ferr

SAMPLE

3. What factors determine the rate of disinfection?

A. Temperature and pH level

B. Chlorine concentration and contact time

C. Water flow rate and chlorine dosage

D. Type of pathogens present

The rate of disinfection is primarily influenced by chlorine concentration and contact time. Chlorine is a widely used disinfectant in water treatment processes, and its effectiveness is significantly affected by how much chlorine is added (chlorine concentration) and the duration for which it remains in contact with the water being treated (contact time). Higher chlorine concentrations generally lead to more effective disinfection; however, if the contact time is insufficient, even high concentrations may not achieve the desired level of disinfection. This relationship underscores the importance of both factors: adequate chlorine levels must be paired with sufficient time for the chlorine to interact with and inactivate pathogens present in the water. While temperature and pH level can influence the disinfection process, they are typically considered secondary factors that affect the efficacy of the disinfection chemistry rather than the direct rate of disinfection in practice. Additionally, water flow rate and chlorine dosage, along with the type of pathogens, contribute to overall water quality but do not primarily determine the rate of disinfection the way chlorine concentration and contact time do. Thus, focusing on chlorine concentration and contact time provides a fundamental understanding of how to optimize disinfection processes in water treatment systems.

4. What is the impact of insufficient mixing during floc formation?

A. Enhances floc strength

B. Results in poor floc formation

C. Results in stable floc

D. Improves settling

Insufficient mixing during floc formation has a direct impact on the ability of particles to collide and bond effectively, which is critical for the formation of flocs. When mixing is inadequate, particles may not come together as they should, leading to a lack of effective aggregation. This results in poorly formed flocs that are smaller, weaker, and less effective at removing contaminants from water. Effective mixing facilitates the collision and interaction of particles, allowing for the development of strong and stable flocs. When the mixing is insufficient, these conditions are not met, resulting in flocs that can break apart easily and do not settle effectively during the clarification process. Thus, this situation complicates subsequent water treatment processes and can significantly impact the overall efficiency of water purification. This highlights the importance of proper mixing techniques in the flocculation process to ensure robust floc formation and the successful treatment of water.

SAMPLE

5. As turbidity levels decrease, what becomes more effective?

A. Filtration

B. Ozonation

C. Chlorine disinfection

D. Coagulation

As turbidity levels decrease, chlorine disinfection becomes more effective due to the clearer water allowing for better contact between chlorine and any pathogens present. In water treatment, turbidity can interfere with disinfection processes by providing a barrier that protects microorganisms from the disinfectant. When turbidity is high, particles in the water can shield pathogens, making it more difficult for chlorine to act effectively. However, as turbidity is reduced, there are fewer particles to obstruct the chlorine, allowing for more efficient disinfection. This enhanced interaction leads to a higher likelihood of successful pathogen inactivation, resulting in safer drinking water. The other methods mentioned may have different effectiveness under varying turbidity conditions, but they do not directly relate to the same mechanism of disinfection as chlorine. For instance, while filtration improves with lower turbidity for removing particulate matter, the focus of this question is on the specific effectiveness of disinfection methods, making the enhancement of chlorine disinfection the most pertinent outcome as turbidity decreases.

6. Before putting a filter into service, what is the minimum required backwashing expansion of sand?

A. 1%

B. 3%

C. 5%

D. 10%

The correct answer, which indicates a 3% minimum required backwashing expansion of sand before putting a filter into service, is based on the need to ensure effective and efficient operation of sand filters in water treatment processes. During backwashing, the flow of water reverses through the filter media, which causes the sand grains to expand and agitate. This expansion is necessary to dislodge accumulated particles and debris from the sand granules, allowing them to be flushed out of the filter. A minimum of 3% expansion is crucial because it provides sufficient space for the media to maintain effective cleaning action and prevents channeling, which can lead to poor filtration performance. If the expansion is less than the specified amount, the sand may not effectively clean itself, resulting in a buildup of contaminants in the media. This can ultimately lead to diminished filtration capacity and higher operational costs due to the need for more frequent cleaning or premature replacement of the filter media. Moreover, while higher expansion rates could theoretically enhance the cleaning process, 3% is considered a balanced rate that ensures both effective filter cleaning and operational efficiency, aligning with industry standards for maintaining optimal water quality.

SAMPLE

7. If short filter runs are occurring due to high head loss, what should be reduced?

A. Backwash frequency

B. Filter aid dosage like polyelectrolytes

C. Water temperature

D. Influent flow rate

When experiencing short filter runs due to high head loss, one effective approach is to reduce the dosage of filter aids such as polyelectrolytes. These chemicals are added to enhance the filtration process by promoting flocculation and improving particle removal. However, excessive amounts can lead to an accumulation of materials on the filter media, which can inevitably increase head loss and result in a shorter filtration cycle. By reducing the filter aid dosage, the load on the filter is decreased, allowing for more efficient filtration and reducing the buildup of residuals that contributes to high head loss. Therefore, managing the amount of filter aid used directly addresses the issue of short filter runs due to the physical constraints on the system. In contrast, adjusting backwash frequency or modifying water temperature may not directly resolve the immediate issue of head loss caused by filter aid accumulation. Altering influent flow rate may also affect overall system performance, but the root cause of high head loss related to filter aids specifically calls for a reduction in their usage.

8. What is a standard solution?

A. A solution with an unknown strength

B. A solution of known strength or concentration

C. A solution used for emergency purposes

D. A solution used in filtration processes

A standard solution is defined as a solution of known strength or concentration. It is used in various analytical chemistry processes, specifically in titrations, where the precise concentration of a reactant is crucial for achieving accurate and reliable results. By knowing the exact concentration of a standard solution, a chemist can determine the concentration of an unknown solution through comparison and calculation. This precise knowledge allows for various quantitative analyses, such as determining the amount of a substance in a sample or calibrating instruments used in measurements. The accuracy of the analysis heavily relies on the ability to work with a solution that has a well-defined concentration, making the standard solution a foundational element in laboratory practices. Other types of solutions, such as those with unknown strengths or used for emergency or filtration purposes, lack this defined concentration and therefore do not serve the same purpose in analytical contexts. The clarity and reliability provided by a standard solution are what make it essential in chemical analysis and research.

SAMPLE

9. What would be the best definition of temporary hardness in water?

A. Hardness that can be removed by boiling

B. Hardness that cannot be removed

C. Hardness caused by sulphates

D. Hardness that remains regardless of treatment

Temporary hardness in water is characterized by the presence of calcium and magnesium bicarbonate, which can be removed through boiling. When water containing these bicarbonates is heated, they decompose into insoluble carbonate salts, which precipitate out of the solution. This process reduces the hardness of the water, making it "temporary." In contrast, other types of hardness, such as permanent hardness, involve sulfate or chloride compounds that do not precipitate upon boiling, thus remaining in the water regardless of temperature changes or treatment. The distinct nature of temporary hardness is key in water treatment processes, as it can be effectively managed through methods such as boiling, unlike permanent hardness that poses different challenges.

10. What should the backwash water velocity be in a filtration system?

A. 10 to 15 ft/second

B. 15 to 25 ft/second

C. 5 to 10 ft/second

D. 20 to 30 ft/second

In a filtration system, the backwash water velocity is a critical factor that affects the effectiveness of the cleaning process for filters. The correct range for backwash water velocity is 15 to 25 ft/second. This velocity range is essential because it provides sufficient energy to lift and separate the accumulated debris, sediment, and particles clinging to the filter media, allowing these contaminants to be flushed out of the system. If the velocity is too low, it may not effectively dislodge the contaminants, leading to increased pressure drop and decreased filtration efficiency. Conversely, if the velocity is too high, it could damage the filter media or disturb the filtration bed excessively, which can also impact the filter's performance and lifespan. Maintaining the backwash water velocity within this optimal range ensures that the filtration system operates efficiently, prolongs the life of the filter media, and helps achieve the desired water quality standards.

SAMPLE

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://tceqclassbsurfacewater.examzify.com

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

SAMPLE