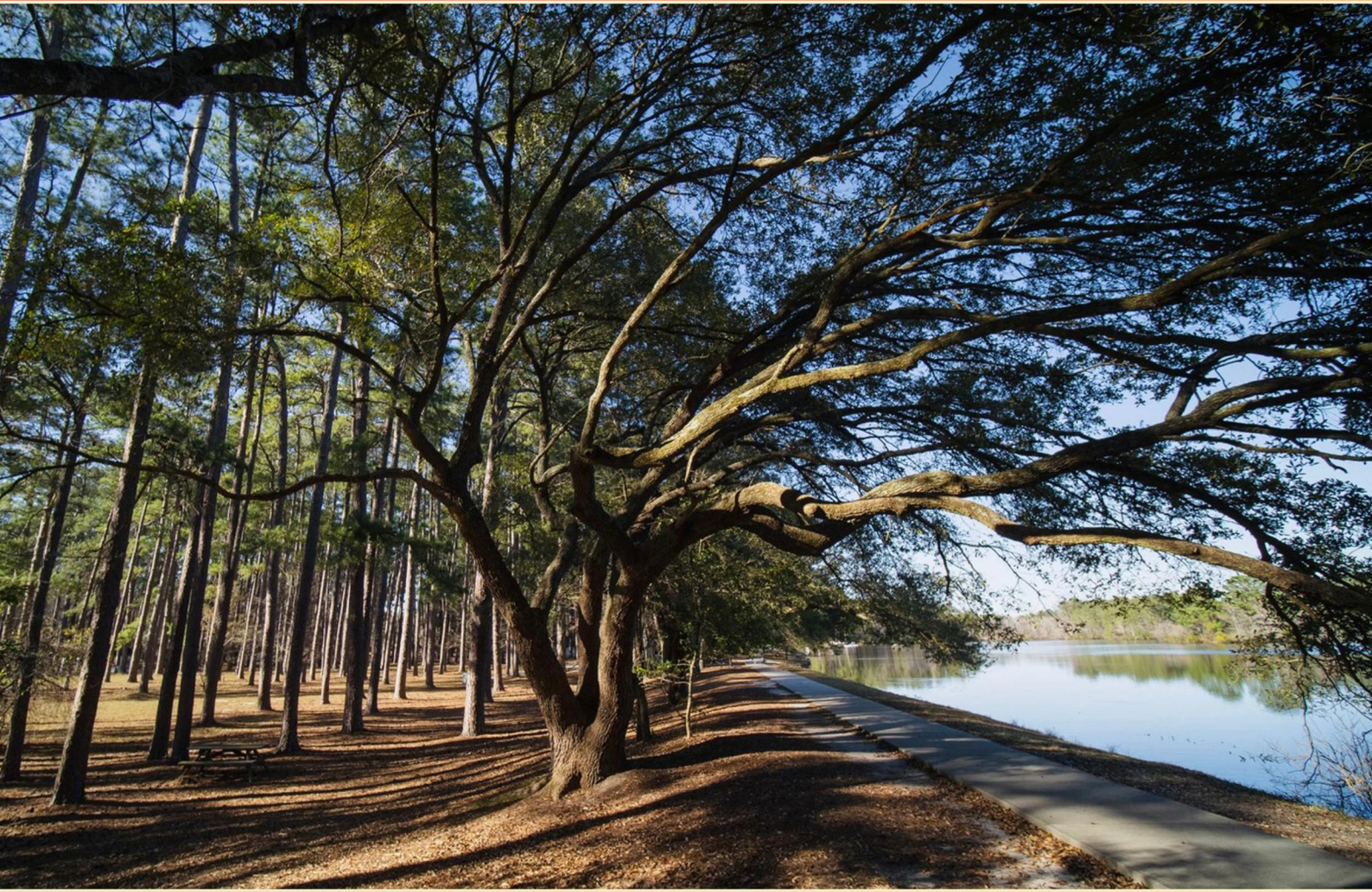


NORTH CAROLINA SURFACE WATER PRACTICE EXAM (SAMPLE)

STUDY GUIDE



Prepare with structure. Pass with confidence



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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. One pound per square inch will support a column of water that is...**
 - A. 1.55 ft high
 - B. 2.31 ft high
 - C. 7.48 ft high
 - D. 8.34 ft high
- 2. What does the term "flocculation" refer to in water treatment?**
 - A. the settling of solid particles
 - B. the process of forming aggregates of particles
 - C. the mixing of chemicals in water
 - D. the measurement of chemical concentrations
- 3. What should the electrical load on a single circuit be limited by?**
 - A. The power source capacity
 - B. The number of devices on the circuit
 - C. The maximum current rating of the wiring and switches
 - D. The voltage of the circuit
- 4. Why should you contact utility companies before starting underground repairs?**
 - A. To determine recent excavations in that location
 - B. To ask them to mark the location of their utilities
 - C. To see if they have excavating to do in the area
 - D. To see if they will help route traffic during repairs
- 5. An air-gap device is used to...**
 - A. clean lines
 - B. let air in manholes
 - C. prevent backflow of nonpotable water into a drinking water supply
 - D. test for oxygen deficiency
- 6. Copper in drinking water is primarily the result of...**
 - A. naturally occurring mineral deposits
 - B. industrial pollution
 - C. corrosion within the distribution system
 - D. automobile exhaust

- 7. What is a primary component responsible for generating suction in a pump system?**
- A. Impeller
 - B. Motor
 - C. Valves
 - D. Seals
- 8. Coliforms are primarily used as indicators of what type of contamination?**
- A. A. Chemical contamination
 - B. B. Fecal contamination
 - C. C. Heavy metal pollution
 - D. D. Nutrient enrichment
- 9. What does a high level of coliforms typically suggest about water safety?**
- A. the water is potable
 - B. the water is potentially contaminated
 - C. the water has adequate minerals
 - D. the water is perfectly safe
- 10. What is the primary source of trihalomethanes (THMs) in drinking water?**
- A. Industrial solvents
 - B. Polymer coagulants
 - C. Leaching from paint linings
 - D. Reaction of chlorine compounds and organic matter

Answers

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

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Explanations

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1. One pound per square inch will support a column of water that is...

- A. 1.55 ft high
- B. 2.31 ft high**
- C. 7.48 ft high
- D. 8.34 ft high

One pound per square inch can support a column of water that is approximately 2.31 feet high. This relationship can be derived from the properties of hydrostatics and the specific weight of water. To understand why this is the correct answer, it's essential to consider the weight of water and how pressure is expressed in a fluid. The specific weight (weight per unit volume) of water is about 62.4 pounds per cubic foot. Using the formula for pressure in a fluid, which is defined as pressure (P) = weight density (γ) $\times$ height (h), we can rearrange it to find height: $h = P / \gamma$. Given that 1 PSI equals 2.31 feet of water pressure, if you set the pressure at 1 PSI and the specific weight of water at 62.4 lbs/ft³, you reorganize the equation to find that one PSI of pressure will support a water column that is 2.31 feet high. This is a standard conversion in fluid mechanics and helps in understanding how pressure and height relate in liquids. This understanding is crucial in fields like civil engineering, hydrology, and environmental science, where accurately calculating water pressure and column heights can influence design and safety considerations.

2. What does the term "flocculation" refer to in water treatment?

- A. the settling of solid particles
- B. the process of forming aggregates of particles**
- C. the mixing of chemicals in water
- D. the measurement of chemical concentrations

The term "flocculation" in water treatment specifically refers to the process of forming aggregates of fine particles or flocs. This occurs when certain chemicals, known as coagulants, are added to the water. These coagulants encourage small suspended particles to clump together, creating larger particles that can be more easily removed from the water through sedimentation or filtration. This process is crucial in preparing water for subsequent treatment steps, as it enhances the effectiveness of sedimentation by increasing the size of the particles that need to be removed. The formation of these aggregates not only improves the clarity of the water but also helps in reducing the amount of chlorine or other disinfectants needed in the final disinfection step. While the process of settling of solid particles and the mixing of chemicals may seem related, they do not accurately capture the specific action that flocculation entails. Similarly, the measurement of chemical concentrations does not pertain to the physical or chemical processes involved in the formation of particle aggregates.

3. What should the electrical load on a single circuit be limited by?

- A. The power source capacity
- B. The number of devices on the circuit
- C. The maximum current rating of the wiring and switches**
- D. The voltage of the circuit

The electrical load on a single circuit should be limited by the maximum current rating of the wiring and switches. This rating determines how much electrical current the conductors can safely carry without overheating, which can lead to potential hazards such as electrical fires. Each wire has a specific gauge that corresponds to its current-carrying capacity, often referred to as ampacity. If the load exceeds this capacity, it can cause the wire to overheat, damage the insulation, and create unsafe conditions. While the power source capacity is important, it is primarily about the overall available power rather than the specific limitations of the circuit. Similarly, the number of devices does play a role in determining the total current draw, but the actual limitation comes from the wiring and switches' ratings. Voltage is important for function but does not limit the safe current capacity of the circuit components directly. Hence, focusing on the maximum current rating ensures safety and compliance with electrical codes.

4. Why should you contact utility companies before starting underground repairs?

- A. To determine recent excavations in that location
- B. To ask them to mark the location of their utilities**
- C. To see if they have excavating to do in the area
- D. To see if they will help route traffic during repairs

Contacting utility companies before starting underground repairs is essential to ensure safety and prevent damage to existing infrastructure. Asking them to mark the location of their utilities is crucial because it provides information about the presence and depth of underground lines. This helps in avoiding accidental strikes to water, gas, electric, or telecommunications lines, which can lead to service disruptions, safety hazards, and potentially costly repairs. Additionally, knowing where these utilities are located helps to inform the planning and execution of the repair work, thereby reducing the risk of accidents and ensuring compliance with regulations that govern excavation and repairs. Proper marking of utilities allows workers to proceed with confidence, which minimizes the risk of interruptions and enhances overall project efficiency.

5. An air-gap device is used to...

- A. clean lines
- B. let air in manholes
- C. prevent backflow of nonpotable water into a drinking water supply**
- D. test for oxygen deficiency

An air-gap device is specifically designed to prevent backflow of nonpotable water into a drinking water supply, making it a crucial component in maintaining water safety and public health. The function of this device is to create a physical separation between the water supply and any potential contaminants. This is achieved by ensuring that there is a vertical distance, or "gap," between the inlet of the potable water system and the overflow level of the receiving vessel, which effectively prevents any undesired backflow that could occur due to pressure changes in the water system. By maintaining this air gap, even if there are fluctuations in pressure that might cause water to flow backward, the physical barrier ensures that nonpotable water cannot contaminate the drinking water supply. Such devices are particularly important in settings where there is a risk of cross-contamination, such as in irrigation systems, industrial applications, or any situation where nonpotable water is present. Therefore, the use of an air-gap device directly supports the safety and integrity of drinking water supplies by eliminating risks associated with backflow.

6. Copper in drinking water is primarily the result of...

- A. naturally occurring mineral deposits
- B. industrial pollution
- C. corrosion within the distribution system**
- D. automobile exhaust

Copper in drinking water is predominantly a result of corrosion within the distribution system. When water travels through pipes, especially older ones made of copper, the water can cause the copper to leach into the drinking water. This leaching process can be exacerbated by factors such as water acidity, temperature, and the duration of water contact with the pipes. In contrast, while naturally occurring mineral deposits can contribute to copper levels in some water sources, they are not the primary source of copper found in treated drinking water. Industrial pollution can introduce various contaminants into water systems, but copper from this source is typically less significant compared to the corrosion of existing infrastructure. Automobile exhaust does not have a direct impact on copper levels in drinking water, as copper is not a primary component of vehicle emissions. Overall, the corrosion of copper pipes in the water distribution system is the main route by which copper enters potable water supplies.

7. What is a primary component responsible for generating suction in a pump system?

- A. Impeller**
- B. Motor
- C. Valves
- D. Seals

The impeller is a critical component in a pump system that generates suction. It is designed to convert rotational energy, typically from a motor, into kinetic energy in the fluid. As the impeller spins, it creates a low-pressure zone at the inlet, which encourages fluid to be drawn into the pump. This action is crucial for initiating and maintaining the flow of fluid through the system. The function of the impeller is central to the operation of centrifugal pumps, where its design governs the efficiency and capacity for moving the fluid. As fluid enters the eye of the impeller, it is accelerated and pushed outwards, which enhances the pressure and flow rate further down the system. This transformation of energy from the mechanical action of the impeller to fluid movement is what makes it such an essential component for creating suction and ensuring the pump functions effectively. Other components, like the motor, valves, and seals, play supportive and regulatory roles in the system but do not directly affect the suction creation in the same direct manner as the impeller does.

8. Coliforms are primarily used as indicators of what type of contamination?

- A. A. Chemical contamination
- B. B. Fecal contamination**
- C. C. Heavy metal pollution
- D. D. Nutrient enrichment

Coliforms are primarily used as indicators of fecal contamination because they are a group of bacteria that are commonly found in the intestines of warm-blooded animals, including humans. The presence of coliforms in water suggests that fecal matter has entered the water source, which may carry harmful pathogens associated with diseases. Testing for coliforms, particularly Escherichia coli (E. coli), provides a reliable method to assess the microbiological quality of water and indicates a potential risk to human health from waterborne diseases. In contrast, other types of contamination, such as chemical contamination, heavy metal pollution, and nutrient enrichment, do not typically involve the presence of coliforms. Chemical contamination pertains to synthetic substances and their effects, heavy metal pollution involves toxic metals that can be present in water and sediment, and nutrient enrichment refers to an increase in nutrients like nitrogen and phosphorus, which can lead to algal blooms but not directly point to fecal contamination. Therefore, the utility of coliforms as indicators specifically highlights their role in identifying fecal contamination in water sources.

9. What does a high level of coliforms typically suggest about water safety?

- A. the water is potable
- B. the water is potentially contaminated**
- C. the water has adequate minerals
- D. the water is perfectly safe

A high level of coliforms in water typically indicates that the water is potentially contaminated. Coliform bacteria are a group of microorganisms found in the environment, including in soil and feces of warm-blooded animals. Their presence in water suggests a pathway for pathogens, indicating that the water may contain harmful micro-organisms that can pose health risks to humans. The detection of coliforms serves as an important indicator of water quality, especially in surface water sources. High levels can signify issues with water treatment, faulty septic systems, or runoff from agricultural areas where animal waste is present. Therefore, when a water sample shows high coliform levels, further testing is necessary to assess the safety of drinking water and to understand the source and nature of the contamination. In contrast, the other options imply water conditions that are either safe or beneficial (potable water, adequate minerals, and perfectly safe), which does not align with the implications of high coliform levels. Safe drinking water should have low or non-detectable levels of coliform bacteria. Thus, recognizing high levels as a warning sign rather than an assurance of safety is crucial in ensuring public health.

10. What is the primary source of trihalomethanes (THMs) in drinking water?

- A. Industrial solvents
- B. Polymer coagulants
- C. Leaching from paint linings
- D. Reaction of chlorine compounds and organic matter**

Trihalomethanes (THMs) are primarily formed through the reaction of chlorine compounds, commonly used as disinfectants in water treatment, with organic matter present in the water. When chlorine is added to drinking water, it reacts with organic materials such as decayed vegetation, which can be found naturally in surface waters. This process can result in the formation of THMs, including compounds such as chloroform, bromoform, bromodichloromethane, and dibromochloromethane. Understanding the formation of THMs is crucial because they are regulated in drinking water due to potential health risks associated with long-term exposure. Reducing the levels of organic matter in water before chlorination can help minimize THM formation, which illustrates the importance of proper water treatment practices in safeguarding public health.

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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://ncsurfacewater.examzify.com>

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

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