

# Registered Electrical Engineering Licensure 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

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- 1. Which device is used as an electrically operated switch to open or close circuits?**
  - A. Fuse**
  - B. Voltage regulator**
  - C. Relay**
  - D. Transformer**
  
- 2. What happens if a current transformer secondary connection is opened-circuited while the primary is active?**
  - A. The circuit will continue to function normally.**
  - B. It can cause damage or safety hazards.**
  - C. It will automatically reset.**
  - D. It will reduce the output voltage.**
  
- 3. What is the purpose of transformer oil?**
  - A. Insulation for wires**
  - B. Cooling method for transformers**
  - C. Current regulation**
  - D. Voltage level adjustment**
  
- 4. What does increasing the alternator speed do to the frequency it produces?**
  - A. Reduces the frequency**
  - B. Has no effect on frequency**
  - C. Increases the frequency**
  - D. Causes fluctuation in frequency**
  
- 5. What does the term "line current" refer to?**
  - A. Current in a battery**
  - B. Current in any circuit**
  - C. Current in a specific conductor**
  - D. Current that powers transformers**

- 6. What does a wattmeter measure?**
- A. Electrical resistance**
  - B. Electrical power in watts**
  - C. Voltage in volts**
  - D. Current in amperes**
- 7. Which component primarily affects the saturation of a transformer core?**
- A. Core material type**
  - B. Number of transformer phases**
  - C. Transformer winding turns**
  - D. Ambient temperature**
- 8. What does kWh measure?**
- A. Power output**
  - B. Energy consumed over time**
  - C. Current flow**
  - D. Voltage drop**
- 9. How is the speed of a DC shunt motor regulated?**
- A. By changing the supply voltage**
  - B. By adjusting the field winding**
  - C. By using variable resistance in the armature circuit**
  - D. By altering the rotor speed**
- 10. What is the primary difference between single-phase and three-phase systems?**
- A. Single-phase systems utilize three waveforms**
  - B. Three-phase systems provide a more stable power supply**
  - C. Single-phase systems provide more power than three-phase systems**
  - D. Three-phase systems are only used for residential applications**

## Answers

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

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## **Explanations**

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**1. Which device is used as an electrically operated switch to open or close circuits?**

- A. Fuse**
- B. Voltage regulator**
- C. Relay**
- D. Transformer**

The device used as an electrically operated switch to open or close circuits is a relay. A relay functions by using an electromagnetic coil to control the connectivity of contacts within the switch. When electrical current passes through the coil, it generates a magnetic field that moves an armature and subsequently opens or closes the contacts, allowing or interrupting the flow of electricity in a circuit. This functionality makes relays ideal for applications where it is necessary to control a high-power circuit with a low-power signal, providing isolation and protection for sensitive components. Relays are commonly used in various applications, including automation systems, motor control, and circuit protection, due to their capability to handle different voltage and current levels effectively. In contrast, the other devices listed have different primary functions: a fuse protects circuits by breaking the connection in case of overload or short-circuit, a voltage regulator maintains a consistent output voltage despite variations in input voltage or load conditions, and a transformer is primarily used to increase or decrease voltage levels in AC circuits without changing frequency.

**2. What happens if a current transformer secondary connection is opened-circuited while the primary is active?**

- A. The circuit will continue to function normally.**
- B. It can cause damage or safety hazards.**
- C. It will automatically reset.**
- D. It will reduce the output voltage.**

When a current transformer (CT) secondary connection is open-circuited while there is current flowing in the primary, it can lead to potentially dangerous conditions. In normal operation, the secondary of a current transformer is designed to operate with a closed circuit, allowing the proportional current to be stepped down safely. If the secondary is allowed to open-circuit, the transformer continues to generate a high voltage across the secondary terminals due to the magnetic flux created by the primary current. This high voltage can exceed the insulation rating of the transformer, leading to insulation breakdown. Moreover, this condition poses significant safety hazards, as it can result in electric shock or equipment damage. Furthermore, there is a risk of causing arcing or sparking at the open terminal points, which can lead to further hazards. Thus, the situation highlights the importance of ensuring that current transformer secondaries are never left open-circuited during normal operation to maintain safe and effective functioning.

### 3. What is the purpose of transformer oil?

- A. Insulation for wires
- B. Cooling method for transformers**
- C. Current regulation
- D. Voltage level adjustment

Transformers operate by transferring electrical energy between circuits through electromagnetic induction, and during this process, they can generate significant amounts of heat. The primary purpose of transformer oil is to act as a cooling medium to dissipate this heat. By absorbing and carrying away heat generated due to losses in the windings and core, transformer oil helps to maintain optimal operating temperatures, thereby ensuring efficient performance and longevity of the transformer. Additionally, transformer oil serves as an insulating medium between the internal components of the transformer, further ensuring the safe operation of the equipment by preventing electrical discharges. While insulation and thermal conductivity are important properties, the core function of transformer oil within a transformer is distinctly focused on managing heat, which directly supports the operational integrity of the device.

### 4. What does increasing the alternator speed do to the frequency it produces?

- A. Reduces the frequency
- B. Has no effect on frequency
- C. Increases the frequency**
- D. Causes fluctuation in frequency

Increasing the alternator speed directly influences the frequency of the electrical power it generates. This relationship is rooted in the fundamental principles of electromagnetic induction, specifically described by the equation:  $f = \frac{P \times N}{120}$  where  $f$  is Frequency,  $P$  is Number of poles, and  $N$  is Speed. From this equation, we see that frequency is directly proportional to the speed of the alternator's rotor. When the speed is increased while keeping the number of poles constant, the frequency of the output increases as well. This means that if an alternator spins faster, it produces more cycles per second, resulting in a higher frequency. As such, the option indicating that increasing the alternator speed increases the frequency is indeed accurate. Other possible effects, such as reduction or fluctuation in frequency, would occur only under different conditions, such as instability within the system or varying loads, rather than a straightforward increase in speed.

## 5. What does the term "line current" refer to?

- A. Current in a battery
- B. Current in any circuit**
- C. Current in a specific conductor
- D. Current that powers transformers

The term "line current" refers to the current flowing through any electrical circuit, particularly in the context of AC (Alternating Current) systems. This current is typically associated with the power transmission lines that connect generators, transformers, and loads in a power distribution system. It represents the current that is delivered to or drawn from the electrical supply network. The broad interpretation of line current as encompassing any circuit is essential because it captures the operational characteristics regardless of the specific components or configuration of a particular setup. This understanding is crucial for engineers when assessing power consumption, analyzing circuit behavior, or designing system protections and distributions. While other options might seem related to specific scenarios involving current, they do not reflect the general application of the term "line current" as clearly as acknowledging it as the current flowing in any circuit. Thus, the interpretation aligns closely with the practices and terminologies used in electrical engineering concerning power distribution and management.

## 6. What does a wattmeter measure?

- A. Electrical resistance
- B. Electrical power in watts**
- C. Voltage in volts
- D. Current in amperes

A wattmeter measures electrical power in watts, which is a crucial aspect in electrical engineering. This device is specifically designed to quantify the rate at which electrical energy is consumed or produced in a circuit, providing valuable insight into the energy efficiency of electrical systems. The primary operational principle of a wattmeter is based on the product of voltage (volts) and current (amperes), taking into account any phase difference between the current and voltage in an AC system. This allows it to deliver an accurate representation of true power, as opposed to merely measuring individual components like voltage or current. Understanding this measure of power is vital for engineers as they assess the performance of electrical devices, calculate energy costs, and design efficient power systems. In contrast, devices that measure resistance, voltage, or current fulfill different roles and do not provide information about power consumption.

**7. Which component primarily affects the saturation of a transformer core?**

- A. Core material type**
- B. Number of transformer phases**
- C. Transformer winding turns**
- D. Ambient temperature**

The saturation of a transformer core is primarily influenced by the type of core material used. This is because different materials have varying magnetic properties, such as permeability and saturation flux density. When the core material reaches its maximum saturation point, it cannot support any additional magnetic flux. This characteristic determines how much magnetic field strength the core can effectively hold before becoming saturated and losing its ability to properly transform voltage. A high-quality core material, such as silicon steel or ferrite, is designed to maximize the efficiency and performance of the transformer while minimizing losses due to saturation. Poorly chosen or inferior materials can lead to early core saturation, thus adversely affecting the transformer's operation, including increased losses, reduced efficiency, and potential overheating. Other factors, such as the number of transformer phases, winding turns, and ambient temperature, can certainly affect transformer performance, but they do not as directly determine the core's saturation point as the material properties do.

**8. What does kWh measure?**

- A. Power output**
- B. Energy consumed over time**
- C. Current flow**
- D. Voltage drop**

Kilowatt-hour (kWh) is a unit of measurement that quantifies the amount of energy consumed over time. Specifically, it represents the energy usage when a device with a power rating of one kilowatt operates for one hour. This makes it particularly useful for understanding electricity billing, as utility companies charge customers based on the total energy consumed in kWh. In contrast, power output is measured in watts (W) or kilowatts (kW) and represents the rate of energy transfer at a specific moment, while current flow is measured in amperes (A) and indicates the flow of electric charge. Voltage drop refers to the reduction in voltage in an electrical circuit between two points, usually expressed in volts (V). These other options do not capture the concept of energy utilization over a period, which is precisely what the kWh measures.

## 9. How is the speed of a DC shunt motor regulated?

- A. By changing the supply voltage
- B. By adjusting the field winding
- C. By using variable resistance in the armature circuit**
- D. By altering the rotor speed

The speed of a DC shunt motor is primarily regulated by using variable resistance in the armature circuit. This method works by controlling the amount of current flowing through the armature winding, which subsequently affects the torque and speed of the motor. When resistance is added to the armature circuit, the voltage drop across the resistance reduces the net voltage across the armature, leading to a decrease in armature current. Since the speed of the motor is proportional to the torque generated, limiting the armature current will effectively reduce the operational speed. In contrast, adjusting the field winding, while it can impact the motor's characteristics, typically does not lead to optimal speed control in a shunt motor. Altering the supply voltage can have a significant effect on performance, but it's not the primary method since it can cause instability in operation and lead to armature reaction issues. Lastly, altering rotor speed does not apply as the rotor speed is inherently dependent on the operating conditions of the motor; this method is not a practical approach for speed regulation in this type of motor. Therefore, utilizing variable resistance in the armature circuit is the most effective and common method for regulating the speed of a DC shunt motor.

## 10. What is the primary difference between single-phase and three-phase systems?

- A. Single-phase systems utilize three waveforms
- B. Three-phase systems provide a more stable power supply**
- C. Single-phase systems provide more power than three-phase systems
- D. Three-phase systems are only used for residential applications

The primary difference between single-phase and three-phase systems lies in their ability to provide a more stable and efficient power supply, which is why the chosen answer focuses on this characteristic. In a single-phase system, power is delivered through a single alternating current (AC) waveform. This can be sufficient for small loads, like residential lighting and outlets, but the power delivery is not as consistent, especially under varying loads, which can lead to fluctuations in voltage. Conversely, three-phase systems deliver power through three interconnected AC waveforms that are evenly spaced in phase (each 120 degrees apart). This configuration allows for a more continuous and stable power flow since at least one of the phases is always near its peak voltage. Consequently, three-phase systems can handle larger electrical loads more efficiently, making them ideal for industrial and commercial applications where high power output and stability are crucial. The other options don't accurately represent this fundamental distinction. Single-phase systems do not utilize three waveforms, which means the first statement is misleading. It's also incorrect to assert that single-phase systems provide more power than three-phase systems, as three-phase systems are typically stronger and facilitate greater power distribution. Finally, while three-phase systems are common in industrial settings, they are not exclusively used for residential

## 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://electricalengineeringlicensure.examzify.com>**

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

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