Corrosion Technician Practice Exam (Sample)

Study Guide

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. **When corrosion rates ______________, it is more difficult to predict long-term corrosion.**
    - A. Decreasing with Time.
    - B. Linear.
    - C. Constant.
    - D. Increasing with Time.

2. **A galvanic series is a listing of metals in the order of their potential in a specific electrolyte.**
    - A. Galvanic series
    - B. Electrochemical table
    - C. Noble scale
    - D. Potential sequence

3. **Pipe and tubing that suffer from general corrosion are**
    - A. Thinned from one side, or the other, or both
    - B. Thinned from one side only
    - C. Thinned from the other side only
    - D. Thinned evenly around the circumference

4. **Pitting corrosion is characterized by corrosive attack in a localized region surrounded by corrosion-free surfaces, or surfaces that are attacked to a much lesser extent.**
    - A. Pitting corrosion
    - B. Localized corrosion
    - C. Uniform corrosion
    - D. Galvanic corrosion

5. **In a pit cell, the surrounding surfaces act as which electrode?**
    - A. The interior pit surfaces
    - B. The surrounding surfaces
    - C. The bottom of the pit
    - D. The electrolyte solution

6. ____________ and _________ are used to control crevice corrosion.

A. Design and passivation

B. Design and cathodic protection

C. Cleaning and inspection

D. Coatings and sealants

7. In general, how does the rate of penetration change as the number of pits increases?

A. Increases

B. Decreases

C. Remains constant

D. Fluctuates

8. Which term describes corrosion that occurs at a localized region surrounded by relatively corrosion-free areas?

A. Pitting corrosion

B. Localized corrosion

C. Uniform corrosion

D. Galvanic corrosion

9. Ferritic stainless steels are generally resistant to chlorine SCC but may suffer which type of cracking in hot concentrated caustic?

A. Intergranular cracking

B. Environmental cracking

C. Transgranular cracking

D. No cracking

10. Experimental measurement of general attack corrosion is usually made by measuring _______________ and calculating _______________.

A. Weight loss, the equivalent loss of metal thickness.

B. Color change and surface roughness.

C. Electrical resistance and current density.

D. Mass gain and volume increase.

Answers

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

Explanations

1. **When corrosion rates ____________, it is more difficult to predict long-term corrosion.**

   A. Decreasing with Time.

   B. Linear.

   C. Constant.

   D. Increasing with Time.

The main idea is how time-dependent changes in corrosion rate affect forecasting. If the rate increases with time, predicting long-term corrosion becomes harder because the damage accumulates faster as time goes on, so an early rate tends to underestimate what will happen later. This non-linear behavior happens when mechanisms shift or environments change: protective films break down, localized attack such as pitting or crevice corrosion can start or worsen, diffusion and reactant availability alter, and corrosion products can spall or change conductivity. All of these factors can cause the rate to accelerate, making long-term projections less reliable. By contrast, decreasing or constant rates are easier to project because they imply steadier or slowing processes, allowing linear or near-linear extrapolation.

2. **A galvanic series is a listing of metals in the order of their potential in a specific electrolyte.**

   A. Galvanic series

   B. Electrochemical table

   C. Noble scale

   D. Potential sequence

The main idea is that this is a ranking of metals by their electrochemical potential in a specific electrolyte. That ordered list is called the galvanic series. It's used to predict galvanic corrosion: when two metals are connected in an electrolyte, the metal lower in the series tends to act as the anode and corrode, while the metal higher in the series acts as the cathode. The potentials shift with different electrolytes, so the series is specific to the environment. Other labels like "electrochemical table," "noble scale," or "potential sequence" aren't the standard name for this commonly used list in corrosion science, which is why the galvanic series is the best term.

3. **Pipe and tubing that suffer from general corrosion are**

   A. Thinned from one side, or the other, or both

   B. Thinned from one side only

   C. Thinned from the other side only

   D. Thinned evenly around the circumference

General corrosion is an attack that occurs more or less uniformly over the exposed surface. In pipe and tubing this means the wall gets thinner at about the same rate all the way around the circumference, not preferentially on one side. Over time you'd expect to see uniform thinning around the pipe as the corrosion proceeds. If thinning is seen on just one side or localized to a small area, that points to localized forms of corrosion or other mechanisms like flow-accelerated wear, deposits causing differential aeration, or crevice corrosion, rather than general (uniform) corrosion. So the description that best represents general corrosion is thinning evenly around the circumference.

4. **Pitting corrosion is characterized by corrosive attack in a localized region surrounded by corrosion-free surfaces, or surfaces that are attacked to a much lesser extent.**

   A. Pitting corrosion

   B. Localized corrosion

   C. Uniform corrosion

   D. Galvanic corrosion

Pitting corrosion is a localized form of attack where corrosion concentrates in tiny pits, while the surrounding surface remains relatively corrosion-free or only lightly attacked. This description exactly matches the scenario of a small, deep pit forming in a metal with the rest of the surface looking intact. It often occurs when a protective film on the metal surface breaks down in a localized spot—such as stainless steels or aluminum in chloride environments—allowing a pit to start and continue growing beneath the surface, sometimes going unnoticed until it becomes critical. Other options don't fit as well because they describe different patterns of attack. Localized corrosion is a broader term that includes pits but isn't specific to the tiny, deep, isolated holes described here. Uniform corrosion implies a steady, even loss of material across a large area, not concentrated pits. Galvanic corrosion results from a potential difference between two different metals in contact, causing preferential attack on one metal and not the characteristic isolated pits with surrounding untouched areas.

5. **In a pit cell, the surrounding surfaces act as which electrode?**

   A. The interior pit surfaces

   B. The surrounding surfaces

   C. The bottom of the pit

   D. The electrolyte solution

In a pit cell, a small galvanic couple forms: metal dissolves at the pit interior (anodic behavior) while the surrounding metal surfaces serve as the site for reduction reactions (cathodic behavior). The surrounding surfaces provide the cathodic electrode where electrons flow to from the pit and reduction (often oxygen reduction) occurs. So, the surrounding surfaces act as the cathode in the pit cell, completing the circuit through the electrolyte that carries ions between the pit and the surrounding metal.

6. ____________ and _________ are used to control crevice corrosion.

A. Design and passivation

B. Design and cathodic protection

C. Cleaning and inspection

D. Coatings and sealants

Crevice corrosion is driven by localized chemistry in a confined space where the solution becomes stagnant and oxygen levels differ, creating a strong corrosion driver in the crevice. You tackle this by two complementary approaches: changing the design to minimize or eliminate crevices, and applying cathodic protection to suppress the metal's tendency to corrode in those areas.   Design changes reduce or remove the environmental niches where crevice corrosion can develop, such as avoiding tight joints, using compatible metals, and preventing trapped gaps or gasketed interfaces that disrupt fluid flow. When crevices cannot be avoided, cathodic protection helps by shifting the metal potential to more negative values, making dissolution less favorable and limiting localized attack inside the crevice. Other options are less effective as primary controls: passivation helps with general corrosion but may not prevent attack in crevices, especially if a crevice traps corrosive solution; cleaning and inspection manage problems after they occur rather than preventing crevice formation; coatings and sealants can reduce exposure, but they may degrade over time and still rely on the crevice being sealed, whereas design and CP provide more robust, targeted control.

7. In general, how does the rate of penetration change as the number of pits increases?

A. Increases

B. Decreases

C. Remains constant

D. Fluctuates

The rate of penetration is driven by electrochemical reactions at the pit and by how fast corrosive species can reach the pit. When there are only a few pits, each pit draws a relatively high local current and can deepen more quickly. As the number of pits increases, the available reactants and aggressive ions must be shared among many sites, and diffusion through the surrounding boundary layer becomes the limiting factor for all of them. This spreads the current over more pits, so the current per pit drops and each pit grows deeper more slowly. In practice, increasing pit density tends to reduce the average rate at which penetration deepens, even though total surface area for dissolution is higher.

8. Which term describes corrosion that occurs at a localized region surrounded by relatively corrosion-free areas?

A. Pitting corrosion

B. Localized corrosion

C. Uniform corrosion

D. Galvanic corrosion

Pitting corrosion describes corrosion that starts at a tiny, localized spot and forms a deep cavity while the surrounding metal remains comparatively clean and intact. This happens when a protective oxide or passive film on the metal surface breaks down at a small area—often due to chlorides or other aggressive ions—allowing metal to dissolve vigorously at that spot. Because the rest of the surface stays relatively protected, the overall metal loss can look minimal even though a pit can penetrate deeply. This is different from uniform corrosion, which progresses evenly over the entire surface, and from galvanic corrosion, which involves accelerated attack on one metal in a pair due to electrical contact with a more noble metal. It's also more specific than the broad term localized corrosion, which encompasses any corrosion confined to a small area; pitting is the classic term for a localized, pit-like attack. In short, the description matches pitting corrosion.

9. Ferritic stainless steels are generally resistant to chlorine SCC but may suffer which type of cracking in hot concentrated caustic?

A. Intergranular cracking

B. Environmental cracking

C. Transgranular cracking

D. No cracking

Environmental cracking is the type of failure at play here. When ferritic stainless steels are under tensile stress in hot, highly concentrated caustic solutions, the caustic environment assaults the protective films and promotes cracking together with the applied stress. This isn't about the metal's susceptibility to chloride SCC; it's about the aggressive alkaline environment enabling crack initiation and growth. The result is cracking driven by the environment itself, which is why this scenario is described as environmental cracking. Intergranular or transgranular paths can occur in different contexts, but the defining factor in hot concentrated caustic is the environmental assistance that leads to cracking.

10. Experimental measurement of general attack corrosion is usually made by measuring _______________ and calculating _______________.

A. Weight loss, the equivalent loss of metal thickness.

B. Color change and surface roughness.

C. Electrical resistance and current density.

D. Mass gain and volume increase.

General (uniform) attack corrosion removes metal evenly from the surface, so the most straightforward way to quantify it is by measuring how much metal is lost. You weigh the specimen before and after exposure; the difference is the weight loss. To compare different samples or convert to a more universal metric, turn that weight loss into an equivalent thickness of metal removed: thickness loss = weight loss / (area × density). This gives a representative metal-thickness loss (in mm) that, divided by the exposure time, yields a corrosion rate. Color change and surface roughness are qualitative indicators and don't quantify material loss. Electrical resistance and current density relate to electrochemical activity but don't directly measure uniform metal loss for general attack. Mass gain or volume increase would indicate oxide growth or deposits, not the typical metal loss from general attack.

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://corrosiontech.examzify.com

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