

# ADEQ Wastewater Treatment 1 Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

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# Table of Contents

<b>Copyright</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>How to Use This Guide</b> .....	<b>4</b>
<b>Questions</b> .....	<b>5</b>
<b>Answers</b> .....	<b>8</b>
<b>Explanations</b> .....	<b>10</b>
<b>Next Steps</b> .....	<b>16</b>

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.

# 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. When the aeration is turned off, the clear water that forms on top of an aerobic digester is called?**
  - A. Backwash**
  - B. Supernatant**
  - C. Centrate**
  - D. Filtrate Nitrogen**
  
- 2. Grit cannot be broken down in biological treatment processes because it is primarily:**
  - A. Is mostly inorganic**
  - B. Settles rapidly**
  - C. Settles slowly**
  - D. Is mostly organic**
  
- 3. How much larvicide should be spread over the lagoon surface if the weight of the larvicide is 8.5 lbs/gal, the lagoon surface area is 5 acres & 3 ft deep, and the recommended dose is 1 lb/10,000 ft<sup>2</sup>?**
  - A. 4.6 gal**
  - B. 2.8 gal**
  - C. 1.9 gal**
  - D. 2.2 gal**
  
- 4. When starting up a new activated sludge plant, what action will achieve building up MLSS to the desired concentration quickly?**
  - A. Increase aeration rate**
  - B. Do not return sludge**
  - C. Decrease aeration rate**
  - D. Do not waste sludge**
  
- 5. What is the primary purpose of a grit chamber in a municipal wastewater treatment plant?**
  - A. To aerate wastewater.**
  - B. To remove grit before biological treatment.**
  - C. To settle solids after treatment.**
  - D. To remove advanced pollutants.**

- 6. Changing oil every 1000 hours is what type of maintenance?**
- A. Reactive**
  - B. Run-to-failure**
  - C. Conditional**
  - D. Preventative**
- 7. Hazard communication is a key element of basic plant safety programs. Which statement best describes its purpose?**
- A. Hazard communication involves labeling and communicating chemical hazards to workers.**
  - B. It ensures energy isolation during maintenance.**
  - C. It controls wastewater pH.**
  - D. It trains employees in PPE.**
- 8. If a secondary clarifier becomes septic, what should be checked FIRST?**
- A. Comminutor**
  - B. Sludge withdrawal rate**
  - C. Clarifier weir setting**
  - D. Digester operation**
- 9. In an activated sludge plant, what elements must be balanced to maintain steady-state concentrations?**
- A. Electrical power, ventilation, and lighting**
  - B. Temperature, humidity, and pH**
  - C. Influent load, biological consumption, and sludge wasting.**
  - D. Turbidity, color, and odor**
- 10. Which action would correctly address a three-phase motor that runs backward after rewiring?**
- A. Reverse the direction of the capacitor**
  - B. Check the voltage on the leads**
  - C. Decrease the amperage on all leads**
  - D. Change the location of 2 of the 3 leads**

## Answers

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

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## **Explanations**

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1. When the aeration is turned off, the clear water that forms on top of an aerobic digester is called?

- A. Backwash
- B. Supernatant**
- C. Centrate
- D. Filtrate Nitrogen

When the aeration stops, the mixture in the digester starts to separate: solids settle toward the bottom while clearer liquid remains on top. That clear liquid layer is called the supernatant. It represents the liquid portion that has separated from the settled solids and can be drawn off or decanted without disturbing the sludge below. This term is used to distinguish the liquid above settled sludge from the heavier, suspended solids beneath. Backwash refers to the process of cleaning filters by reversing flow, so it isn't the liquid atop a digester. Centrate comes from dewatering or centrifugation of sludge, not from a resting digester. Filtrate is the liquid that has passed through a filter, and "filtrate nitrogen" isn't the standard term for the layer in a digester.

2. Grit cannot be broken down in biological treatment processes because it is primarily:

- A. Is mostly inorganic**
- B. Settles rapidly
- C. Settles slowly
- D. Is mostly organic

Grit cannot be broken down in biological treatment processes because it is primarily inorganic. Biological treatment relies on microorganisms to degrade organic matter for energy and carbon. Grit consists of minerals like sand and gravel that contain no organic carbon, so microbes cannot digest it or convert it into biomass or CO<sub>2</sub>. Because of its inorganic, nonbiodegradable nature, grit is handled by physical removal methods such as gravity settling and grit chambers rather than biodegradation. The other options point to how grit behaves physically (settling rates) rather than why it isn't biologically degradable, which is why the inorganic nature is the correct reason.

3. How much larvicide should be spread over the lagoon surface if the weight of the larvicide is 8.5 lbs/gal, the lagoon surface area is 5 acres & 3 ft deep, and the recommended dose is 1 lb/10,000 ft<sup>2</sup>?

- A. 4.6 gal
- B. 2.8 gal**
- C. 1.9 gal
- D. 2.2 gal

Dosing by surface area is the key idea here, so depth isn't part of the calculation. First convert the lagoon area to square feet: 5 acres × 43,560 ft<sup>2</sup>/acre = 217,800 ft<sup>2</sup>. At 1 lb per 10,000 ft<sup>2</sup>, you need 217,800 ÷ 10,000 = 21.78 lb of larvicide. With a weight of 8.5 lb per gallon, the volume required is 21.78 ÷ 8.5 ≈ 2.561 gallons. Rounding to a practical value gives about 2.6 gallons, and the closest available option is 2.8 gallons.

**4. When starting up a new activated sludge plant, what action will achieve building up MLSS to the desired concentration quickly?**

- A. Increase aeration rate**
- B. Do not return sludge**
- C. Decrease aeration rate**
- D. Do not waste sludge**

Building MLSS quickly comes from keeping solids in the reactor rather than removing them. MLSS is the concentration of suspended solids in the mixed liquor, determined by the balance between solids entering and solids leaving the aeration basin. If you stop wasting sludge, you're not removing solids from the system, so the solids accumulate and MLSS rises faster. This is why not wasting sludge is the best choice for speeding up the buildup. Increasing aeration rate can help microbial activity but doesn't directly ensure a higher MLSS and can be counterproductive if it disrupts floc or washout. Not returning sludge would reduce the solids in the reactor, lowering MLSS rather than raising it. Decreasing aeration rate slows oxygen transfer and biomass growth, which would also slow any rise in MLSS.

**5. What is the primary purpose of a grit chamber in a municipal wastewater treatment plant?**

- A. To aerate wastewater.**
- B. To remove grit before biological treatment.**
- C. To settle solids after treatment.**
- D. To remove advanced pollutants.**

Grit removal is about protecting downstream treatment and equipment by letting heavy inorganic particles settle out early. Grit—things like sand, gravel, and small stones—can cause abrasive wear on pumps, pipes, screens, and clarifiers, and can accumulate in basins if not removed. A grit chamber slows the flow just enough that these heavier particles settle by gravity, while lighter organic matter stays in suspension. This happens before biological treatment, so the equipment that follows isn't damaged or clogged and the treatment processes work more effectively. It's not about aerating the water, settling solids after treatment, or removing advanced pollutants, which require other steps. Therefore, removing grit before biological treatment is the primary purpose.

**6. Changing oil every 1000 hours is what type of maintenance?**

- A. Reactive**
- B. Run-to-failure**
- C. Conditional**
- D. Preventative**

Scheduled preventive maintenance is performing tasks at planned intervals to keep equipment operating and prevent unexpected failures. Changing oil every 1000 hours is a proactive, regular upkeep activity done regardless of current performance to extend engine life and reduce the risk of lubrication-related failures, which helps avoid unplanned downtime. Reactive maintenance would be doing repairs after something already fails, which leads to more downtime and higher costs. Run-to-failure means operating until the component breaks before fixing it. Conditional maintenance relies on condition data or inspections to decide when to service, not on a fixed schedule.

**7. Hazard communication is a key element of basic plant safety programs. Which statement best describes its purpose?**

- A. Hazard communication involves labeling and communicating chemical hazards to workers.**
- B. It ensures energy isolation during maintenance.**
- C. It controls wastewater pH.**
- D. It trains employees in PPE.**

Hazard communication is about informing workers of the chemical hazards they may encounter and giving them the information and tools to protect themselves. Its purpose is to ensure that at the point of use chemicals are labeled so hazards are visible, and the safety data sheets provide details on handling, storage, exposure risks, and emergency steps. With this information, workers can choose the right controls and protective measures and respond appropriately to spills or exposures. While energy isolation during maintenance, pH control, and PPE training are important safety practices, they address different goals. Hazard communication specifically centers on conveying chemical hazard information so workers understand and can act to stay safe.

**8. If a secondary clarifier becomes septic, what should be checked FIRST?**

- A. Comminutor
- B. Sludge withdrawal rate**
- C. Clarifier weir setting
- D. Digester operation

A septic condition in a secondary clarifier is usually caused by poor solids management and an improper solids balance. The first thing to check is the sludge withdrawal rate because it directly determines how long solids stay in the clarifier and how much sludge is removed. If wasting or return sludge rates are off, solids can accumulate, creating anaerobic zones and a septic odor or condition. Correcting the withdrawal rate to maintain the design sludge age and balance helps prevent that septic environment. Upstream equipment like a comminutor isn't the immediate fix for a septic clarifier, and adjusting the weir setting affects surface flow but doesn't address the solids buildup that causes septic conditions. Digester operation relates to the digestion tank, not the clarifier itself.

**9. In an activated sludge plant, what elements must be balanced to maintain steady-state concentrations?**

- A. Electrical power, ventilation, and lighting
- B. Temperature, humidity, and pH
- C. Influent load, biological consumption, and sludge wasting.**
- D. Turbidity, color, and odor

In an activated sludge plant, steady-state concentrations are achieved by balancing what comes into the system, what the microbes use, and what is removed as waste. The influent load sets the amount of substrate available for biological growth. Biological consumption represents the microbes breaking down organics and forming biomass, which dictates how quickly substrate and biomass are used up. Sludge wasting then removes excess biomass and solids from the system to keep the overall solids concentration and food-to-microorganism ratio under control. When these three rates are in balance, substrate and biomass levels remain steady, supporting stable treatment performance. The other options describe operational or quality factors (power, ventilation, lighting; environmental conditions like temperature and pH; or effluent attributes like turbidity, color, and odor) that affect plant operation or output but do not define the fundamental balance needed for steady-state concentrations.

**10. Which action would correctly address a three-phase motor that runs backward after rewiring?**

- A. Reverse the direction of the capacitor**
- B. Check the voltage on the leads**
- C. Decrease the amperage on all leads**
- D. Change the location of 2 of the 3 leads**

Rotation direction in a three-phase motor is determined by the order of the three supply lines. If you swap two of the leads, you reverse the phase sequence, which changes the rotating magnetic field and makes the motor spin in the opposite direction. That's why changing the location of two of the three leads correctly addresses backward rotation after rewiring. The other options don't fix the direction: a capacitor isn't used to set rotation in standard three-phase motors, so altering it won't change the spin; checking the voltage on the leads helps diagnose supply issues but won't correct the rotation; reducing amperage on all leads would just weaken the motor and won't alter the phase order. Remember to power off and lock out/tag out before adjusting wiring, and follow the motor's wiring diagram to swap the correct leads.

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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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://adeqwastewatertreatment1.examzify.com>**

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

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