GTAW WLD 150 WELDING AND JOINING PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://gtawwld150weldingjoining.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 15

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. Root cracks are usually easy to detect.

A. True

B. False

C. They are always at the root

D. They are a form of porosity

2. Porosity consists of cavity-type discontinuities formed by gas entrapment during solidification.

A. True

B. False

C. Porosity is caused by rust

D. Porosity is a type of crack

3. What is the typical sequence for a multi-pass GTAW weld on a butt joint (root, fill, cap) and the purpose of each pass?

A. Root pass shapes final contour; fill passes remove defects; cap pass establishes penetration.

B. Root pass establishes fusion and penetration; fill passes build the weld bead to the required height; cap pass shapes the final contour and smooths the surface.

C. Root pass only; fill and cap are optional.

D. Root pass is for decoration only.

4. The following statement is true or false: Hardness is a key indicator of mechanical properties for carbon and alloy steels.

A. Not Applicable

B. False

C. Not Enough Information

D. True

5. Identify tungsten electrode types and explain their suitability for different GTAW materials.

A. Thoriated (2% ThO_2) is durable for DC welding on steel but radioactive.

B. Pure tungsten is used for DC welding on non-ferrous materials.

C. Zirconiated is favored for DC welding on stainless.

D. Ceria/Lanthanated are universal for both AC and DC.

SAMPLE

6. Which evaluation method seeks to identify how a component could fail and what the consequences would be, to prioritize improvements?

A. Root cause analysis

B. Forensic analysis

C. Failure analysis

D. Failure modes and effects analysis

7. Which weld joint type is most likely to be susceptible to lamellar tearing?

A. Butt joints

B. Lap joints

C. T-joints

D. Corner joints

8. When welding aluminum in the vertical or overhead position, what technique changes are recommended?

A. Use a shorter arc length, slower travel speed, and appropriate heat control; maintain continuous shielding and a stable puddle; use a slight back-and-forth motion to control the weld pool.

B. Use longer arc length and faster travel speed.

C. Use reverse polarity exclusively.

D. Always use DC only.

9. The thickness of metal required to support a load on a part is the ___.

A. Final thickness

B. Working thickness

C. Design thickness

D. Structural thickness

10. A ___ joint contains insufficient adhesive to create an optimum bond.

A. starved

B. weak

C. void

D. poor

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Root cracks are usually easy to detect.

A. True

B. False

C. They are always at the root

D. They are a form of porosity

Root cracks form where the weld root experiences high tensile stresses and hydrogen-induced cracking, and they are often difficult to see. Cracks can be very small, start at or just below the root surface, or lie within the heat-affected zone, so a visual check may miss them. Because of their tendency to hide at the root, they're not usually easy to detect with just a glance. Detecting them properly often requires nondestructive testing such as dye penetrant or magnetic particle testing for surface or near-surface cracks, or radiography/ultrasonic testing for subsurface indications. Employing good welding practices—controlling hydrogen content, using appropriate preheat and interpass temperatures, and ensuring a solid root pass—helps reduce the chance of root cracking.

2. Porosity consists of cavity-type discontinuities formed by gas entrapment during solidification.

A. True

B. False

C. Porosity is caused by rust

D. Porosity is a type of crack

Porosity is a weld defect that shows up as voids or cavities in the weld metal, formed when gas becomes trapped as the molten metal solidifies. During welding, gases dissolved in the molten metal or from the shielding atmosphere can be released while the metal is still liquid. If these gases don't escape before solidification finishes, they leave behind pores or porosity in the weld. In GTAW, hydrogen is a common cause—moisture on filler metal, contaminated surfaces, oil, or a damp shielding gas can introduce hydrogen into the weld pool, leading to gas porosity. To prevent it, keep everything clean and dry, ensure shielding gas is pure and properly delivered, and use appropriate welding parameters. Porosity is not rust (which is corrosion) and it is not a crack (which is a separation in the material).

3. What is the typical sequence for a multi-pass GTAW weld on a butt joint (root, fill, cap) and the purpose of each pass?

A. Root pass shapes final contour; fill passes remove defects; cap pass establishes penetration.

B. Root pass establishes fusion and penetration; fill passes build the weld bead to the required height; cap pass shapes the final contour and smooths the surface.

C. Root pass only; fill and cap are optional.

D. Root pass is for decoration only.

In a multi-pass TIG weld on a butt joint, the sequence is chosen to ensure strength, proper fill, and a clean finish. The root pass is focused on establishing fusion and penetration at the root of the joint, so the weld actually penetrates into the joint thickness and properly ties the two pieces together. Once the root is solid, the fill passes are added to build up the weld metal to the required height and width, filling the groove and shaping the bead while controlling heat input to minimize distortion and defects. The final cap pass shapes the top surface, smooths the contour, and seals the weld so it looks good and resists corrosion or environmental exposure. This order matters because without adequate root penetration the joint isn't fully welded; without fill the weld can be underfilled; and without a dedicated cap pass the surface finish and contour would be poor.

SAMPLE

4. The following statement is true or false: Hardness is a key indicator of mechanical properties for carbon and alloy steels.

A. Not Applicable

B. False

C. Not Enough Information

D. True

Hardness in carbon and alloy steels reflects the material's resistance to local deformation, which is closely tied to its strength and wear resistance. Through heat treatment and alloying, steels develop microstructures (like pearlite, bainite, or martensite) that increase hardness and, correspondingly, tensile and yield strength. That practical link is why hardness tests (Rockwell, Brinell, Vickers) are used as quick, non-destructive indicators of mechanical properties: a higher hardness usually signals greater strength and better wear resistance. Keep in mind that hardness isn't the whole story—toughness, ductility, and impact resistance can behave differently, and the exact hardness-to-strength relationship depends on the steel's composition and heat-treatment history. But overall, hardness serves as a reliable, widely used proxy for mechanical properties in carbon and alloy steels.

5. Identify tungsten electrode types and explain their suitability for different GTAW materials.

A. Thoriated (2% ThO2) is durable for DC welding on steel but radioactive.

B. Pure tungsten is used for DC welding on non-ferrous materials.

C. Zirconiated is favored for DC welding on stainless.

D. Ceria/Lanthanated are universal for both AC and DC.

Tungsten electrode choices revolve around how the dopant affects arc stability, starting, and wear when using AC or DC on different base metals. Ceria/Lanthanated electrodes are considered universal because they perform reliably on both AC and DC and across a wide range of materials, including aluminum, stainless steel, and carbon steel. They offer easy arc starting, stable arcs with frequent polarity changes, and good longevity, making them versatile for mixed GTAW tasks. The other types have more limited or safety-heavy applications. Thoriated electrodes provide strong DC performance and high current capacity, which is why they're often used for DC welding on steel, but thorium is radioactive, so modern practice leans away from them in many settings. Pure tungsten lacks dopants, so it tends to be less stable or durable, especially on DC and higher current work. Zirconiated electrodes are valued for good arc stability, particularly with aluminum and other materials under AC, but they aren't as universally suitable for both AC and DC across many base metals as ceria/lanthanated electrodes.

SAMPLE

6. Which evaluation method seeks to identify how a component could fail and what the consequences would be, to prioritize improvements?

A. Root cause analysis

B. Forensic analysis

C. Failure analysis

D. Failure modes and effects analysis

Failure Modes and Effects Analysis is a proactive risk assessment that identifies how a component or weld joint could fail and what the consequences would be, so you can prioritize improvements before problems occur. It asks, what potential failure modes could happen, what effects those failures would have on function, safety, or service life, and how likely each failure is and how easy it would be to detect. By evaluating severity, occurrence, and detection, you build a risk priority that guides where to focus design changes, process controls, or inspection methods to prevent issues. In welding, you might consider possible failure modes such as porosity, cracks, lack of fusion, or misalignment, and trace their potential impacts on strength, leak-tightness, or durability, then implement actions to reduce those risks. Other approaches analyze failures after the fact to determine causes and prevent recurrence, which is reactive rather than preventive.

7. Which weld joint type is most likely to be susceptible to lamellar tearing?

A. Butt joints

B. Lap joints

C. T-joints

D. Corner joints

Lamellar tearing happens when the shrinkage of a weld is restrained by the surrounding thick base metal, creating tensile stresses along the planes of the steel's lamellae parallel to the plate surface. A T-joint imposes the greatest restraint because the weld connects a plate edge to another plate, producing opposing reactions from both members and a long restraint path at the weld root. That concentration of restrained shrinkage drives shear along those lamellar planes in the heat-affected zone, making tearing along the laminated structure more likely to propagate. Other joint geometries provide fewer restraint conditions in the critical direction, so they are less prone to this defect. Practically, reducing heat input, applying preheating, using appropriate post-weld heat treatment, and adjusting welding sequence or adding stiffeners can help lessen the risk.

SAMPLE

8. When welding aluminum in the vertical or overhead position, what technique changes are recommended?

A. Use a shorter arc length, slower travel speed, and appropriate heat control; maintain continuous shielding and a stable puddle; use a slight back-and-forth motion to control the weld pool.

B. Use longer arc length and faster travel speed.

C. Use reverse polarity exclusively.

D. Always use DC only.

Welding aluminum in vertical or overhead positions demands careful heat management and puddle control. Aluminum conducts heat quickly and forms a tough oxide layer, so keeping the molten pool small, stable, and well shielded is key to a sound weld in challenging positions. Using a shorter arc length concentrates the arc where you want heat and improves puddle control, helping prevent excessive spreading or burning through. Slower travel speed increases heat input just enough to keep the puddle fluid and able to fill the joint properly, which is essential when gravity tends to pull the molten metal away from the weld path. Maintaining continuous shielding ensures the oxide layer doesn't contaminate the weld as you move, and a stable puddle makes it easier to place filler metal accurately. A slight back-and-forth motion helps wet the joint evenly, distributes heat more evenly, and counters the tendency of the pool to sag in vertical or overhead positions. Other approaches—longer arc length and faster travel—tend to overheat or destabilize the puddle, making control harder. Relying exclusively on DC or a single polarity isn't appropriate for aluminum GTAW, which is commonly done with AC to balance cleaning action with heat control.

9. The thickness of metal required to support a load on a part is the ___.

A. Final thickness

B. Working thickness

C. Design thickness

D. Structural thickness

Design thickness is the thickness chosen during the design process to carry the expected loads with an adequate factor of safety. This is the dimension engineers use to ensure the part will perform safely under service conditions, taking into account material strength, allowable stresses, and the applied loads. The actual finished thickness may vary a bit due to manufacturing tolerances, but the design thickness provides the basis for ensuring strength and safety. Final thickness refers to the actual finished size, which isn't the dimension used to guarantee load-carrying capacity; working thickness and structural thickness aren't standard terms for this context.

10. A ___ joint contains insufficient adhesive to create an optimum bond.

A. starved

B. weak

C. void

D. poor

When the strength of a bond relies on a properly filled bondline, the amount of adhesive matters. If there isn't enough adhesive applied, the joint becomes starved. A starved joint has an under-filled bondline, so it can't wet surfaces adequately or transfer stresses effectively, leading to a weaker, suboptimal bond. A void would mean pockets of air, and weak or poor describe the overall quality without pinpointing the specific lack of adhesive. So the term that best matches "insufficient adhesive to create an optimum bond" is starved.

SAMPLE

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://gtawwld150weldingjoining.examzify.com

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

SAMPLE