SEPTA ELECTRICIAN PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://septaelectrician.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 15

SAMPLE

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.

SAMPLE

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!

SAMPLE

Questions

SAMPLE

1. What are brushes in DC motors used for?

A. Provide electrical contact with the rotating commutator

B. Generate the rotating magnetic field

C. Control the motor's speed

D. Cool the motor windings

2. Which component is designed to reduce friction and support rotating components?

A. Bearings

B. Gears

C. Lubrication Systems

D. Pulleys

3. Which NEC article addresses wiring methods?

A. NEC Article 625

B. NEC Article 700

C. NEC Article 300

D. NEC Article 110

4. In a synchronous motor, rotor speed is what relative to the magnetic field?

A. Rotor lags behind the magnetic field

B. Rotor turns at the same speed as the magnetic field

C. Rotor speed is independent of the magnetic field

D. Rotor runs twice the magnetic field speed

5. What component do DC motors use to switch current direction and keep the rotor turning?

A. A commutator and brushes

B. A flywheel

C. A transistor gate

D. A generator coil

SAMPLE

6. In three-phase calculations, what is the purpose of the factor 1.73?

A. It corrects for efficiency losses

B. It converts kilovolt-amps to watts

C. It represents the square root of 3 and relates line-to-line voltages to phase voltages

D. It adjusts for temperature effects on resistance

7. What is the primary winding connected to?

A. Connected to the input voltage

B. Connected to the output/load

C. Is the rotor

D. Is made of permanent magnets

8. What is the core typically made of to reduce eddy currents?

A. Copper

B. Aluminum

C. Laminated Steel

D. Solid Steel

9. Attaches ground wires to pipes or rods?

A. Wire nuts

B. Ground clamps

C. Fuses

D. Inductive Reactance

10. Which statement best defines a diode?

A. An electronic component that allows current to flow in one direction only

B. A device that stores energy

C. A controller that regulates motor speed

D. A transformer that changes voltage levels

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. What are brushes in DC motors used for?

A. Provide electrical contact with the rotating commutator

B. Generate the rotating magnetic field

C. Control the motor's speed

D. Cool the motor windings

Brushes provide the electrical connection between the stationary power supply and the rotating armature by pressing against the rotating commutator. This contact lets current flow into the rotor windings, and the commutator switches which winding segments are connected to the supply as the rotor turns, so the torque keeps driving rotation in the same direction. The magnetic field itself comes from the stator (or field windings) and the current in the rotor—not from the brushes. Brushes don't set motor speed directly, nor do they cool the windings; those roles come from voltage control and cooling systems, while the brushes mainly enable electrical transfer to the moving parts.

2. Which component is designed to reduce friction and support rotating components?

A. Bearings

B. Gears

C. Lubrication Systems

D. Pulleys

Bearings provide the surface between a rotating shaft and its housing to carry axial and radial loads while letting the shaft turn with minimal resistance. They reduce friction by using rolling elements or well-lubricated surfaces, so rotation stays smooth and wear is minimized. This combination of supporting the rotating component and lowering friction is what makes bearings the best choice here. Gears, while essential for transmitting torque and changing speed or direction, aren't designed to primarily reduce friction or carry the rotating loads between components. Lubrication systems reduce friction and wear but don't provide the mechanical support between moving parts themselves. Pulleys transfer motion and power and alter direction, but they don't bear the shaft loads the way bearings do.

3. Which NEC article addresses wiring methods?

A. NEC Article 625

B. NEC Article 700

C. NEC Article 300

D. NEC Article 110

Wiring methods are governed by the rules that tell you how to run and protect conductors, whether they're in conduit, within cables, or exposed. This is addressed in NEC Article 300, which lays out the general requirements for wiring methods and the materials used. It covers how conductors, raceways, cables, and their fittings should be installed, secured and supported, protected from physical damage, and properly terminated and spliced. It also sets standards for enclosures and identification, providing the framework that other articles reference for specifics on different wiring methods. Other topics mentioned, like EV charging equipment or emergency systems, cover specialized areas, or broader installation rules, but Article 300 is the direct, foundational source for wiring methods.

SAMPLE

4. In a synchronous motor, rotor speed is what relative to the magnetic field?

A. Rotor lags behind the magnetic field

B. Rotor turns at the same speed as the magnetic field

C. Rotor speed is independent of the magnetic field

D. Rotor runs twice the magnetic field speed

In a synchronous motor, the rotor is designed to lock onto and rotate with the stator's rotating magnetic field. The stator field spins at the synchronous speed set by the supply frequency and the number of poles, and the rotor's DC-excited magnetic field aligns with that rotating field. Once in step, the rotor follows the field exactly, so there is no slip. Therefore, the rotor speed matches the magnetic field speed.

5. What component do DC motors use to switch current direction and keep the rotor turning?

A. A commutator and brushes

B. A flywheel

C. A transistor gate

D. A generator coil

In a traditional brushed DC motor, continuous rotation relies on a mechanical switch that reverses the current through the armature windings every half turn. The commutator, a split ring connected to the windings, works with carbon brushes to swap the winding connections just as the rotor passes through the halfway point. This reversal keeps the torque in the same direction, so the rotor keeps turning. A flywheel simply stores rotational energy to smooth out power delivery, but it doesn't change winding direction. A transistor gate is part of electronic control in some systems, not the motor's fundamental switch mechanism. A generator coil is for producing electricity, not for driving rotation.

6. In three-phase calculations, what is the purpose of the factor 1.73?

A. It corrects for efficiency losses

B. It converts kilovolt-amps to watts

C. It represents the square root of 3 and relates line-to-line voltages to phase voltages

D. It adjusts for temperature effects on resistance

In a balanced three-phase system, the three phase voltages are 120 degrees apart. The voltage measured between two lines (line-to-line) is the vector difference between two of those phase voltages, and its magnitude works out to be √3 times the phase-to-neutral voltage. That is where the 1.73 factor comes from. It lets you convert between line quantities and phase quantities, and it appears in important formulas like $P = \sqrt{3} V_L I_L \cos\varphi$ and $V_L = \sqrt{3} V_{Ph}$ when the system is wye-connected. So, the purpose of the factor is to relate line-to-line voltages to the corresponding phase voltages.

SAMPLE

7. What is the primary winding connected to?

A. Connected to the input voltage

B. Connected to the output/load

C. Is the rotor

D. Is made of permanent magnets

The primary winding is the input side of a transformer; it is connected to the input voltage source. When AC is applied to this winding, it creates a changing magnetic flux in the core, which induces voltage in the other winding (the secondary) to supply the load. The winding that feeds the output/load is the secondary, and terms like rotor or permanent magnets belong to motors or generators, not transformers. So the primary winding is connected to the input voltage.

8. What is the core typically made of to reduce eddy currents?

A. Copper

B. Aluminum

C. Laminated Steel

D. Solid Steel

Eddy currents are circulating currents that appear in conductive materials when the magnetic field around them changes. These currents waste energy as heat, so the core is made from thin sheets of metal, insulated from one another, to keep those loops small. This laminating drastically increases resistance to the currents and cuts losses, letting the core guide magnetic flux with minimum heat. The usual material is laminated soft magnetic steel (silicon steel) rather than a solid block. Copper or aluminum would conduct those currents more readily, and solid steel would allow larger eddy currents too, leading to more losses. Laminated steel provides the right balance of magnetic permeability and reduced eddy-current loss for efficient operation.

9. Attaches ground wires to pipes or rods?

A. Wire nuts

B. Ground clamps

C. Fuses

D. Inductive Reactance

Ground clamps provide a secure, low-resistance bond between a grounding conductor and a grounding electrode such as pipes or rods. They are specifically designed to grip the metal surface and create a reliable electrical connection so the equipment grounding conductor can safely carry fault current to earth. Wire nuts are used to join insulated conductors inside a box, not to attach to pipes or rods. Fuses are protective devices that interrupt current, not hardware for bonding to electrodes. Inductive reactance describes how AC circuits impede current flow, not a method for connecting ground wires. When choosing a ground clamp, ensure it's appropriate for the pipe or rod material and conductor size, and rated for grounding use.

SAMPLE

10. Which statement best defines a diode?

A. An electronic component that allows current to flow in one direction only

B. A device that stores energy

C. A controller that regulates motor speed

D. A transformer that changes voltage levels

Diodes are devices that permit current to pass predominantly in one direction while blocking it in the opposite direction. That one-way conduction comes from the PN junction and is the defining trait of a diode—forward bias lets current flow, reverse bias blocks it. This makes diodes essential for converting AC to DC, protecting circuits from reverse polarity, and steering current in various circuits. The other descriptions point to different components: something that stores energy refers to capacitors or inductors; a controller that regulates motor speed refers to a motor controller or speed regulator; a transformer that changes voltage levels describes a transformer.

SAMPLE

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://septaelectrician.examzify.com

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

SAMPLE