

COLORADO WASTEWATER (WW) OPERATOR D PRACTICE EXAM (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. Detention time in a stabilization pond with influent flow rate 0.785 MGD, depth 4.5 ft, and area 17 acres is approximately how many days?
 - A. 12 days
 - B. 22 days
 - C. 32 days
 - D. 42 days
2. If dairy wastewater BOD is around 1,000 mg/L, but can be as high as 10,000 mg/L, which statement best describes its range?
 - A. Typically around 100 mg/L but can be higher
 - B. Typically around 1,000 mg/L but can be as high as 10,000 mg/L
 - C. Always exactly 1,000 mg/L
 - D. Typically around 50,000 mg/L
3. What is the approximate number of gallons in one cubic foot?
 - A. 6.0
 - B. 8.0
 - C. 5.5
 - D. 7.48
4. Which valve type is installed on discharge piping to prevent backflow when the pump stops?
 - A. Globe valve
 - B. Ball valve
 - C. Butter valve
 - D. Check valve
5. The flow velocity in a 6-in diameter pipe is twice that in a 12-in diameter pipe if both are carrying 50 gal/min of wastewater.
 - A. TRUE
 - B. CANNOT BE DETERMINED
 - C. NOT APPLICABLE
 - D. FALSE

6. When fixed-film processes such as RBCs and trickling filters are placed after the secondary clarifiers, they are said to be which type of process?
- A. Tertiary
 - B. Primary
 - C. Secondary
 - D. Quaternary
7. Which process best describes making sludge particles come together by neutralizing their charges?
- A. Coagulation
 - B. Filtration
 - C. Oxidation
 - D. Sedimentation
8. Chlorine applied minus ____ equals chlorine residual
- A. Chlorine Demand
 - B. Chlorine Gas
 - C. Chlorine Concentration
 - D. Chlorine Supply
9. Calculate the cross-sectional area of a channel with width 2.4 ft and depth 1.8 ft.
- A. 3.56 ft²
 - B. 5.12 ft²
 - C. 2.98 ft²
 - D. 4.32 ft²
10. IFAS stands for Integrated fixed-film activated sludge.
- A. Integrated fixed-film activated sludge system
 - B. Integrated fixed-film activated sludge
 - C. Integrated fixed-film aerated sludge
 - D. Internal fixed-film activated sludge

Answers

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

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Explanations

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1. Detention time in a stabilization pond with influent flow rate 0.785 MGD, depth 4.5 ft, and area 17 acres is approximately how many days?

- A. 12 days
- B. 22 days
- C. 32 days**
- D. 42 days

Detention time, or hydraulic retention time, is the time water spends in the pond and is found by dividing the pond's volume by the influent flow. First find the volume from area and depth: 17 acres at 4.5 ft deep gives 76.5 acre-feet. Convert to gallons since the flow is in gallons per day: 1 acre-foot is about 325,851 gallons, so the volume is $76.5 \times 325,851 \approx 24,930,000$ gallons. The inflow is 0.785 MGD, or 785,000 gallons per day. So the detention time is $24,930,000 \div 785,000 \approx 31.8$ days, which rounds to about 32 days.

2. If dairy wastewater BOD is around 1,000 mg/L, but can be as high as 10,000 mg/L, which statement best describes its range?

- A. Typically around 100 mg/L but can be higher
- B. Typically around 1,000 mg/L but can be as high as 10,000 mg/L**
- C. Always exactly 1,000 mg/L
- D. Typically around 50,000 mg/L

The key idea is that dairy wastewater BOD is variable but centers around a fairly high value. It's typically about 1,000 mg/L, with potential spikes up to around 10,000 mg/L depending on factors like process activity and cleaning cycles. So the statement that best fits is that dairy wastewater BOD is usually near 1,000 mg/L but can reach as high as 10,000 mg/L. The other descriptions don't match this variability: 100 mg/L is far too low for dairy waste, 50,000 mg/L exceeds the stated maximum, and saying it's always exactly 1,000 mg/L ignores natural fluctuations.

3. What is the approximate number of gallons in one cubic foot?

- A. 6.0
- B. 8.0
- C. 5.5
- D. 7.48**

Understanding how many gallons fit in a cubic foot comes from using the standard US definitions for volume. A cubic foot is 12 inches on each side, so it equals $12 \times 12 \times 12 = 1728$ cubic inches. A US gallon is defined as 231 cubic inches. So the number of gallons in a cubic foot is $1728 \div 231$, which is about 7.484—roughly 7.48 gallons. The other options aren't close because they would correspond to using different gallon sizes or rough rounding that doesn't match the standard US definitions. If you're comparing to imperial gallons, you'd get a different value (about 6.23), which isn't what's asked here.

4. Which valve type is installed on discharge piping to prevent backflow when the pump stops?

- A. Globe valve
- B. Ball valve
- C. Butter valve
- D. Check valve**

When trying to stop reverse flow in a discharge line after the pump stops, you want a device that automatically blocks flow in the opposite direction. A check valve does exactly that. It allows fluid to move forward with the pump but closes automatically if the flow tries to go backward, so the discharge line isn't drawn back toward the pump. Check valves come in types like swing checks and lift checks. A swing check uses a disc on a hinge that swings closed when reverse pressure appears. A lift check has a guided disc that lifts with forward flow and drops back to seal when flow reverses. Proper orientation and installation are important to ensure reliable closure. Other valves—the globe, ball, or butterfly—are primarily for isolation or throttling. They don't automatically close to prevent backflow when the pump stops, so they don't reliably protect against reverse flow on shutdown.

5. The flow velocity in a 6-in diameter pipe is twice that in a 12-in diameter pipe if both are carrying 50 gal/min of wastewater.

- A. TRUE
- B. CANNOT BE DETERMINED
- C. NOT APPLICABLE
- D. FALSE**

Flow rate through a pipe is the product of cross-sectional area and velocity ($Q = vA$). With the same flow rate in both pipes, the velocity is inversely proportional to the area. A circle's area is $A = \pi D^2/4$, so the 6-in pipe has $A_6 = 9\pi \text{ in}^2$ and the 12-in pipe has $A_{12} = 36\pi \text{ in}^2$. The velocity in each is $v = Q/A$, so the ratio $v_6/v_{12} = A_{12}/A_6 = (36\pi)/(9\pi) = 4$. This means the 6-in pipe's velocity is four times that of the 12-in pipe, not twice.

6. When fixed-film processes such as RBCs and trickling filters are placed after the secondary clarifiers, they are said to be which type of process?

- A. Tertiary**
- B. Primary
- C. Secondary
- D. Quaternary

Tertiary treatment is any polishing step that comes after the secondary treatment stage to greatly improve effluent quality. Fixed-film processes like rotating biological contactors (RBCs) and trickling filters use biofilm on media to finish breaking down organics. When these steps are placed after the secondary clarifier, they serve to remove additional contaminants and polish the water before discharge or disinfection, which is the essence of tertiary treatment. Primary treatment is the initial solids removal, secondary is the biological treatment itself (often including a clarifier to settle biomass), and quaternary refers to even more advanced polishing or nutrient removal stages.

7. Which process best describes making sludge particles come together by neutralizing their charges?

- A. Coagulation
- B. Filtration
- C. Oxidation
- D. Sedimentation

Neutralizing the charges on sludge particles is coagulation. In wastewater, many solids are colloidal and carry negative surface charges, which makes them repel each other and stay dispersed. Adding a coagulant introduces positively charged ions that neutralize these surface charges, reducing electrostatic repulsion. With the repulsion lowered, particles can come close enough for weak attractive forces to act, allowing them to collide and stick together into small aggregates called microflocs. This sets the stage for the next step, where gentle mixing helps these microflocs grow into larger flocs that settle more readily or can be removed by filtration. Filtration relies on passing water through a barrier to trap solids, not on changing particle charges. Oxidation chemically alters pollutants and is not about bringing particles together. Sedimentation is the gravity-driven settling of already formed flocs after coagulation and flocculation, not the charge-neutralizing process itself.

8. Chlorine applied minus ____ equals chlorine residual

- A. Chlorine Demand
- B. Chlorine Gas
- C. Chlorine Concentration
- D. Chlorine Supply

Chlorine residual is what remains after chlorine has reacted with substances in the water. When you add chlorine, some of it is used up to satisfy the chlorine demand—the amount consumed by reactions with organic matter, ammonia, and other compounds present. The remaining amount is the chlorine residual. So, applied chlorine minus chlorine demand equals chlorine residual. Chlorine gas, chlorine concentration, and chlorine supply describe forms, current levels, or sources of chlorine, not the amount that gets used up by reactions, so they don't fit the equation. For example, if you apply 3 mg/L of chlorine and the demand is 1 mg/L, the residual would be about 2 mg/L.

9. Calculate the cross-sectional area of a channel with width 2.4 ft and depth 1.8 ft.

- A. 3.56 ft²
- B. 5.12 ft²
- C. 2.98 ft²
- D. 4.32 ft²

Cross-sectional area for a rectangular channel is found by multiplying its width by its depth. So, with a width of 2.4 ft and a depth of 1.8 ft, you multiply $2.4 \times 1.8 = 4.32$. The units become square feet, giving 4.32 ft². This area represents the opening through which water can flow and is a fundamental value used in hydraulic calculations for open-channel flow.

10. IFAS stands for Integrated fixed-film activated sludge.

- A. Integrated fixed-film activated sludge system
- B. Integrated fixed-film activated sludge**
- C. Integrated fixed-film aerated sludge
- D. Internal fixed-film activated sludge

IFAS stands for Integrated Fixed-Film Activated Sludge, which describes a system that combines attached-growth biofilm on media with the traditional suspended-growth activated sludge in one treatment unit. The correct form uses Integrated (not Internal), Fixed-Film (hyphenated), and Activated Sludge as two words. The option that adds "system" isn't part of the acronym, and using "aerated sludge" isn't the standard term—activated sludge is the established phrasing. The idea behind IFAS is to boost treatment capacity by adding biofilm on media alongside the conventional activated-sludge process.

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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://coloradowwoperatord.examzify.com>

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

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