PMMI Programmable Logic Controllers (PLC) 1 Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Table of Contents

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 a relay output, how are the terminals typically wired?

A. Both terminals to PLC.

B. One terminal to the output device, and the other to the power source.

C. Both terminals to the device.

D. One terminal to ground, the other to PLC.

2. What best describes an Up/Down Counter in PLCs?

A. It uses only CTU

B. It uses only CTD

C. It is formed by counting up then down using different tags

D. It is formed by combining CTU and CTD to share the same tag name

3. Which element is used to keep an output energized after the input signal has been removed?

A. Memory/Seal-In

B. And

C. Or

D. Not

4. What does the 'Number of Outputs' feature specify for a PLC discrete output module?

A. The number of devices the module can control

B. The voltage level of the module

C. The current rating per output

D. The color of connectors

5. XIO stands for Examine If Open. What is the typical contact type for XIO when not energized?

A. Normally Open

B. Normally Closed

C. Extend Input

D. Execute Input

6. Which best describes the role of interlock safety in automation?

- **A. To prevent outputs from turning on unless safety conditions are met**
- **B. To optimize energy use**
- **C. To maximize throughput at all times**
- **D. To improve color display of indicators**

7. What happens when two XIC instructions are placed in parallel on a rung?

- **A. Energizes if either is closed**
- **B. Energizes if both closed**
- **C. De-energizes when any is open**
- **D. Never energizes**

8. Which statement about Triacs is correct?

- **A. Triac conducts only in one direction and is used for DC.**
- **B. Triac is three-terminal; conducts current in either direction when triggered; used for AC outputs.**
- **C. Triac is a type of transistor used in DC outputs.**
- **D. Triac is a passive resistor.**

9. Ladder Logic is typically described as which of the following?

- **A. A graphical language that encapsulates other languages into blocks.**
- **B. A high-level language for data processing.**
- **C. Sequential Function Chart uses steps and transitions.**
- **D. Ladder Logic resembles a ladder with rungs.**

10. In a retentive timer, which bit represents the Done status?

- **A. .ACC**
- **B. .DN**
- **C. .PRE**
- **D. .EN**

Answers

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

Explanations

1. In a relay output, how are the terminals typically wired?

A. Both terminals to PLC.

B. One terminal to the output device, and the other to the power source.

C. Both terminals to the device.

D. One terminal to ground, the other to PLC.

Relays act as switches that control power to a load. In a typical relay output, the power path is broken by the relay contacts, so the device gets power only when the relay closes. One terminal is connected to the output device and the other to the power source. When the PLC energizes the coil, the contact closes and current flows from the power source through the relay to the device, completing the circuit. Wiring both terminals to the device or both to the PLC wouldn't provide a proper power path or would bypass the switching function.

2. What best describes an Up/Down Counter in PLCs?

A. It uses only CTU

B. It uses only CTD

C. It is formed by counting up then down using different tags

D. It is formed by combining CTU and CTD to share the same tag name

An Up/Down Counter is a single counter value that can be increased or decreased depending on the input conditions. In ladder logic, you typically use the up-count instruction (CTU) to increase the counter and the down-count instruction (CTD) to decrease it. The key is that both CTU and CTD operate on the same memory location, or tag, that holds the current count. By wiring the up input to CTU and the down input to CTD but pointing both to the same tag, you have one counter that can go up or down—rather than two separate counters. Using only CTU would give an up-counting register that never decreases. Using only CTD would give a down-counting register that never increases. If you used different tags for the up and down operations, you'd effectively have two separate counters, not one that can both increment and decrement. Sharing the same tag name implements a true Up/Down Counter.

3. Which element is used to keep an output energized after the input signal has been removed?

A. Memory/Seal-In

B. And

C. Or

D. Not

The ability to keep an output energized after the input is removed comes from a memory element called a seal-in (latch). When the input is true, the output energizes and its own auxiliary contact closes, creating a hold-in path that keeps the circuit closed even if the input goes away. This self-holding path maintains the output until something else breaks the circuit (like a stop input). In contrast, And, Or, and Not do not provide this memory capability: And requires both inputs to be present, Or only responds to inputs but won't maintain state after inputs drop, and Not inverts a signal without holding the state.

4. What does the 'Number of Outputs' feature specify for a PLC discrete output module?

A. The number of devices the module can control

B. The voltage level of the module

C. The current rating per output

D. The color of connectors

The Number of Outputs shows how many devices the module can switch on or off independently. Each output channel controls a separate load, like a relay or transistor, so the total count defines how many loads the module can drive at once. The voltage level per output, the current rating per output, and cosmetic details like connector color are separate specifications and do not define how many devices you can control. So a module with more outputs can handle more devices, while the other factors describe how those outputs operate and are within safe limits.

5. XIO stands for Examine If Open. What is the typical contact type for XIO when not energized?

A. Normally Open

B. Normally Closed

C. Extend Input

D. Execute Input

XIO stands for Examine If Open, a ladder logic element that is true when the input is not energized. That behavior is implemented with a normally closed contact: it is closed when the input is off, allowing the rung to pass, and it opens when the input is energized, stopping the rung. So the typical contact type used with XIO is normally closed. The other options don't describe a contact type used in this context, and normally open would be paired with a different instruction (XIC) rather than XIO.

6. Which best describes the role of interlock safety in automation?

A. To prevent outputs from turning on unless safety conditions are met

B. To optimize energy use

C. To maximize throughput at all times

D. To improve color display of indicators

Interlock safety centers on ensuring that a machine can only energize outputs and start operating when all safety conditions are met. In practice, an interlock is placed in the control path of the machine so that a guarded area must be securely closed and any safety devices (like guards, doors, or fences) must indicate a safe state before the PLC can energize actuators or conveyors. If a guard is opened or a safety device is tripped, the interlock opens the circuit and the outputs cannot turn on, stopping any motion and protecting personnel. This fail-safe gating of power emphasizes safety over production pace. This isn't about saving energy, maximizing throughput, or changing indicator colors. Those aspects don't define the interlock's purpose; the goal is to prevent hazardous operation until conditions are safe.

7. What happens when two XIC instructions are placed in parallel on a rung?

A. Energizes if either is closed

B. Energizes if both closed

C. De-energizes when any is open

D. Never energizes

In ladder logic, placing two XIC (Examine If Closed) contacts in parallel creates an OR-style path. Each XIC is true when its input is on (closed). With parallel paths, if either input is on, there's a complete path from the power rail to the output coil, so the coil energizes. If at least one input is on, the rung fires; if both are off, there's no complete path and the rung stays de-energized. This is why two XICs in parallel energize the output when either input is on. If they were in series, you'd need both inputs on to energize (AND behavior).

8. Which statement about Triacs is correct?

A. Triac conducts only in one direction and is used for DC.

B. Triac is three-terminal; conducts current in either direction when triggered; used for AC outputs.

C. Triac is a type of transistor used in DC outputs.

D. Triac is a passive resistor.

Triacs are bidirectional switching devices with three terminals that control AC power. Once a gate pulse is applied, current can flow through the main terminals in either direction. They latch on after the trigger and continue conducting until the current drops below a holding level, which in AC circuits happens at each zero crossing, allowing the device to turn off automatically each half-cycle. This makes them ideal for AC outputs such as dimming lights or controlling motors. They aren't transistors, nor are they passive resistors, and they aren't suited for DC switching because, in DC, there's no natural zero crossing to turn them off.

9. Ladder Logic is typically described as which of the following?

A. A graphical language that encapsulates other languages into blocks.

B. A high-level language for data processing.

C. Sequential Function Chart uses steps and transitions.

D. Ladder Logic resembles a ladder with rungs.

Ladder Logic is typically described as resembling a ladder with rungs. This captures the visual idea: a pair of vertical rails with horizontal rungs, where each rung represents a logical condition or action. Inputs appear on the left side and, when those conditions are met, the corresponding output on the right side is activated. This graphical style mirrors traditional electrical relay logic, making it intuitive for technicians transitioning from hardwired control to software-based control. It's a discrete, I/O-focused language used to implement control circuits, not a high-level data-processing language. The other descriptions don't fit because they describe different concepts. A graphical language that encapsulates other languages into blocks aligns more with approaches like function block diagrams or modular programming, not the ladder-style presentation. A high-level language for data processing doesn't reflect ladder logic's low-level, I/O-oriented nature. And sequential function charts describe a separate system that uses steps and transitions, whereas ladder logic is defined by its ladder-like diagram rather than steps and transitions.

10. In a retentive timer, which bit represents the Done status?

A. .ACC

B. .DN

C. .PRE

D. .EN

The Done status is represented by the DN bit. In a retentive timer, DN goes high when the accumulated time reaches the preset value, signaling that the timer has completed its delay. Unlike other timer bits, DN acts as a completion flag and typically latches high until the timer is reset, which is why it's the indicator of "Done." The other bits have different roles: ACC holds the current elapsed (accumulated) time, PRE stores the target delay, and EN indicates whether the timer is currently enabled to count.

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://pmmiplc1.examzify.com

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