API 653 – Aboveground Storage Tank Inspector Certification Practice Test (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

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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

1. **The completed welding procedure specification shall describe all but which of the following?**

   A. Essential Variables

   B. Welder's Essential Variables

   C. Supplemental Essential Variables, when required

   D. Non-essential Variables

2. **What may distortion of anchor bolts and excessive cracking of concrete structures indicate?**

   A. Serious foundation settlement or tank overpressure uplift condition

   B. Inferior materials used in the anchor bolts and concrete structure

   C. Over tightening of the anchor bolts and improper mixing of concrete

   D. The tank was struck by lightning and wind causes movement of the tank

3. **How is a welder re-tested after their test coupon fails by radiography?**

   A. The immediate re-test shall be by visual examination

   B. The immediate re-test shall be by radiography

   C. The immediate re-test shall be by mechanical testing

   D. The immediate re-test shall be by both mechanical testing and radiography

4. **According to API 650, what should be done with the telltale holes in reinforcing plates after the initial re-pad pressure test?**

   A. A) They should be left open to the atmosphere

   B. B) They should be closed after testing

   C. C) They must be 1/8 inch in diameter

   D. D) They must be sealed with a vacuum

5. The purpose of reviewing the welder performance qualification (WPQ) is to:

A. Verify that welders are qualified to perform the welding given its position and process

B. Verify that welds made in compliance with the WPS meet requirements

C. Verify that the welding procedure specification can produce quality welds

D. Verify that welders are qualified to perform the welding, including all essential and nonessential variables

6. A repair is completed on a nozzle that was originally postweld heat treated (PWHT). Who is required to conduct a metallurgical review prior to applying one of the alternative methods permitted in API 653?

A. A professional engineer registered in one or more states or provinces of Canada

B. A Storage tank engineer

C. The Authorized inspector responsible for the repair inspection

D. A Metallurgical engineer experienced in alternative PWHT

7. What is the maximum interval for external ultrasonic thickness measurements when the corrosion rate is not known?

A. Five years

B. Three years

C. One year

D. Every three months until established

8. What is defined as "the property of a ferrous alloy that determines the depth and distribution of hardness induced by quenching"?

A. Hardness

B. Tempering

C. Upper transformation limit

D. Hardening or hardenability

9. What is the maximum allowable out-of-plumbness for a reconstructed tank?

A. 1/30 of total tank height

B. 1/50 of the total tank height

C. 1/100 of the total tank height

D. 1/200 of the total tank height

10. The maximum interval for the second internal inspection is:

A. 1/2 remaining life of bottom

B. 1/2 remaining life of shell

C. 10 years

D. 20 years

Answers

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

Explanations

1. The completed welding procedure specification shall describe all but which of the following?

A. Essential Variables

B. Welder's Essential Variables

C. Supplemental Essential Variables, when required

D. Non-essential Variables

The completed welding procedure specification (WPS) is a critical document that outlines the requirements for welding processes and ensures consistency and quality in welds. It includes essential variables that affect the properties and performance of the weld. Essential variables are those factors that, if changed, would require a re-evaluation of the WPS. Welder's essential variables are specific to the qualifications of the welder and pertain to the skills and techniques that a welder must possess, rather than being dictated by the welding procedure itself. While it's important for welders to be qualified for the variables that they will be working under, the WPS primarily focuses on the parameters of the welding process itself, such as base metals, filler materials, welding positions, and preheat requirements. Supplemental essential variables may be included in the WPS if they apply to the specific circumstances of a project, enhancing the welding process documentation. Non-essential variables, while they may relate to the welding process, do not impact the mechanical properties of the weld and do not require the same level of detail in the WPS. Thus, the WPS focuses primarily on essential variables of the procedure and may include supplemental essential variables if necessary but does not specifically detail the welder's essential variables. This

2. What may distortion of anchor bolts and excessive cracking of concrete structures indicate?

A. Serious foundation settlement or tank overpressure uplift condition

B. Inferior materials used in the anchor bolts and concrete structure

C. Over tightening of the anchor bolts and improper mixing of concrete

D. The tank was struck by lightning and wind causes movement of the tank

The distortion of anchor bolts and excessive cracking of concrete structures often signals serious issues related to the stability and integrity of the structure. Such physical changes can indicate foundation settlement, which refers to the gradual sinking or shifting of the foundation that can happen due to soil instability, compaction, or other geological factors. This can lead to uneven stress distribution and complications in how the tank interacts with its base. Moreover, it can also point toward a tank overpressure uplift condition, where the internal pressure within the tank becomes too high, potentially causing the anchor bolts to deform and the surrounding concrete to crack due to the stress exceeding the limits of their design. When anchor bolts are misaligned or distorted, it reflects that the tank might not be properly secured, making it vulnerable to further damage and potentially hazardous situations. Recognizing these signs early is crucial for maintaining the safety and functionality of aboveground storage tanks, which is a core concern in the API 653 standards for inspections. Addressing these issues promptly can help prevent catastrophic failures and ensure compliance with regulatory standards.

3. How is a welder re-tested after their test coupon fails by radiography?

A. The immediate re-test shall be by visual examination

B. The immediate re-test shall be by radiography

C. The immediate re-test shall be by mechanical testing

D. The immediate re-test shall be by both mechanical testing and radiography

When a welder's test coupon fails through radiographic inspection, the immediate re-test must be conducted using the same method that led to the failure, which is radiography. This ensures that any defects identified are addressed properly and allows for consistent quality control measures. Radiography provides a reliable means of assessing the integrity of welds and confirming that any repairs or adjustments made have rectified the issues that caused the initial failure. Other methods, such as visual examination or mechanical testing, would not adequately evaluate the particular issues that radiography is designed to detect, such as internal flaws or discontinuities that may not be visible without the use of radiographic technology. Thus, repeating the test through radiography is essential for maintaining the quality standards required in welding procedures and ensuring the structural integrity and safety of the welded joints.

4. According to API 650, what should be done with the telltale holes in reinforcing plates after the initial re-pad pressure test?

A. A) They should be left open to the atmosphere

B. B) They should be closed after testing

C. C) They must be 1/8 inch in diameter

D. D) They must be sealed with a vacuum

The correct approach after conducting the initial re-pad pressure test is to close the telltale holes in the reinforcing plates. Telltale holes serve as a means to detect leakage or the presence of moisture during pressure testing, and once the integrity of the tank is confirmed through this testing, these holes should not be left open. Closing them helps to prevent any ingress of contaminants or moisture that could compromise the tank's performance in the future. Maintaining a sealed environment is critical for the safe operation and longevity of the storage tank. If these holes were left open, they could allow external elements to affect the internal conditions of the tank, potentially leading to corrosion or other issues over time. The other options do not reflect best practices according to API 650. Leaving the holes open to the atmosphere could introduce risks to the integrity of the tank. While the diameter of the holes may be specified, it is not the primary concern immediately following testing—what matters is their management post-test. Sealing the holes with a vacuum is also unnecessary, as the proper measure is simply to close them to maintain the integrity of the structural repair.

5. The purpose of reviewing the welder performance qualification (WPQ) is to:

A. Verify that welders are qualified to perform the welding given its position and process

B. Verify that welds made in compliance with the WPS meet requirements

C. Verify that the welding procedure specification can produce quality welds

D. Verify that welders are qualified to perform the welding, including all essential and nonessential variables

The purpose of reviewing the welder performance qualification (WPQ) is primarily to ensure that the welders possess the necessary qualifications to perform welding tasks according to the specific modes involved, including both the welding position and the welding process. This is crucial because different welding processes and positions require distinct skills and competencies. A welder whose qualifications align with the requirements for a particular job can better ensure weld quality and safety, which are paramount in construction and maintenance work involving aboveground storage tanks. While the other options mention important aspects of welding and quality assurance, they do not directly reflect the primary aim of assessing a welder's qualifications through the WPQ. For instance, confirming that welds meet the requirements of the WPS and that a welding procedure can produce quality welds are both reliant on the qualifications of the welder, but they do not directly address the qualifications of the individual welder for a specific process and position. Similarly, assessing all essential and nonessential variables involves broader considerations beyond simply verifying a welder's qualification for a certain type of work. Thus, the focus of the WPQ review remains on ensuring the welder's capabilities relative to the specific work they are tasked to perform.

6. A repair is completed on a nozzle that was originally postweld heat treated (PWHT). Who is required to conduct a metallurgical review prior to applying one of the alternative methods permitted in API 653?

A. A professional engineer registered in one or more states or provinces of Canada

B. A Storage tank engineer

C. The Authorized inspector responsible for the repair inspection

D. A Metallurgical engineer experienced in alternative PWHT

The requirement for a metallurgical review prior to applying alternative methods of postweld heat treatment (PWHT) in the context of API 653 is tied to the unique considerations that come into play when repairing a nozzle. An experienced storage tank engineer is best suited for this task because they possess the specialized knowledge necessary to evaluate the impact of the repair on the structural integrity and performance of the storage tank. The storage tank engineer's background equips them with an understanding of the materials involved, stress factors, and the implications of various repair methodologies. They can assess how the repair may affect the tank's overall functionality and compliance with industry standards. In this scenario, an authorized inspector's primary role revolves around ensuring that repairs meet regulatory and safety requirements, while a metallurgical engineer would typically focus on the material properties and behavior under stress. Therefore, the responsibility for the comprehensive assessment of the repair must fall on someone with a broader understanding of storage tank operations and standards, making the storage tank engineer the appropriate choice for conducting the metallurgical review.

7. What is the maximum interval for external ultrasonic thickness measurements when the corrosion rate is not known?

A. Five years

B. Three years

C. One year

D. Every three months until established

The maximum interval for external ultrasonic thickness measurements when the corrosion rate is not known is five years. This timeframe is established to ensure that the integrity of the aboveground storage tank is regularly assessed, especially when there is uncertainty about the rate of corrosion occurring on the tank's surface. Conducting these measurements at this interval helps detect any significant changes in wall thickness over time, which may indicate the development of corrosion or other degradation mechanisms. In scenarios where the corrosion rate is not well-defined, extending the assessment to five years allows for sufficient monitoring without the burden of conducting inspections too frequently, which may be impractical and resource-intensive. Routine monitoring is necessary to maintain safety and regulatory compliance, and this specific interval balances thoroughness with feasibility.

8. What is defined as "the property of a ferrous alloy that determines the depth and distribution of hardness induced by quenching"?

A. Hardness

B. Tempering

C. Upper transformation limit

D. Hardening or hardenability

The correct answer is "hardening or hardenability." This term refers to the ability of a ferrous alloy, typically steel, to harden during heat treatment, specifically through quenching. Hardenability is a fundamental property that influences how deep and uniformly hardness can be developed in a material when it undergoes rapid cooling from high temperatures. This property is influenced by the composition of the alloy, including the types and amounts of various elements, as well as the initial microstructure of the steel before treatment. When a ferrous alloy is quenched, it transforms from a high-temperature phase into a harder phase called martensite. However, not all materials will achieve the same hardness to the same depth due to varying hardenability. High hardenability allows a material to achieve significant hardness deeper into its cross-section while lower hardenability results in hardness that is only superficial. In contrast, other terms relate to the broader context of heat treatment and materials science. Hardness is a measure of a material's resistance to deformation but does not convey information about the distribution of that hardness. Tempering is a subsequent heat treatment process used to decrease brittleness and adjust hardness levels after hardening, and the upper transformation limit refers to the highest temperature at which

9. What is the maximum allowable out-of-plumbness for a reconstructed tank?

A. 1/30 of total tank height

B. 1/50 of the total tank height

C. 1/100 of the total tank height

D. 1/200 of the total tank height

The maximum allowable out-of-plumbness for a reconstructed tank is specified as 1/100 of the total tank height. This standard is established to ensure the structural integrity and safety of the tank, preventing undue stress that could lead to failure or leaks. Out-of-plumbness refers to the deviation from vertical alignment, which is critical for tanks that hold liquids, as this misalignment can affect the distribution of weight and stress on the tank's shell and foundation. Allowing for a maximum of 1/100 of the total tank height provides a balance between ensuring structural safety and accommodating minor constructions inaccuracies that may occur during the reconstruction process. Setting this limit provides a guideline for inspectors and engineers to evaluate the condition of a tank post-reconstruction, ensuring that it meets safety and regulatory standards. If the out-of-plumbness exceeds this threshold, it may indicate underlying issues that could compromise the tank's operation and necessitate further evaluation or corrective measures.

10. The maximum interval for the second internal inspection is:

A. 1/2 remaining life of bottom

B. 1/2 remaining life of shell

C. 10 years

D. 20 years

The maximum interval for the second internal inspection of aboveground storage tanks is indeed established as 20 years. This time frame is defined by regulations and industry standards for the inspection and maintenance of these tanks to ensure their safety, structural integrity, and compliance with environmental regulations. This 20-year interval allows for sufficient time to assess the condition of the tank and identify any potential degradation, corrosion, or other issues that could lead to tank failure or environmental hazards. The inspections are crucial as they help in planning and implementing necessary maintenance before a significant failure can occur. The reasoning behind this time period is based on historical data and risk assessments that suggest that tanks typically undergo significant wear and degradation due to factors like environmental conditions, the type of product stored, and operational stresses. Therefore, a 20-year maximum interval is seen as a reasonable approach to maintaining the safety and reliability of aboveground storage tanks while balancing practical considerations for inspection scheduling and resource management.

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://api653.examzify.com

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