

# North Carolina Public Utilities License Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

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# Table of Contents

<b>Copyright</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>How to Use This Guide</b> .....	<b>4</b>
<b>Questions</b> .....	<b>5</b>
<b>Answers</b> .....	<b>8</b>
<b>Explanations</b> .....	<b>10</b>
<b>Next Steps</b> .....	<b>16</b>

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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**

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- 1. In high-voltage systems, what is a common voltage range needed for transferring electricity over long distances?**
  - A. 1,000 to 5,000 volts**
  - B. 13,000 to 25,000 volts**
  - C. 138,000 to 765,000 volts**
  - D. 10,000 to 50,000 volts**
- 2. What must be done to a line before it can be worked on?**
  - A. It must be inspected for damages**
  - B. It must be disconnected from the main source**
  - C. It must be energized and tested**
  - D. It must be grounded and short-circuited at the work location**
- 3. What is often included in the features of a protective link for a distribution transformer?**
  - A. High-voltage insulators**
  - B. Overcurrent protection**
  - C. A voltage regulator**
  - D. Temperature sensors**
- 4. What is the function of the trip coil in an oil switch?**
  - A. To provide backup power**
  - B. To automatically open the circuit when needed**
  - C. To enhance voltage regulation**
  - D. To monitor the insulation level**
- 5. What material is not typically used as a conductor covering in electrical applications?**
  - A. Acrylic**
  - B. Neoprene**
  - C. Cotton**
  - D. Crosslinked polyethylene**

**6. How far from the suspension of dead-end points should all splices in transmission-line conductors be made?**

- A. At least 25 feet**
- B. At least 30 feet**
- C. At least 50 feet**
- D. At least 75 feet**

**7. What is the primary purpose of training cables on the manhole wall?**

- A. Making a neat arrangement**
- B. Providing expansion space**
- C. Facilitating easier access**
- D. Improving insulation protection**

**8. What does it mean to ground a circuit or apparatus?**

- A. To connect it to the electrical grid**
- B. To isolate it for maintenance**
- C. To connect it to the earth**
- D. To secure it against physical movement**

**9. How can the tension in a conductor be measured?**

- A. With a multimeter**
- B. With a dynamometer**
- C. By visual inspection**
- D. With an accelerometer**

**10. What is the function of a light-duty strain carrier (rocker-arm type)?**

- A. To support heavy loads**
- B. To relieve the insulator string of conductor pull**
- C. To insulate conductors**
- D. To measure electrical current**

## **Answers**

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

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## **Explanations**

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**1. In high-voltage systems, what is a common voltage range needed for transferring electricity over long distances?**

- A. 1,000 to 5,000 volts**
- B. 13,000 to 25,000 volts**
- C. 138,000 to 765,000 volts**
- D. 10,000 to 50,000 volts**

The voltage range of 138,000 to 765,000 volts is commonly utilized in high-voltage systems for the efficient transmission of electricity over long distances. This range is crucial because higher voltages significantly reduce energy losses due to resistance in the transmission lines. When electricity travels long distances, a higher voltage minimizes the current flowing through the conductors, which in turn decreases the  $I^2R$  losses (where  $I$  is current and  $R$  is resistance). Transmission systems operating within this range are often used by utility companies to transport power from generation plants to substations and ultimately to consumers. By utilizing high voltages, utilities can maintain efficient power flow, which is essential for meeting demand and ensuring a reliable supply of electricity. Lower voltage options, such as those listed in the other choices, are generally not suitable for long-distance transmission due to higher losses and decreased efficiency, making them more appropriate for local distribution networks rather than extensive transmission systems.

**2. What must be done to a line before it can be worked on?**

- A. It must be inspected for damages**
- B. It must be disconnected from the main source**
- C. It must be energized and tested**
- D. It must be grounded and short-circuited at the work location**

To ensure safety when working on an electrical line, the appropriate procedure is to ground and short-circuit the line at the work location. This process is essential to prevent accidental energization, which could result in serious injuries or fatalities to personnel conducting maintenance or repairs. Grounding the line creates a direct path for electrical current to flow to the ground, while short-circuiting ensures that any remaining voltage is neutralized, thereby providing a safe working environment. Prior actions such as disconnecting the line or inspecting for damage may be part of the overall maintenance procedure but do not specifically guarantee safety during physical work on the line. Grounding and short-circuiting represent critical steps that are specifically mandated to ensure that the line is completely safe to work on.

**3. What is often included in the features of a protective link for a distribution transformer?**

- A. High-voltage insulators**
- B. Overcurrent protection**
- C. A voltage regulator**
- D. Temperature sensors**

Overcurrent protection is a fundamental feature of a protective link for a distribution transformer. This type of protection is crucial because it prevents damage to the transformer and the electrical distribution network that could occur due to excessive current flow. When an overcurrent situation arises—often due to faults such as short circuits—overcurrent protection devices (like fuses or circuit breakers) detect the abnormal conditions and interrupt the current flow. This safeguard helps maintain system stability, minimizes the risk of fire, and protects both the equipment and personnel. The other features mentioned, such as high-voltage insulators, voltage regulators, and temperature sensors, are important components in the overall operation and safety of a transformer but serve different specific roles. Insulators prevent unwanted current pathways, regulators ensure voltage levels remain stable under varying loads, and temperature sensors monitor the thermal condition of the transformer to prevent overheating. While these components contribute to the reliability and efficiency of a transformer, they do not directly address the specific need for overcurrent protection.

**4. What is the function of the trip coil in an oil switch?**

- A. To provide backup power**
- B. To automatically open the circuit when needed**
- C. To enhance voltage regulation**
- D. To monitor the insulation level**

The trip coil in an oil switch is designed to automatically open the circuit when certain conditions are met, such as an overload or fault condition. It functions as a safety mechanism within the switch to prevent damage to the electrical system and maintain operational integrity. When the trip coil is energized, it activates the mechanism that causes the contacts within the oil switch to open, thereby interrupting the current flow. This is essential for protecting equipment from potential damage due to excessive current or short circuits, ensuring the reliability and safety of the electrical distribution system. The other options, while relevant to electrical systems, do not describe the primary purpose of the trip coil. Providing backup power pertains to a different aspect of power systems, enhancing voltage regulation deals with maintaining stable voltage levels rather than circuit interruption, and monitoring the insulation level relates to identifying the health of insulation materials, which is not the function of a trip coil.

**5. What material is not typically used as a conductor covering in electrical applications?**

- A. Acrylic**
- B. Neoprene**
- C. Cotton**
- D. Crosslinked polyethylene**

Acrylic is not typically used as a conductor covering in electrical applications because it lacks the necessary properties that make for effective insulation and protection. Conductors require materials that provide excellent electrical insulation, mechanical strength, and resistance to environmental factors. Neoprene, cotton, and crosslinked polyethylene, on the other hand, are more commonly utilized for conductor coverings. Neoprene is valued for its durability and resistance to weather and chemicals, making it suitable for outdoor electrical applications. Cotton, while not as common in modern applications, can sometimes be used in specific contexts where flexibility and breathability are required. Crosslinked polyethylene is an advanced insulating material known for its excellent thermal and electrical properties, making it ideal for a variety of electrical cable applications. Thus, acrylic stands out as the least suitable choice among these materials.

**6. How far from the suspension of dead-end points should all splices in transmission-line conductors be made?**

- A. At least 25 feet**
- B. At least 30 feet**
- C. At least 50 feet**
- D. At least 75 feet**

Splices in transmission-line conductors should be made at least 50 feet from the suspension of dead-end points to ensure the integrity and reliability of the line. This distance minimizes the risk of mechanical stress and electrical interference at the dead-end points, which are locations where cables are anchored and may experience different operational stresses. Proper distancing of splices helps to protect them from environmental degradation, such as wind or ice loading, which can occur at dead ends. Ensuring that splices are placed well away from these critical points allows for easier maintenance access and contributes to overall system safety. Additionally, this practice aids in preventing any potential failure that could arise from excessive tension near the dead-end suspensions.

## 7. What is the primary purpose of training cables on the manhole wall?

- A. Making a neat arrangement
- B. Providing expansion space**
- C. Facilitating easier access
- D. Improving insulation protection

The primary purpose of training cables on the manhole wall is to provide expansion space. Cables can expand and contract due to temperature changes or physical stress, and training them properly allows for this movement without causing stress on the cables or their connections. This setup helps in managing the cables in a way that accommodates their natural behavior, thus preventing potential damage or tension that could lead to failures in the electrical system. A neatly arranged cable management system, while visually appealing, isn't the main function of training cables on the wall. Facilitating easier access is also a consideration, but it is secondary to ensuring that there is proper allowance for thermal expansion. Additionally, while improving insulation protection can be a result of good cable management, it is not the primary reason for training cables on the wall. Overall, the focus on providing expansion space maintains the integrity and reliability of the cable system.

## 8. What does it mean to ground a circuit or apparatus?

- A. To connect it to the electrical grid
- B. To isolate it for maintenance
- C. To connect it to the earth**
- D. To secure it against physical movement

Grounding a circuit or apparatus refers to the process of connecting it to the earth, which serves as a reference point for voltage levels and provides a safe path for excess electricity, such as a surge or fault condition, to dissipate into the ground. This connection is crucial for the safety and functionality of electrical systems, as it helps to prevent electric shocks and equipment damage by ensuring that any stray currents are directed safely away from users and sensitive components. Grounding is particularly important in protecting both people and equipment from the risks of electrical hazards. For example, in the event of a short circuit or insulation failure, having an effective ground connection allows the fault current to flow through the ground rather than through a person who might touch the equipment. The other options do not accurately describe the function or purpose of grounding. Connecting the circuit to the electrical grid refers to supplying it with power rather than providing a safety path. Isolating for maintenance means disconnecting the system from power sources, which is not related to grounding. Securing against physical movement pertains to stability and has no connection to electrical safety or operation. Thus, the focus of grounding as a practice rests firmly on its role in connecting systems to the earth for safety and protection.

## 9. How can the tension in a conductor be measured?

- A. With a multimeter
- B. With a dynamometer**
- C. By visual inspection
- D. With an accelerometer

The tension in a conductor can be accurately measured using a dynamometer. A dynamometer is a device designed to measure force, torque, or power, and is specifically suitable for assessing the tension in cables or conductors. It provides a direct and quantitative measurement, which is crucial for ensuring that the tension remains within safe limits to prevent damage to the structure or the conductor itself. A multimeter, while useful for measuring electrical parameters such as voltage, current, and resistance, cannot measure mechanical tension directly. Visual inspection may help identify issues like sagging or wear, but it does not provide precise numerical values for tension. An accelerometer measures acceleration and would not be applicable for determining the tension in a conductor. Thus, the use of a dynamometer is the most effective and accurate method for this specific measurement.

## 10. What is the function of a light-duty strain carrier (rocker-arm type)?

- A. To support heavy loads
- B. To relieve the insulator string of conductor pull**
- C. To insulate conductors
- D. To measure electrical current

The function of a light-duty strain carrier, specifically a rocker-arm type, is primarily to relieve the insulator string of conductor pull. This type of carrier allows conductors to be suspended in a way that minimizes stress on the insulators. By effectively managing the tension in the electrical conductors, the strain carrier helps prevent potential damage to the insulator strings and contributes to the overall stability and reliability of electrical transmission systems. This function is crucial because insulators are designed to withstand specific loads, and any excess pull can lead to failure or decreased performance. The rocker-arm design helps distribute forces and allows for some movement, which can further ease strain on both the insulators and the attached conductors. Other options, such as supporting heavy loads, insulating conductors, or measuring electrical current, do not accurately describe the primary role of a light-duty strain carrier. While it is true that some components in a transmission system may serve to support loads or provide insulation, those functions are not the focus of a light-duty strain carrier.

# 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](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://ncpublicutilities.examzify.com>**

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

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