GAS METAL ARC WELDING (GMAW) FLUX CORED ARC WELDING (FCAW) METAL CORED ARC WELDING (MCAW) PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. **In the context of MCAW fill passes, which inclination description is correct for 2G?**

   A. Backhand 0° - 10°

   B. Forehand 0° - 10°

   C. Sideways 5° - 15°

   D. Vertical 0° - 5°

2. **Which shielding gas composition is commonly used for achieving specific bead shapes and wetting in carbon steel GMAW?**

   A. 100% CO_2 (deep penetration, arc instability and spatter)

   B. 75/25 Ar/CO_2 (stable arc, smoother bead, balanced penetration)

   C. 90/10 Ar/CO_2

   D. Other blends such as He additions used for specialized bead shapes and wetting

3. **What is the angle range for a Single Vee prep on pipe?**

   A. 60-70 degrees

   B. 30-45 degrees

   C. 70-90 degrees

   D. 0-20 degrees

4. **How environmental conditions (wind, humidity) affect FCAW-S versus FCAW-G welding?**

   A. FCAW-S is more affected by wind

   B. FCAW-G is more sensitive to wind and shielding gas leakage

   C. Humidity has no effect on flux moisture or hydrogen content

   D. Both processes are equally affected by wind

5. **For an 80 mm pipe, what is the minimum number and lengths of tacks required?**

   A. Three tacks at 12.7 mm long

   B. Two tacks at 6.3 mm long

   C. Four tacks at 10 mm long

   D. One tack at 25 mm long

6. Where should the 4 tack welds be located on a 150 mm pipe to be welded in the 5G position?

A. 12, 3, 6, 9 o clock positions

B. 1, 4, 7, 10 o clock positions

C. 2, 5, 8, 11 o clock positions

D. 3, 6, 9, 12 o clock positions

7. Pipe 350 mm and larger is identified by OD?

A. False

B. Not applicable

C. Sometimes

D. True

8. What does 1G define in welding positions?

A. 1st position (flat) groove weld

B. 2nd position (horizontal) groove weld

C. 5th position (horizontal) groove weld

D. Vertical position groove weld

9. Does welding position influence FCAW machine settings, and if so, how does the vertical position compare to the flat position?

A. No influence

B. Only affects torch angle

C. Yes; vertical position requires lower settings than flat

D. Only affects wire feed speed

10. To prevent the root pass from becoming concave with shrinkage marks on the inside, which single action can help?

A. Reduce the root spacing

B. Increase root opening

C. Change electrode angle to 45 degrees

D. Increase wire feed speed

Answers

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

Explanations

1. In the context of MCAW fill passes, which inclination description is correct for 2G?

A. Backhand 0° - 10°

B. Forehand 0° - 10°

C. Sideways 5° - 15°

D. Vertical 0° - 5°

In a 2G horizontal groove weld, you're welding on a vertical plate with the bead laid horizontally as you move the torch left to right. The torch should be angled slightly forward toward the direction of travel (forehand). Keeping a small forward tilt, about 0 to 10 degrees, gives you better control of the molten pool on the horizontal plane, promotes proper wetting into the joint, and helps build a uniform bead for MCAW fill passes. A backhand approach tends to pull the puddle away from the joint and can cause a less stable bead, while a sideways tilt (and certainly a vertical tilt) disrupts control on a horizontal weld. So the best choice for 2G MCAW fill passes is forehand with a 0–10 degree inclination.

2. Which shielding gas composition is commonly used for achieving specific bead shapes and wetting in carbon steel GMAW?

A. 100% CO2 (deep penetration, arc instability and spatter)

B. 75/25 Ar/CO2 (stable arc, smoother bead, balanced penetration)

C. 90/10 Ar/CO2

D. Other blends such as He additions used for specialized bead shapes and wetting

Shielding gas not only protects the molten metal but also shapes how the weld bead forms. Different gas mixes affect arc characteristics, heat input, and how well the molten metal wets the base material. While 100% CO2 tends to push deeper penetration but can make the arc unstable and increase spatter, and argon-CO2 blends (like common general-purpose mixes) give a stable arc with smoother beads and balanced penetration, these standard options are mainly for routine welds. To dial in bead geometry and wetting for specific joint requirements, engineers use other blends that include helium or other additions. Helium-containing mixes raise heat input and modify the arc and metal transfer in ways that can produce particular bead shapes and improved wetting, suited to specialized welds. So the choice describing these alternative blends for tailored bead shapes and wetting is the best fit.

3. What is the angle range for a Single Vee prep on pipe?

A. 60-70 degrees

B. 30-45 degrees

C. 70-90 degrees

D. 0-20 degrees

A single Vee groove is made by beveling both pipe edges so they meet in a V shape. The important measure is the groove's included angle—the angle between the two bevel faces at the root. For a standard pipe weld, this included angle is typically in the 60 to 70 degrees range. This range provides a practical root opening that allows proper root penetration and access for the weld pool, while not requiring unnecessary material removal or creating an excessively large weld bead. If you imagine the bevels on each side, each side would be about 30 to 35 degrees, which roughly adds up to the 60–70 degree included angle.

4. How environmental conditions (wind, humidity) affect FCAW-S versus FCAW-G welding?

A. FCAW-S is more affected by wind

B. FCAW-G is more sensitive to wind and shielding gas leakage

C. Humidity has no effect on flux moisture or hydrogen content

D. Both processes are equally affected by wind

The main idea is how shielding happens and how it can be disrupted by the environment. Gas-shielded FCAW relies on an external flow of shielding gas around the weld. If wind drafts blow across the joint or if there are leaks in the shielding gas supply, the shield can be carried away or diluted. This leaves molten metal exposed to air, leading to porosity, oxidation, and other defects. That makes gas-shielded FCAW particularly sensitive to wind and shielding gas leakage. Self-shielded FCAW generates its protective environment from the flux inside the wire itself, so external wind has much less effect on shielding. The shield is created as the flux melts and releases gases and slag locally around the weld, providing protection without relying on an external gas flow. Humidity and moisture can still influence hydrogen content, but the key difference in how wind and shielding gas leakage impact the processes is that the external gas shield is more vulnerable in the gas-shielded method.

5. For an 80 mm pipe, what is the minimum number and lengths of tacks required?

A. Three tacks at 12.7 mm long

B. Two tacks at 6.3 mm long

C. Four tacks at 10 mm long

D. One tack at 25 mm long

When assembling a pipe joint, tack welds are used to position and lock the pieces before the full weld. For a circular joint like an 80 mm pipe, you need enough tacks to resist rotation and keep the joint aligned during welding. Placing three tacks evenly around the circumference (about 120 degrees apart) gives three-point stabilization so the halves can't tilt or shift while you weld the seam. The length should hold the pieces but not create excessive heat or distortion. About 12.7 mm (1/2 inch) is a common tack length for this size, providing sufficient hold without overdoing the heat. Two tacks would allow rotation around the joint; four would be more than necessary and add extra heat; one tack cannot secure the entire circumference. So three tacks at 12.7 mm long is the appropriate approach.

6. Where should the 4 tack welds be located on a 150 mm pipe to be welded in the 5G position?

A. 12, 3, 6, 9 o clock positions

B. 1, 4, 7, 10 o clock positions

C. 2, 5, 8, 11 o clock positions

D. 3, 6, 9, 12 o clock positions

In the 5G pipe welding setup, you want four tack welds that hold the joint firmly while you complete the weld around the circumference. Placing them at the four cardinal points—12, 3, 6, and 9 o'clock—gives four evenly spaced restraint points around the pipe. This symmetric tacking keeps the pipe centered in the fixture, prevents tilt or shifting as you start and progress the weld, and makes rotating or moving the pipe for subsequent passes predictable and stable. If tacks were placed at other, non-equidistant positions, you'd risk uneven restraint, which can lead to distortion or misalignment as you weld around the circumference. The four-quartered arrangement ensures balanced support throughout the 5G welding process.

7. Pipe 350 mm and larger is identified by OD?

A. False

B. Not applicable

C. Sometimes

D. True

For large pipes, the actual external dimension becomes the reliable way to identify the size. When you reach about 350 mm (roughly 14 in) and larger, the nominal bore no longer provides a consistent reference because wall thickness and the resulting inside diameter vary a lot with different schedules. Using the outside diameter as the identifying feature avoids confusion and ensures fittings, flanges, and connections match the true pipe size. So yes, pipes of 350 mm and larger are identified by their outside diameter.

8. What does 1G define in welding positions?

A. 1st position (flat) groove weld

B. 2nd position (horizontal) groove weld

C. 5th position (horizontal) groove weld

D. Vertical position groove weld

The main idea here is how welding positions are labeled by the orientation of the workpiece. 1G refers to the flat position for a groove weld on a flat plate—the plate lies in a horizontal plane and you weld from above the joint. This setup is typically the easiest and most common way to perform a groove weld because gravity helps molten metal stay in the groove and heat control is straightforward. So, why this is the best answer: in the flat (first) position, the groove weld on a flat plate is welded with the surface facing up, which is exactly what 1G denotes. The other options describe different orientations or contexts—like welding along a horizontal or vertical plane or welding around a pipe in a fixed position—none of which define the flat-plate groove weld that 1G specifies.

9. Does welding position influence FCAW machine settings, and if so, how does the vertical position compare to the flat position?

A. No influence

B. Only affects torch angle

C. Yes; vertical position requires lower settings than flat

D. Only affects wire feed speed

When you weld in different positions, heat input and how the molten metal behaves change. In the flat position, gravity helps the molten pool settle smoothly, so you can use higher heat input to get good penetration and a steady bead. In the vertical position, gravity pulls the molten metal downward and can cause the pool to sag, run, or become hard to control. To keep the bead from overflowing or burning through, you typically reduce the heat input, which means lower current (and often lower voltage). This gives better control of penetration and bead shape in vertical welds. Wire feed speed may be adjusted for deposition, but the key adjustment is lowering the overall heat input to match the vertical geometry. So the vertical position does require different, generally lower, machine settings than the flat position.

10. To prevent the root pass from becoming concave with shrinkage marks on the inside, which single action can help?

A. Reduce the root spacing

B. Increase root opening

C. Change electrode angle to 45 degrees

D. Increase wire feed speed

Reducing the root spacing helps the root pass fuse more completely and stay supported as it cools. When the gap at the root is smaller, the heat concentrates more in the root area, promoting better penetration and a more uniform fill. That balanced heat and controlled contraction reduce the tendency for the root to pull inward, which creates a concave surface and internal shrinkage marks. Widening the root opening spreads heat away from the root and can worsen concavity and internal marks. Changing the electrode angle or wire feed speed affects bead shape or deposition rate but doesn't directly address the internal shrinkage at the root.

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://gmawfcawmcaw.examzify.com

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