

ASNT Phased Array Level II Practice Test (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 statement best describes "dynamic focusing" in PAUT?**
 - A. Focusing is done at a fixed depth throughout inspection**
 - B. It allows the ultrasonic beam to focus at varying depths automatically**
 - C. Focusing does not change throughout the inspection process**
 - D. It is only relevant for certain materials**

- 2. How is a "C-scan" defined in phased array ultrasonic testing?**
 - A. It shows the amplitude of echoes versus time**
 - B. It presents a two-dimensional view of the material**
 - C. It maps intensity of echoes across a plane**
 - D. It provides a summary of inspection results**

- 3. What capability do phased array beams have regarding their movement?**
 - A. They can be electronically steered, scanned, swept, and focused**
 - B. They are typically performed with electronic lamb waves**
 - C. They are conventional fixed and angle probes**
 - D. They are not constrained by the physics of conventional UT**

- 4. What aspect of the sound beam does the probe angle primarily influence during testing?**
 - A. The mention of frequency modulation of the beam**
 - B. The angle of incidence at which the beam strikes a material**
 - C. The dimensions of the probe itself**
 - D. The power output of the ultrasonic transducer**

- 5. How does the use of a phased array in ultrasonic testing enhance detection capabilities?**
 - A. By increasing the number of operators required.**
 - B. By allowing dynamic adjustment of focal laws during testing.**
 - C. By relying solely on fixed angles for scanning.**
 - D. By using more data points than traditional methods.**

6. How does increasing UT range affect A-scan acquisition?

- A. It decreases accuracy**
- B. It can lead to prolonged acquisition times**
- C. It has no effect on data quality**
- D. It increases the likelihood of missing defects**

7. What does the term "beam steering" refer to in phased array ultrasonic testing?

- A. The ability to change the frequency of the ultrasound waves**
- B. The process of adjusting the angle and direction of the ultrasound beam**
- C. The method of focusing sound waves only**
- D. The technique used in post-processing of data**

8. What is the primary consequence of an improper interface assessment during testing?

- A. Detection of additional, irrelevant flaws.**
- B. Misinterpretation of the actual material quality.**
- C. Increased costs due to extended testing.**
- D. More precise and accurate testing results.**

9. What is one limitation associated with Phased Array Ultrasonic Testing?

- A. Limited applicability in high-temperature environments**
- B. Higher initial equipment cost compared to traditional methods**
- C. Reduced effectiveness with thin materials**
- D. Longer inspection times compared to older methods**

10. What is the compensation applied to focal laws in an S-scan to correct for echo-transmittance variation?

- A. Angle corrected gain (ACG).**
- B. Distance amplitude correction (DAC).**
- C. Time corrected gain (TCG).**
- D. Time variable gain (TVG).**

Answers

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

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Explanations

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1. Which statement best describes "dynamic focusing" in PAUT?

- A. Focusing is done at a fixed depth throughout inspection
- B. It allows the ultrasonic beam to focus at varying depths automatically**
- C. Focusing does not change throughout the inspection process
- D. It is only relevant for certain materials

Dynamic focusing is a key feature in Phased Array Ultrasonic Testing (PAUT) that allows for greater control and adaptability of the ultrasonic beam during inspection. This technique enables the ultrasonic beam to focus at varying depths automatically as the inspection progresses. By adjusting the time delays between the elements of the phased array, the system can continuously optimize the focus of the beam based on the distance to the material being inspected. This capability is particularly advantageous because it allows for the inspection of complex geometries and varying material thicknesses while maintaining optimal resolution. As the beam focus can shift dynamically, it enhances the ability to detect flaws at different depths within the material without needing multiple fixed focus settings. This contrasts with static focusing methods, which do not allow for adjustments in the beam focus during the process, significantly limiting their application in diverse inspection scenarios. Thus, the statement that dynamic focusing allows the ultrasonic beam to focus at varying depths automatically accurately reflects the benefits and functionality of this advanced technique in practical applications of PAUT.

2. How is a "C-scan" defined in phased array ultrasonic testing?

- A. It shows the amplitude of echoes versus time
- B. It presents a two-dimensional view of the material
- C. It maps intensity of echoes across a plane**
- D. It provides a summary of inspection results

A "C-scan" in phased array ultrasonic testing is defined as a method that maps the intensity of echoes across a plane. This type of scan creates a two-dimensional representation that indicates the distribution of generated ultrasonic signals within the material being tested. By representing the intensity of echoes in graphical form, C-scans allow technicians to visualize and identify areas of interest such as defects or variations in material properties in a straightforward manner. This method is particularly valuable in non-destructive testing as it provides detailed spatial information about the integrity of a structure. The graphical representation helps to interpret the inspection results quickly, making it easier to focus on specific areas that may require further investigation. In contrast, other types of scans serve different functions: some may present amplitude versus time, while others summarize inspection results or provide standard one-dimensional views. Each type of scan contributes uniquely to the evaluation process, but the defining characteristic of a C-scan is its ability to illustrate echo intensity across a defined area.

3. What capability do phased array beams have regarding their movement?

- A. They can be electronically steered, scanned, swept, and focused**
- B. They are typically performed with electronic lamb waves**
- C. They are conventional fixed and angle probes**
- D. They are not constrained by the physics of conventional UT**

Phased array beams possess the ability to be electronically steered, scanned, swept, and focused due to the specific design and operation of phased array systems. This technology utilizes multiple elements in an array, which can be activated in various sequences to control the direction and shape of the ultrasonic beam. When electronic steering is employed, the phase of the ultrasound waves emitted by each element can be adjusted. This allows the beam to be directed toward a specific angle without the need to physically move the transducer, enabling rapid scanning over a range of angles. Scanning refers to the ability to cover a predefined area or volume by changing the beam direction in a systematic way. Sweeping is similar, allowing the beam to continuously cover a sector over time, providing a dynamic view of the inspected area. Focusing can also be achieved by delaying the pulsing of elements, which enhances the resolution of signals at specific depths. The combination of these capabilities in phased array systems leads to improved defect detection and characterization, making this method versatile and efficient for non-destructive testing applications.

4. What aspect of the sound beam does the probe angle primarily influence during testing?

- A. The mention of frequency modulation of the beam**
- B. The angle of incidence at which the beam strikes a material**
- C. The dimensions of the probe itself**
- D. The power output of the ultrasonic transducer**

The probe angle plays a crucial role in influencing the angle of incidence at which the sound beam strikes the material being tested. This angle of incidence affects how the ultrasonic waves interact with the material, which can significantly impact the results of the inspection. When the probe is angled, the sound waves are directed towards the material surface at a specific angle, which can enhance or reduce the reflection and refraction of the waves depending on the material properties and any flaws present. By controlling the probe angle, the tester can optimize the detection of certain types of discontinuities or enhance the sensitivity of the examination. Understanding this relationship is fundamental in phased array technology, as proper angling allows for better imaging and characterization of defects. This function of the probe angle is essential for ensuring accurate assessments during ultrasonic testing.

5. How does the use of a phased array in ultrasonic testing enhance detection capabilities?

- A. By increasing the number of operators required.
- B. By allowing dynamic adjustment of focal laws during testing.**
- C. By relying solely on fixed angles for scanning.
- D. By using more data points than traditional methods.

The use of a phased array in ultrasonic testing significantly enhances detection capabilities primarily by allowing dynamic adjustment of focal laws during testing. This flexibility is crucial because it enables the technician to modify the focus and scan angle in real-time, which optimizes the detection of defects at various depths and orientations within the material being tested. By dynamically adjusting the focal laws, a phased array system can focus the ultrasound beam at different depths and angles without the need for physically moving the transducer. This capability allows for better inspection of complex geometries and improved sensitivity to flaws, as the ultrasound waves can be precisely directed where they are most needed. While the other options mention aspects of the testing process, they do not contribute to the primary advantage of phased array technology. For instance, requiring more operators does not inherently improve detection capabilities; it only increases labor costs and complexity. Relying on fixed angles for scanning limits the flexibility and effectiveness of the inspection, as it does not leverage the adaptive capabilities of modern phased array systems. Lastly, while using more data points can improve the overall resolution and quality of the inspection, the unique strength of phased array technology lies in its ability to dynamically change focus in real-time, making it superior in enhancing detection capabilities.

6. How does increasing UT range affect A-scan acquisition?

- A. It decreases accuracy
- B. It can lead to prolonged acquisition times**
- C. It has no effect on data quality
- D. It increases the likelihood of missing defects

When the ultrasound testing (UT) range is increased, it can lead to prolonged acquisition times due to the increased volume of material that needs to be evaluated. This occurs because a longer scanning range means that the probe has to cover more distance, thereby requiring more time to complete the necessary scans at various angles and positions. Moreover, as the range increases, each individual pulse takes longer to travel through the material and return to the sensor, which can also contribute to longer setup and data acquisition times. Consequently, A-scan acquisitions will require more extensive processing and time to gather and analyze data, directly affecting the efficiency of the testing process. In this context, while extending the UT range may provide broader coverage of the component being tested, it doesn't necessarily enhance defect detection speed and can potentially lead to inefficiencies in the workflow during inspections.

7. What does the term "beam steering" refer to in phased array ultrasonic testing?

- A. The ability to change the frequency of the ultrasound waves**
- B. The process of adjusting the angle and direction of the ultrasound beam**
- C. The method of focusing sound waves only**
- D. The technique used in post-processing of data**

The term "beam steering" in the context of phased array ultrasonic testing refers specifically to the process of adjusting the angle and direction of the ultrasound beam. This capability is a key advantage of phased array technology, enabling the inspection of components at various angles without the need to physically move the transducer. Beam steering is achieved by varying the timing of the ultrasound pulses emitted by individual elements within the array. By controlling the phase of the signals from different elements, the resulting wavefront can be steered in the desired direction. This allows for improved inspection efficiency, as it facilitates the exploration of complex geometries and enhances the detection of defects at different depths and locations. In contrast, altering the frequency of ultrasound waves pertains to a different aspect of ultrasonic testing, known as frequency modification, while focusing sound waves primarily deals with the convergence of waves at a specific point, which is a separate function. Post-processing of data involves the analysis and interpretation of the signals received after testing has occurred, rather than the real-time manipulation of the beam during the inspection. Through beam steering, technicians can effectively optimize their inspections and gather critical information regarding the integrity of the material being tested, demonstrating the importance of this capability in phased array ultrasonic testing.

8. What is the primary consequence of an improper interface assessment during testing?

- A. Detection of additional, irrelevant flaws.**
- B. Misinterpretation of the actual material quality.**
- C. Increased costs due to extended testing.**
- D. More precise and accurate testing results.**

The primary consequence of an improper interface assessment during testing is the misinterpretation of the actual material quality. In phased array testing, evaluating interfaces is crucial because they can significantly influence the performance of the test and the results obtained. If the interface is not assessed accurately, it may lead to a misunderstanding of the material's integrity or defect characterization. Misjudging the interface can mask the presence of actual flaws or, conversely, suggest flaws where none exist, affecting the reliability of the inspection results. It is essential to recognize that interface conditions, such as bonding or surface characteristics, directly impact the ultrasonic wave propagation. A failure to accurately evaluate these factors can result in misleading conclusions about the overall quality and fitness of the material being inspected, which can have serious implications in applications where safety and reliability are paramount.

9. What is one limitation associated with Phased Array Ultrasonic Testing?

- A. Limited applicability in high-temperature environments**
- B. Higher initial equipment cost compared to traditional methods**
- C. Reduced effectiveness with thin materials**
- D. Longer inspection times compared to older methods**

Phased Array Ultrasonic Testing (PAUT) is known for its advanced capabilities, but one significant limitation is indeed the higher initial equipment cost compared to traditional ultrasonic testing methods. This higher expense can be attributed to the sophisticated technology involved in PAUT, which requires specialized equipment such as multi-element transducer arrays, advanced signal processing, and software for data interpretation. The investment in this technology can be substantial, creating a barrier for some companies or facilities that might otherwise benefit from the precision and capabilities of phased array techniques. While the operational efficiencies and potential savings in terms of labor and time may justify this cost over time, the initial financial outlay can be a decisive factor for many organizations considering different testing methods. Consequently, while PAUT offers enhanced inspection options and flexibility, the economic aspect remains a notable consideration in its adoption.

10. What is the compensation applied to focal laws in an S-scan to correct for echo-transmittance variation?

- A. Angle corrected gain (ACG).**
- B. Distance amplitude correction (DAC).**
- C. Time corrected gain (TCG).**
- D. Time variable gain (TVG).**

The compensation applied to focal laws in an S-scan to correct for echo-transmittance variation is best described by angle corrected gain (ACG). This technique addresses the effects of varying angles of incidence on the amplitude of the received signals, ensuring that variations due to geometry are accounted for. In S-scans, where the angles of the ultrasonic beam can change during inspection, ACG is crucial for maintaining consistent sensitivity across the inspection area. By applying angle corrected gain, it adjusts the amplitude of the received echoes based on the angle at which they are transmitted, essentially normalizing the data for more accurate interpretation and analysis. This results in improved detection of flaws and enhanced reliability of the inspection results. Other options, while related to signal processing and adjustments, do not specifically target the compensatory needs for echo-transmittance variations in the context of the S-scan's focal laws. Distance amplitude correction typically relates to the attenuation of sound waves over distance, time corrected gain adjusts for the timing of the signals rather than angles, and time variable gain is employed in different contexts to adjust signal amplitudes over time but does not specifically focus on angular aspects of the signal path. Thus, angle corrected gain is the most appropriate answer in this scenario.

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://asntpasedarraylvl2.examzify.com>

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

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