

ET ASNT Level II 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. What is the normal indication when using the ellipse method in eddy current testing and the test specimen matches the reference standard?**
 - A. A straight horizontal line on a cathode ray tube**
 - B. An ellipse**
 - C. A null reading on a meter**
 - D. A clean base line on a strip chart**

- 2. The induction field B within a material, when the H field strength returns to zero, is commonly referred to as?**
 - A. Coercivity**
 - B. Relative permeability**
 - C. Magnetic flux density**
 - D. Residual magnetism**

- 3. When a coil's magnetizing force is applied to a ferromagnetic material, the flux density in the material is:**
 - A. Less than that generated by the test coil due to heat losses**
 - B. Less than that generated by the test coil due to resistivity**
 - C. The same as that generated by the test coil**
 - D. Greater than that generated by the test coil**

- 4. If the test frequency increases while the field strength remains constant, what happens to the surface eddy current density?**
 - A. Decreases**
 - B. Increases**
 - C. Remains the same**
 - D. Could do any of the above**

- 5. Which safety measure is crucial when performing Eddy current testing?**
 - A. Wearing appropriate personal protective equipment**
 - B. Conducting tests in a controlled environment only**
 - C. Using automated tools for all measurements**
 - D. Avoiding contact with any electrical equipment**

- 6. What is a significant limitation of Eddy current testing?**
- A. It can only be used on non-conductive materials**
 - B. It can be affected by environmental conditions**
 - C. It can only be used effectively on conductive materials**
 - D. It requires extensive training for all users**
- 7. What corrective action does an automatic marking system enable in eddy current testing?**
- A. Identifying causes of defects**
 - B. Removing defective areas of products**
 - C. Minimizing operator errors**
 - D. Preventing contamination**
- 8. What is the basis for circuits that minimize the effect of unwanted signals on the readout mechanism?**
- A. Amplitude**
 - B. Phase**
 - C. Frequency**
 - D. Any one or a combination of the quantities listed above**
- 9. When a sinusoidal wave is applied in eddy current testing, what does it indicate?**
- A. Balance condition**
 - B. Unbalance condition**
 - C. Probe calibration**
 - D. Signal strength**
- 10. What happens to the direction of eddy currents in a part when the electrical current in an eddy current coil reverses direction?**
- A. The direction of the eddy currents remains the same**
 - B. The eddy currents will change phase by 45 degrees**
 - C. The eddy currents in the part also reverses**
 - D. The eddy currents in the part remain the same**

Answers

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

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Explanations

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1. What is the normal indication when using the ellipse method in eddy current testing and the test specimen matches the reference standard?

A. A straight horizontal line on a cathode ray tube

B. An ellipse

C. A null reading on a meter

D. A clean base line on a strip chart

When using the ellipse method in eddy current testing, the normal indication occurs when the test specimen matches the reference standard. In this case, a straight horizontal line on a cathode ray tube indicates that there is no difference between the test specimen and the reference standard being used for comparison. This straight line signifies that the characteristics of the test piece—such as conductivity, permeability, and geometry—align exactly with those of the reference, resulting in no detectable variations that would cause the indication to deviate from this horizontal baseline. The presence of a straight line is crucial for establishing that the material has no significant flaws or variations that would affect its performance. Other options, such as an ellipse or a null reading, indicate varying conditions that do not represent the normal indication when a specimen matches the reference. An ellipse typically represents the interaction of signals that indicate variations or potential defects; hence it would not be the expected result in this scenario.

2. The induction field B within a material, when the H field strength returns to zero, is commonly referred to as?

A. Coercivity

B. Relative permeability

C. Magnetic flux density

D. Residual magnetism

The term used to describe the induction field B within a material when the H field strength returns to zero is referred to as residual magnetism. This phenomenon occurs because certain materials can retain magnetic field characteristics even after the external magnetic influence has been removed. Essentially, when the magnetizing force (H) is decreased to zero, the material does not completely demagnetize; instead, it retains a certain level of magnetism, which is measured as the induction (B) within the material. Understanding this concept is critical in applications involving ferromagnetic materials, such as in transformers and magnetic storage devices. Residual magnetism is an important factor to consider, as it affects the overall magnetic properties and behavior of the material in practical applications.

- 3. When a coil's magnetizing force is applied to a ferromagnetic material, the flux density in the material is:**
- A. Less than that generated by the test coil due to heat losses**
 - B. Less than that generated by the test coil due to resistivity**
 - C. The same as that generated by the test coil**
 - D. Greater than that generated by the test coil**

The correct answer relates to the interaction between the applied magnetizing force from the coil and the properties of the ferromagnetic material. When a coil generates a magnetizing force (also known as magnetic field strength) and is applied to a ferromagnetic material, the material responds by becoming magnetized. This process significantly enhances the magnetic flux density within the material. Ferromagnetic materials have high permeability compared to air or vacuum, which allows them to concentrate magnetic field lines more effectively. This means that the flux density, which represents the amount of magnetic field present per unit area in the material, will increase beyond the level produced merely by the coil itself. This enhancement occurs because the ferromagnetic material provides a path with less reluctance for the magnetic flux lines, allowing more lines to pass through it than would be produced by the coil alone. Hence, the flux density in the ferromagnetic material becomes greater than that produced by the magnetizing force of the coil, reflecting the inherent properties of ferromagnetism where the material becomes a stronger magnet than the applied field alone would suggest. This fundamental principle underpins many applications in magnetic testing and material characterization in non-destructive testing, especially with electromagnetic techniques.

- 4. If the test frequency increases while the field strength remains constant, what happens to the surface eddy current density?**
- A. Decreases**
 - B. Increases**
 - C. Remains the same**
 - D. Could do any of the above**

When the test frequency increases while the field strength remains constant, the surface eddy current density actually increases. This is primarily due to the skin effect, which causes eddy currents to flow more densely near the surface of a conductive material as frequency rises. At higher frequencies, the alternating current penetrates less deeply into the conductor, leading to a concentration of currents at the surface. As a result, the density of these eddy currents—essentially the amount of electric current flowing per unit area at the surface—increases. Therefore, when the frequency is increased while maintaining the same field strength, more eddy currents are generated closer to the material's surface, resulting in an increase in surface eddy current density. This principle is essential for understanding non-destructive testing techniques, particularly in electromagnetic methods where detecting surface flaws or characteristics is critical.

5. Which safety measure is crucial when performing Eddy current testing?

- A. Wearing appropriate personal protective equipment**
- B. Conducting tests in a controlled environment only**
- C. Using automated tools for all measurements**
- D. Avoiding contact with any electrical equipment**

Wearing appropriate personal protective equipment (PPE) is crucial when performing Eddy current testing. This testing method involves the use of electrical currents, and the operator may be exposed to live electrical equipment, which can pose a risk of electric shock or other hazards. Proper PPE, such as insulating gloves, safety glasses, and other protective gear, helps to minimize these risks and ensures the safety of the individual performing the tests. The choice of personal protective equipment reflects the importance of personal safety in environments where electrical currents are used and helps protect against potential hazards that may arise during testing. While other factors contribute to a safe testing environment, such as the control of the testing environment and the automation of tools, having the right PPE is a fundamental necessity that directly safeguards the health and safety of the technician.

6. What is a significant limitation of Eddy current testing?

- A. It can only be used on non-conductive materials**
- B. It can be affected by environmental conditions**
- C. It can only be used effectively on conductive materials**
- D. It requires extensive training for all users**

Eddy current testing (ECT) is specifically designed to work with conductive materials, making the characteristic that it can only be used effectively on these types of materials a significant limitation. The process relies on inducing eddy currents within conductive materials using an alternating magnetic field. When the test coil is brought close to a conductive surface, the alternating magnetic field produces eddy currents that can be measured to identify flaws or material characteristics. This limitation does not apply to non-conductive materials, as they do not allow for the generation of eddy currents. Moreover, while environmental conditions can impact the accuracy of measurements taken during ECT, this is not inherent to the fundamental operational limits of the test method. Additionally, while training is important for effective testing, it does not exclude users from utilizing the method, nor is it the primary limitation of ECT. Thus, the focus on conductive materials is a key aspect that defines the scope and applicability of Eddy current testing.

7. What corrective action does an automatic marking system enable in eddy current testing?

- A. Identifying causes of defects**
- B. Removing defective areas of products**
- C. Minimizing operator errors**
- D. Preventing contamination**

The implementation of an automatic marking system in eddy current testing primarily focuses on enhancing the accuracy and efficiency of identifying defects during the inspection process. While it aids in recognizing defects, it does not inherently involve the physical removal of defective areas from products. Instead, the correct focus of such a system is to mark detected defects clearly, allowing operators to easily identify and address specific concerns in the product. This capability directly supports operators in making informed decisions regarding the necessary corrective actions. Automatic marking systems enable effective communication of specific areas needing attention, streamlining follow-up actions, and ensuring that identified defects are not overlooked. Thus, the key role of an automatic marking system is to enhance detection and treatment capabilities, ultimately leading to improved product quality and reduced likelihood of defects in the final product. Minimizing operator errors, for instance, while beneficial in the context of automation, is more about the reduction of human oversight during testing rather than the marking of defects themselves. Similarly, identifying causes of defects and preventing contamination relate to broader quality assurance practices rather than the specific functionality provided by an automatic marking system during eddy current testing.

8. What is the basis for circuits that minimize the effect of unwanted signals on the readout mechanism?

- A. Amplitude**
- B. Phase**
- C. Frequency**
- D. Any one or a combination of the quantities listed above**

The basis for circuits designed to minimize the effect of unwanted signals on the readout mechanism is that they can utilize any one or a combination of amplitude, phase, and frequency to achieve noise reduction and improve signal clarity. By adjusting amplitude, circuits can filter out lower amplitude signals that may be considered noise. Using phase manipulation allows for separation of signals based on their respective phase shifts, which can help distinguish the desired signal from unwanted interference that might arrive at different times. Frequency selection is crucial as it helps filter unwanted out-of-band signals while preserving the integrity of the desired frequency range. Therefore, circuits can be optimized in various ways, depending on the specific application, to effectively attenuate unwanted signal effects by leveraging characteristics associated with any of these quantities—amplitude, phase, or frequency—individually or in combination. This flexibility allows engineers and technicians to tailor their designs for optimal performance in their particular contexts.

9. When a sinusoidal wave is applied in eddy current testing, what does it indicate?

- A. Balance condition**
- B. Unbalance condition**
- C. Probe calibration**
- D. Signal strength**

When a sinusoidal wave is applied in eddy current testing, it typically indicates an unbalance condition in the system. In the context of eddy current testing, a sinusoidal wave serves as a reference or standard measure for the impedance changes in the conductive material being tested. In a balanced system, where there are no abnormalities (such as flaws or cracks), the response signal from the eddy currents will closely mimic the applied sinusoidal wave, maintaining a certain phase relationship. However, when there is an unbalance condition, which may be due to material discontinuities, changes in conductivity, or variations in thickness, the output signal will deviate from this sinusoidal reference. This deviation is critical for detecting flaws, as it provides information about the size and nature of the imperfections in the material. Thus, the presence of a sinusoidal wave indicates that the testing system is correctly tuned but is responding to a material condition that is not ideal, signaling the need for further analysis to characterize the unbalance accurately. Understanding this relationship allows technicians to interpret the data effectively and take appropriate action based on the response of the eddy current signal in relation to the applied sinusoidal wave.

10. What happens to the direction of eddy currents in a part when the electrical current in an eddy current coil reverses direction?

- A. The direction of the eddy currents remains the same**
- B. The eddy currents will change phase by 45 degrees**
- C. The eddy currents in the part also reverses**
- D. The eddy currents in the part remain the same**

When the electrical current in an eddy current coil reverses direction, the eddy currents induced in the part also reverse direction. This phenomenon occurs due to the principles of electromagnetic induction as described by Faraday's law. When the current in the coil changes direction, the alternating magnetic field it produces also changes direction. This changing magnetic field induces eddy currents in the conductive material of the part, which react in accordance with Lenz's Law. According to Lenz's Law, the direction of the induced eddy currents is such that they oppose the change in the magnetic field that produced them. Therefore, when the magnetic field switches direction due to the reversing current in the coil, the induced eddy currents will also switch direction in order to maintain this opposition to the change in magnetic flux. This is crucial for understanding the behavior of materials subjected to eddy current testing, as the performance and effectiveness of this non-destructive testing method rely heavily on the interaction between the alternating magnetic fields and the induced currents in the test material. The other options do not accurately reflect the behavior of eddy currents in response to the change in current direction.

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://etasntlevel2.examzify.com>

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

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