Design and Manufacturing Lab (DML) 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. What are the three most common types of electric arc welding?

A. SMAW, GMAW, GTAW

B. SMAW, GTAW, FCAW

C. GTAW, GMAW, FCAW

D. SMAW, FCAW, GMAW

2. Which item would include the designer/ drawer's name?

A. Designer/ Drawer name

B. Manufacturing order number

C. Date created

D. Customer order number

3. What is the function of a vise in milling?

A. To hold the workpiece securely during milling

B. To rotate the cutting tool

C. To measure the workpiece

D. To lubricate the workpiece

4. What is the term called for the arrangement using D-shaped shafts with small flats cut into them and set screws?

A. Positive mechanical engagement

B. Friction fit

C. Interference fit

D. Keying

5. Compared to casting and billets, forged metal is known for which characteristics?

A. Higher strength and toughness

B. Higher porosity

C. Lower density

D. Poor machinability

6. Why are separate evaluation matrices created for separate functional subunits of a design?

- **A. PICK THE BEST SUBUNITS BECAUSE WE CAN COMBINE THEM**
- **B. RANDOMIZE DECISIONS**
- **C. AVOID TRADE-OFFS**
- **D. INCREASE COMPLEXITY**

7. Which statement about fasteners in BOMs is true?

- **A. Fasteners do not need to be listed in BOMs**
- **B. Fasteners must appear in assembly drawings/BOM**
- **C. Fasteners should be described only by quantity**
- **D. Fasteners should be included only if specified by vendor**

8. Which of the following statements about chuck keys is correct?

- **A. The chuck key should be kept in the chuck after clamping the tool**
- **B. The chuck key should be removed from the chuck when not actively clamping a tool**
- **C. The chuck key should be left near the machine**
- **D. The chuck key has no safety impact**

9. Which welding process uses a tungsten electrode to conduct electricity and provide the heat source?

- **A. MIG welding**
- **B. TIG welding**
- **C. SMAW welding**
- **D. GMAW welding**

10. What is the typical tolerance range for boring?

- **A. +-0.001-0.005 in**
- **B. +-0.005-0.015 in**
- **C. +-0.010-0.020 in**
- **D. +-0.020-0.050 in**

Answers

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

Explanations

1. What are the three most common types of electric arc welding?

A. SMAW, GMAW, GTAW

B. SMAW, GTAW, FCAW

C. GTAW, GMAW, FCAW

D. SMAW, FCAW, GMAW

Understanding which electric arc welding processes are most commonly encountered helps you pick the right tool for a wide range of jobs. The three most common are Shielded Metal Arc Welding, Gas Metal Arc Welding, and Gas Tungsten Arc Welding. Shielded Metal Arc Welding uses a flux-coated consumable electrode, making the setup simple, portable, and versatile for many metals and field or shop work. Gas Metal Arc Welding deposits metal quickly with a continuous wire and shielding gas, is easier to learn than stick welding, and is widely used for production welding on carbon steel, stainless, and aluminum with the appropriate gas. Gas Tungsten Arc Welding employs a non-consumable tungsten electrode with shielding gas, producing very clean, precise welds ideal for critical joints or thin sections and for materials that require high-quality finishes, though it operates more slowly. Together, these three cover a broad spectrum—from rugged, low-setup field work to fast production welding to high-precision fabrication—so they're the standard trio you're likely to encounter first in many training programs and shops. Flux-Cored Arc Welding is also common in industry, especially for thicker sections and outdoor work, but the trio above is typically emphasized as the primary set in educational contexts.

2. Which item would include the designer/ drawer's name?

A. Designer/ Drawer name

B. Manufacturing order number

C. Date created

D. Customer order number

Identifying who created the drawing is essential in design documentation. The field for the designer/ drawer name is included in the drawing's title block so there's a clear record of who produced the work, who to contact with questions, and who is responsible for its content. This supports accountability and helps with revision history, since questions or changes can be directed to the person who drafted the item. The other fields serve different purposes: a manufacturing order number tracks production flow, the date created shows when the drawing was made, and the customer order number ties the drawing to a specific customer request. So, the item that would include the designer/ drawer's name is the designer/ drawer name field.

3. What is the function of a vise in milling?

A. To hold the workpiece securely during milling

B. To rotate the cutting tool

C. To measure the workpiece

D. To lubricate the workpiece

Holding the workpiece securely during milling is essential for accuracy and safety. A milling vise clamps the stock to the table, providing rigid support, precise alignment with the cutter, and repeatable positioning for multiple passes. When the piece is firmly held, the cutter can remove material without the part shifting, reducing dimensional errors and improving surface finish while also preventing tool breakage or collisions. The vise isn't responsible for rotating the cutting tool, measuring the workpiece, or applying lubrication—those tasks belong to the spindle, measuring tools, and lubrication systems, respectively.

4. What is the term called for the arrangement using D-shaped shafts with small flats cut into them and set screws?

A. Positive mechanical engagement

B. Friction fit

C. Interference fit

D. Keying

Positive mechanical engagement describes a drive where torque is transferred by a physical interlock rather than by surface friction alone. In the arrangement with a D-shaped shaft and small flats, the flats provide defined contact surfaces, and the set screws clamp onto those flats. That clamping creates a positive lock: the pieces rotate together because the shape and the screws prevent any slip, even under load. This is different from friction fits, which rely purely on surface pressure, or interference fits, which use deformation to lock parts without any clamping fasteners. It's also not a traditional keyed drive, which uses a separate key and keyway to transmit torque. The flats plus set screws give a direct, positive connection, hence the term.

5. Compared to casting and billets, forged metal is known for which characteristics?

A. Higher strength and toughness

B. Higher porosity

C. Lower density

D. Poor machinability

Forging strengthens metal by deforming it under high pressure, which reshapes the grain structure into a continuous, directional flow and high dislocation density. This refined internal structure resists crack initiation and propagation, giving forged metal higher strength and toughness than material produced by casting or as billets. The process also pushes out and closes internal voids, so porosity is reduced, not increased. Density stays essentially the same for a given alloy, so lower density isn't a feature of forging. While the tougher, more rigid microstructure can make some forged parts a bit harder to machine, machinability isn't the defining advantage of forging; the standout qualities are the markedly improved strength and toughness.

6. Why are separate evaluation matrices created for separate functional subunits of a design?

A. PICK THE BEST SUBUNITS BECAUSE WE CAN COMBINE THEM

B. RANDOMIZE DECISIONS

C. AVOID TRADE-OFFS

D. INCREASE COMPLEXITY

Separating evaluation across functional subunits uses a modular design approach. By giving each function its own matrix, you compare options against criteria that matter specifically for that function. This makes it clear which subunits perform best for their intended role, so you can mix and match the top performers when assembling the full system. This method helps manage complexity by evaluating in parallel and then integrating the best subunits, rather than trying to optimize a single global solution. It also respects that different functions impose different trade-offs, so separate evaluations reveal which subunits fit together best in the final design. Randomizing decisions or insisting that trade-offs disappear would undermine deliberate selection, and adding unnecessary complexity isn't the goal of modular evaluation.

7. Which statement about fasteners in BOMs is true?

A. Fasteners do not need to be listed in BOMs

B. Fasteners must appear in assembly drawings/BOM

C. Fasteners should be described only by quantity

D. Fasteners should be included only if specified by vendor

Fasteners are an essential part of any assembled product, and the bill of materials (BOM) is the authoritative list of every part needed to build the product. Including fasteners in the BOM and in the assembly drawings ensures you have the exact items required—correct type, size, material, finish, and quantity—so procurement, fabrication, and assembly can be done accurately and consistently. If fasteners were described only by quantity, you wouldn't know the precise screw or bolt specifications, which can lead to wrong parts being used or parts not fitting properly. Relying on vendor supply alone can miss mismatches between what's needed and what a vendor happens to stock, creating gaps in documentation and traceability. By listing fasteners in the BOM and showing their placement in the assembly drawings, every team member has clear guidance on what to use and how much to order, ensuring reliable fabrication and assembly.

8. Which of the following statements about chuck keys is correct?

A. The chuck key should be kept in the chuck after clamping the tool

B. The chuck key should be removed from the chuck when not actively clamping a tool

C. The chuck key should be left near the machine

D. The chuck key has no safety impact

Safety with chuck keys is about preventing injury from a moving machine. The best practice is to remove the chuck key from the chuck when you're not actively using it to clamp a tool. If the machine starts or the chuck spins while a key is left in the jaws, the key can be driven outward at high speed, acting like a projectile that can strike you or others and cause serious injury. Keeping the key out of the chuck and storing it in a designated location eliminates this risk and helps ensure the tool is clamped properly without accidental interference. Leaving a key in the chuck after clamping is unsafe because it can still be caught or cause damage if the chuck or tool moves. Having the key lying around near the machine creates a tripping or snag hazard and does not prevent the key from becoming a hazard if the machine starts unexpectedly. And since a chuck key has a direct safety impact in preventing injuries, saying it has no safety impact isn't accurate.

9. Which welding process uses a tungsten electrode to conduct electricity and provide the heat source?

A. MIG welding

B. TIG welding

C. SMAW welding

D. GMAW welding

Tungsten Inert Gas welding uses a non-consumable tungsten electrode to conduct electricity and provide the heat source. The arc forms between the tungsten electrode and the workpiece, delivering the heat needed to melt the metal while the tungsten itself doesn't melt into the weld. Shielding gas (usually argon or a mix) protects the weld area from contamination, and a filler rod may be added as needed for deposition. This setup differs from other common welding methods that rely on a consumable electrode (a wire in a gun for MIG/GMAW or a coated stick for SMAW), where the electrode itself becomes part of the weld.

10. What is the typical tolerance range for boring?

A. +-0.001-0.005 in

B. +-0.005-0.015 in

C. +-0.010-0.020 in

D. +-0.020-0.050 in

Boring aims to bring a drilled hole to a precise, true size and roundness by removing small amounts with a boring bar. In most workshop settings, the achievable tolerance for boring a hole is on the order of a few thousandths of an inch, typically around plus or minus 0.001 to 0.005 inches, depending on hole size, tool condition, and machine rigidity. This range reflects what's commonly attainable with standard equipment before finishing operations. Tolerances looser than this would be too imprecise for a bored hole and are more typical of rough drilling or less controlled processes. If tighter control is needed, finishing with reaming or honing can improve the tolerance further. Therefore, the common boring tolerance falls in the 0.001–0.005 in range.

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://designmanufacturinglab.examzify.com

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