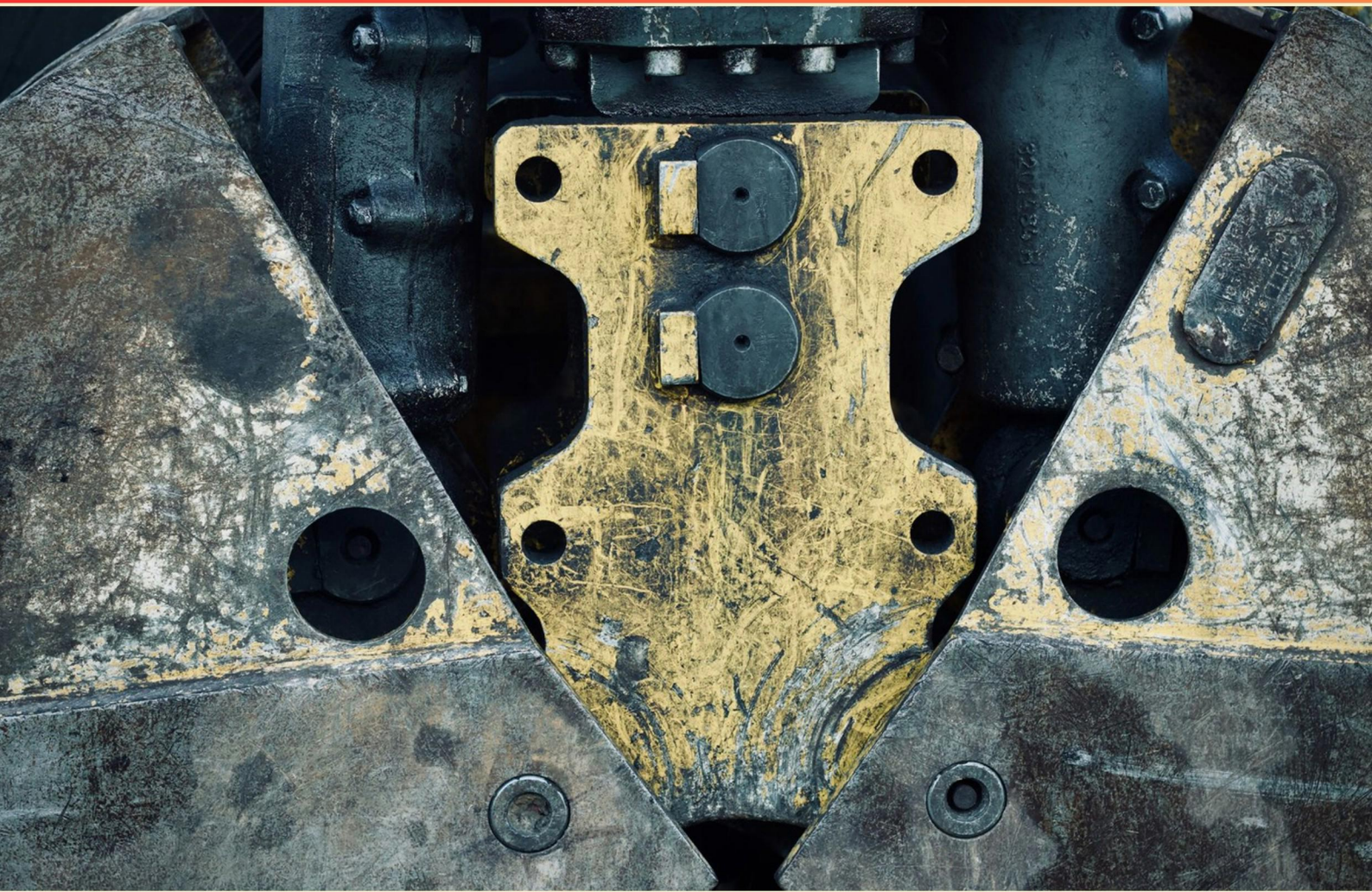


EDDY CURRENT TESTING (ET) LEVEL II PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

**VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE**

<https://eddycurrenttestinglvl2.examzify.com>



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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	16

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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 type of coils are typically used for the inspection of tubing?**
 - A. U shaped coils
 - B. Gap coils
 - C. Encircling coils
 - D. None of the above
- 2. What is the symbol used to signify impedance in circuits?**
 - A. Z
 - B. X1
 - C. R
 - D. X
- 3. An eddy current system with automatic marking of defects primarily allows for what?**
 - A. Removing defective areas
 - B. Eliminating test surface contamination
 - C. Enabling inexperienced operators to identify defect causes
 - D. Passing rejectable material
- 4. What does an increase in conductivity do to eddy current penetration?**
 - A. Increases penetration
 - B. Decreases penetration
 - C. Has no effect
 - D. Only affects certain materials
- 5. Doubling the number of turns on a coil will:**
 - A. Double the inductance
 - B. Halve the inductance
 - C. Decrease the inductance by a factor of four
 - D. Increase the inductance by a factor of four

- 6. It is often possible to separate the conductivity variable from permeability and dimensional variables using which method?**
- A. The vector point method
 - B. The ellipse method
 - C. The linear time base method
 - D. Any of the above
- 7. Why are relatively low frequencies used when inspecting ferromagnetic materials?**
- A. Low penetrability of these materials
 - B. Higher resolution
 - C. Lower resolution
 - D. Higher penetrability of these materials
- 8. In impedance diagrams, what effect does increasing the input frequency typically have on the eddy currents?**
- A. It decreases the eddy current response
 - B. It increases the eddy current response
 - C. It has no impact
 - D. It causes the response to stabilize
- 9. What are some limitations of Eddy Current Testing?**
- A. It can only be performed on large metallic structures.
 - B. It has difficulties testing non-conductive materials and limited depth penetration.
 - C. It requires extensive operator training to execute.
 - D. It is only effective on new materials.
- 10. What principle allows testing of similar specimens under the same conditions?**
- A. Ohm's law
 - B. Kirchoff's law
 - C. The Similarity law
 - D. None of the above

Answers

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

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Explanations

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1. Which type of coils are typically used for the inspection of tubing?

- A. U shaped coils
- B. Gap coils
- C. Encircling coils**
- D. None of the above

Encircling coils are specifically designed for the inspection of tubing in Eddy Current Testing. These coils are shaped to completely wrap around the test specimen, allowing for uniform electromagnetic coupling with the surface of the tubing. This configuration is important because it maximizes the interaction between the coil's magnetic field and the material being inspected, facilitating the detection of both surface and near-surface defects effectively. The benefits of using encircling coils include their ability to inspect the complete circumference of the tube and their efficiency in detecting changes in the material properties across the entire surface area. This makes them particularly suitable for applications involving round and cylindrical components such as tubing. Other types of coils, like U-shaped and gap coils, may have their specific uses, but they are not optimal for inspecting tubing compared to encircling coils. U-shaped coils tend to be used in applications where the geometry allows for opening to facilitate testing, and gap coils are typically utilized for detecting flaws in thicker materials rather than providing broad coverage around tubing. Therefore, encircling coils stand out as the ideal choice for tubing inspection in Eddy Current Testing.

2. What is the symbol used to signify impedance in circuits?

- A. Z**
- B. X1
- C. R
- D. X

The symbol used to signify impedance in circuits is represented by the letter Z. Impedance is a complex quantity that combines resistance and reactance in an AC circuit and is fundamental in understanding how circuits respond to alternating currents. It encompasses both the opposition to current flow (resistance) and the effects of inductance and capacitance on current flow (reactance). Using Z as the symbol allows for clear communication in electrical engineering and related fields, as it efficiently captures this dual nature of impedance in its complex form. Thus, when dealing with calculations and discussions regarding AC circuits, Z is the standard notation employed by engineers and technicians alike, making it the correct answer in this context.

3. An eddy current system with automatic marking of defects primarily allows for what?

- A. Removing defective areas**
- B. Eliminating test surface contamination
- C. Enabling inexperienced operators to identify defect causes
- D. Passing rejectable material

An eddy current system with automatic marking of defects is designed to enhance the efficiency and accuracy of defect detection during testing. The primary function of such a system is to identify and mark areas of potential defects directly on the test piece. This capability allows for the effective removal of defective areas by clearly indicating where these defects are located, enabling operators to make informed decisions regarding repair or replacement. The automatic marking feature streamlines the inspection process by reducing the likelihood of missed defects and ensuring that operators can focus their efforts on the relevant areas needing attention. This capability is particularly valuable in manufacturing and maintenance environments where precise intervention is critical to maintaining quality and safety standards. While the other options touch on aspects of the testing process, they do not directly relate to the core benefit of automatic marking as it pertains specifically to the identification and removal of defective areas in the material being tested.

4. What does an increase in conductivity do to eddy current penetration?

- A. Increases penetration**
- B. Decreases penetration
- C. Has no effect
- D. Only affects certain materials

An increase in conductivity results in deeper eddy current penetration within the material being tested. This phenomenon occurs because higher conductivity allows eddy currents to form more readily and enables them to travel further into the material before being dissipated by resistance. Essentially, as conductivity increases, the skin depth—the distance over which eddy currents can effectively penetrate—also increases. This means that in more conductive materials, the eddy currents can extend deeper compared to less conductive materials, where the currents tend to dissipate more quickly and remain confined near the surface. Understanding this relationship is crucial in Eddy Current Testing because it influences the interpretation of test results, particularly when evaluating the integrity and thickness of materials. In practice, knowing how conductivity affects penetration helps technicians select appropriate probes and testing frequencies for accurate assessments of the materials being inspected.

5. Doubling the number of turns on a coil will:

- A. Double the inductance
- B. Halve the inductance
- C. Decrease the inductance by a factor of four
- D. Increase the inductance by a factor of four**

Doubling the number of turns on a coil will increase the inductance by a factor of four, which is a fundamental principle in the design of inductors. The inductance (L) of a coil is given by the formula: $L = \frac{N^2 \cdot \mu \cdot A}{l}$ where (N) is the number of turns, (μ) is the permeability of the core material, (A) is the cross-sectional area of the coil, and (l) is the length of the coil. From this formula, it can be observed that inductance is proportional to the square of the number of turns. Therefore, if the number of turns is doubled (from (N) to ($2N$)), the inductance becomes: $L' = \frac{(2N)^2 \cdot \mu \cdot A}{l} = \frac{4N^2 \cdot \mu \cdot A}{l} = 4L$ This shows that the inductance increases by a factor of four when the number of turns is doubled. Factors such as the type of core material and geometry remain

6. It is often possible to separate the conductivity variable from permeability and dimensional variables using which method?

- A. The vector point method
- B. The ellipse method
- C. The linear time base method

D. Any of the above

The option that states "Any of the above" is correct because all the mentioned methods can indeed separate the conductivity variable from the permeability and dimensional variables within the context of Eddy Current Testing. In Eddy Current Testing (ET), different methods are employed to analyze how electrical currents interact with conductive materials. Each of these methods offers unique advantages in isolating variables: 1. The vector point method allows for a clear analysis of how conductivity affects the induced eddy currents by examining the vectors related to the current flow and magnetic fields. This helps in distinguishing between the influence of materials' conductivity and other properties. 2. The ellipse method also focuses on the relationship between conductivity and the induced eddy currents; it visually represents the relationship and allows for the separation of variables through graphical interpretation. By assessing the geometry of the resulting ellipses, one can effectively isolate and analyze the conductivity variable. 3. The linear time base method involves capturing the response of eddy currents over time, which helps in differentiating conductivity effects from those due to dimensionality and permeability. By monitoring how these currents decay, this method provides insight into the underlying material properties, including conductivity. Since all three methods are applicable for separating conductivity from the other variables in Eddy Current Testing, the correct answer encompasses

7. Why are relatively low frequencies used when inspecting ferromagnetic materials?

A. Low penetrability of these materials

- B. Higher resolution
- C. Lower resolution
- D. Higher penetrability of these materials

When inspecting ferromagnetic materials, relatively low frequencies are utilized primarily due to the lower penetrability of these materials. Ferromagnetic materials, such as iron and steel, exhibit high magnetic permeability, which significantly affects how eddy currents behave within them. At higher frequencies, the skin depth—the distance into the material where the eddy currents penetrate—becomes shallower, which can limit the effectiveness of the inspection by restricting the probe's ability to sense defects located deeper within the material. Using lower frequencies increases the skin depth, allowing eddy currents to penetrate more deeply and providing better access to features or flaws that may lie beneath the surface. As a result, the inspection becomes more effective for identifying subsurface discontinuities and defects that would otherwise be undetectable at higher frequencies. The other options do not accurately capture the relationship between frequency and ferromagnetic materials in the context of eddy current testing. Higher resolution is often associated with higher frequencies, which would not be advantageous when dealing with ferromagnetic materials due to the reasons outlined regarding skin depth and penetrability.

8. In impedance diagrams, what effect does increasing the input frequency typically have on the eddy currents?

- A. It decreases the eddy current response
- B. It increases the eddy current response**
- C. It has no impact
- D. It causes the response to stabilize

Increasing the input frequency generally leads to an increase in the eddy current response. This occurs because a higher frequency causes the electromagnetic field generated by the coil to change more rapidly, which in turn induces stronger eddy currents in the conductive material being tested. As frequency increases, the skin effect becomes more pronounced, leading to eddy currents being concentrated near the surface of the conductive material. This increase in eddy currents results in a stronger signal that can be detected by the testing equipment, enhancing the sensitivity of the Eddy Current Testing. In the context of an impedance diagram, this means that as the frequency rises, the impedance due to the eddy currents increases, which shifts the response on the diagram. This is particularly important in NDT (Non-Destructive Testing) applications where variations in conductivity or surface conditions can be detected based on the changes in the impedance readings at different frequencies. Thus, the reason why increasing the frequency leads to an increased eddy current response is tied to both the nature of electromagnetic induction and how eddy currents behave in conductive materials.

9. What are some limitations of Eddy Current Testing?

- A. It can only be performed on large metallic structures.
- B. It has difficulties testing non-conductive materials and limited depth penetration.**
- C. It requires extensive operator training to execute.
- D. It is only effective on new materials.

Eddy Current Testing (ET) does indeed have limitations, and recognizing these is crucial for understanding when and how to effectively apply this technique. The selection of the option stating that it has difficulties testing non-conductive materials and limited depth penetration accurately highlights two significant characteristics of the method. Eddy Current Testing relies on the principle of electromagnetic induction, which necessitates the presence of a conductive material to generate the eddy currents. Therefore, non-conductive materials will not support the formation of eddy currents at all, rendering them unsuitable for this testing method. This limitation confines the application of ET primarily to conductive materials, such as metals, while it cannot be successfully employed on materials like plastics or ceramics. Additionally, the limited depth penetration of eddy currents is another fundamental aspect. Typically, eddy currents penetrate only a few millimeters into the surface of the tested material. This means that while ET is excellent for surface or near-surface defects, it is not suitable for detecting flaws that are located deeper within the material. As a result, the method is inherently limited in its ability to investigate subsurface anomalies, which can be a critical factor depending on the requirements of the inspection. Understanding these limitations is essential for personnel involved in applications of Eddy Current

10. What principle allows testing of similar specimens under the same conditions?

- A. Ohm's law
- B. Kirchoff's law
- C. The Similarity law**
- D. None of the above

The principle that allows for the testing of similar specimens under the same conditions is known as the Similarity law. This law states that if two or more specimens exhibit similar geometry and material properties, they can be tested under the same conditions, and the results can provide valid information about their behavior. This is particularly useful in Eddy Current Testing since the technique relies on the interaction of electromagnetic fields with conductive materials. By applying the Similarity law, one can ensure consistency in testing parameters, such as frequency, probe type, and the characteristics of the environment, leading to reliable comparisons in results. Consequently, testing similar materials or geometries allows for effective evaluation of performance and identification of flaws or discrepancies, making the process efficient and scientifically sound. This principle helps streamline testing procedures, especially in industrial applications where multiple items may need to be evaluated quickly.

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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://eddycurrenttestinglvl2.examzify.com>

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

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