

# ARRT Computed Tomography (CT) Registry 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. In CT scans, the phase characterized by peak arterial enhancement occurs after the administration of what?**
  - A. Contrast Medium**
  - B. Intravenous Anesthetic**
  - C. Radiopharmaceutical**
  - D. Magnetic Resonance Contrast**
  
- 2. What does "windowing" refer to in CT imaging?**
  - A. Adjusting the radiation dose**
  - B. Selecting the area of the body to scan**
  - C. Optimizing contrast and brightness of images**
  - D. Determining the slice thickness**
  
- 3. What is the relaxation phase of the heart, also known as the bottom number of blood pressure?**
  - A. Systole**
  - B. Diastole**
  - C. Arrhythmia**
  - D. Bradycardia**
  
- 4. What does the linear attenuation coefficient indicate?**
  - A. The speed of photons through air**
  - B. The amount of attenuation that has occurred for a block of tissue**
  - C. The relationship of pixels in a 2D image**
  - D. The angle of photon incidence**
  
- 5. What term describes the amount of energy absorbed per unit mass in radiological contexts?**
  - A. Radiation dosage**
  - B. Absorbed dose**
  - C. Exposure level**
  - D. Energy index**

- 6. Structures involving the sella turcica are best imaged in which plane?**
- A. Sagittal plane**
  - B. Axial plane**
  - C. Coronal plane**
  - D. Oblique plane**
- 7. What component of the CT scan determines the amount of data used in reconstruction?**
- A. Processed Images**
  - B. Raw Data**
  - C. Post-processed Data Sets**
  - D. Beam Attenuation Factors**
- 8. What type of filter is used in CT to compensate for a cylindrical shape of the body?**
- A. Bow-tie filter**
  - B. Circular filter**
  - C. Cone filter**
  - D. Layered filter**
- 9. Which process creates artificial raw data in the iterative reconstruction loop?**
- A. Back Projection**
  - B. Forward Projection**
  - C. Image Reconstruction**
  - D. Data Smoothing**
- 10. What is used as an indication of renal function, typically ranging from 0.5-1.5 mg/dl?**
- A. Blood Urea Nitrogen (BUN)**
  - B. Creatinine**
  - C. eGFR**
  - D. Urinalysis**

## Answers

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

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## **Explanations**

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**1. In CT scans, the phase characterized by peak arterial enhancement occurs after the administration of what?**

- A. Contrast Medium**
- B. Intravenous Anesthetic**
- C. Radiopharmaceutical**
- D. Magnetic Resonance Contrast**

In CT scans, the phase characterized by peak arterial enhancement occurs after the administration of a contrast medium. This specific phase is crucial for imaging vascular structures and organs, as it allows radiologists to obtain clear and detailed images of the blood vessels and tissue perfusion. During a CT scan, a contrast medium—typically an iodine-based material—is injected intravenously. This enhances the visibility of vascular structures because iodine has a high atomic number, which increases the absorption of X-rays and improves the contrast on the images. Peak arterial enhancement is typically seen a short time after the contrast agent is injected, usually within a specific time frame depending on the type of scan and the injection protocol. The other options represent different types of substances that are not relevant to CT contrast imaging. Intravenous anesthetics are generally used for sedation during procedures, radiopharmaceuticals are used in nuclear medicine for imaging and not in CT, and magnetic resonance contrast agents are specific to MRI procedures, not CT scans. Therefore, the administration of the contrast medium is what facilitates the peak enhancement of arterial structures in CT imaging.

**2. What does "windowing" refer to in CT imaging?**

- A. Adjusting the radiation dose**
- B. Selecting the area of the body to scan**
- C. Optimizing contrast and brightness of images**
- D. Determining the slice thickness**

Windowing in CT imaging specifically refers to the process of optimizing the contrast and brightness of the images. This technique allows radiologists and technicians to manipulate the grayscale levels of the image for better visibility of different tissues or pathologies. Each CT image is comprised of various densities which represent different tissues; windowing adjusts the range of these densities that are displayed, enhancing the details that might be crucial for diagnosis. Through windowing, clinicians can highlight specific structures by selecting a narrow range of Hounsfield units (the quantitative scale for describing radiodensity) to enhance contrast between different tissues, making abnormalities easier to identify. For example, if the primary area of interest is soft tissue, one might use a "soft tissue window" setting that enhances these densities while suppressing others. This technique is essential for effective interpretation of CT images, ensuring that the diagnostic potential of the scan is maximized.

**3. What is the relaxation phase of the heart, also known as the bottom number of blood pressure?**

- A. Systole**
- B. Diastole**
- C. Arrhythmia**
- D. Bradycardia**

Diastole is the phase of the cardiac cycle when the heart relaxes after contraction. During this phase, the heart chambers (the atria and ventricles) fill with blood, allowing the heart to prepare for the next contraction. This relaxation is crucial for maintaining adequate blood flow and pressure throughout the circulatory system. The bottom number of a blood pressure reading, known as the diastolic pressure, reflects the pressure in the arteries when the heart is in this relaxed state, emphasizing the heart's ability to refill with blood without exerting extra pressure. Understanding diastole is important because it plays a key role in overall cardiovascular health. It indicates how well the heart can manage its filling time and maintain adequate blood circulation in contrast to the systolic phase, which is the phase of contraction where blood is pumped out of the heart. Thus, recognizing diastole as the relaxation phase enhances comprehension of cardiac function and blood pressure regulation.

**4. What does the linear attenuation coefficient indicate?**

- A. The speed of photons through air**
- B. The amount of attenuation that has occurred for a block of tissue**
- C. The relationship of pixels in a 2D image**
- D. The angle of photon incidence**

The linear attenuation coefficient is a crucial metric in computed tomography that quantifies how much a particular type of material (such as soft tissue, bone, or air) attenuates, or reduces, the intensity of an x-ray beam as it passes through. This coefficient represents the likelihood of photons being absorbed or scattered as they travel through a material. In practical terms, a higher linear attenuation coefficient indicates that the material is denser or that it has higher atomic number elements, resulting in greater attenuation of x-rays. This is essential for differentiating various tissues in CT imaging, as it helps determine the contrast and brightness of the images created. For example, bone has a much higher linear attenuation coefficient than soft tissue, which is why bones appear much more radiopaque (white) on a CT scan. Understanding the concept of the linear attenuation coefficient is vital for interpreting CT scans and for making decisions about imaging protocols based on the types of tissues being examined. This coefficient plays a significant role in creating accurate and useful diagnostic images.

**5. What term describes the amount of energy absorbed per unit mass in radiological contexts?**

- A. Radiation dosage**
- B. Absorbed dose**
- C. Exposure level**
- D. Energy index**

The term that describes the amount of energy absorbed per unit mass in radiological contexts is absorbed dose. Absorbed dose quantifies the energy deposited by ionizing radiation in a given mass of tissue and is typically measured in gray (Gy), where one gray is equivalent to one joule of radiation energy absorbed per kilogram of matter. This concept is crucial in radiology and radiation therapy, as it helps to assess the potential biological effects of radiation on tissues, supporting the safe and effective use of diagnostic imaging and treatments. In contrast, radiation dosage is a broader term that may encompass various types of dose measurements, while exposure level generally refers to the amount of ionizing radiation in the air, indicating its potential to affect individuals. Energy index is not a standard term used in radiology or radiation science, making absorbed dose the most precise and relevant choice.

**6. Structures involving the sella turcica are best imaged in which plane?**

- A. Sagittal plane**
- B. Axial plane**
- C. Coronal plane**
- D. Oblique plane**

Imaging structures involving the sella turcica, which is a saddle-shaped depression in the sphenoid bone of the skull that houses the pituitary gland, is optimally performed in the coronal plane. This plane provides a clear view of the sella turcica and its surrounding anatomical structures. By slicing through the body from front to back, the coronal plane allows for an unobstructed view of the sella turcica's relationships with other critical structures in the cranial cavity, such as the optic chiasm and the cavernous sinus. Using the coronal plane also helps in assessing the height of the sella, potential abnormalities such as tumors or cysts, and the overall contour of the pituitary gland. This comprehensive view is essential for accurate diagnosis and treatment planning in clinical contexts. Other planes, such as sagittal or axial, while useful for different anatomical evaluations, do not present the sella turcica and its surrounding structures as effectively as the coronal plane, limiting the ability to evaluate this critical area as thoroughly. The oblique plane is typically used for more specialized imaging tasks and holds less relevance for visualizing the sella turcica's anatomical relationships.

**7. What component of the CT scan determines the amount of data used in reconstruction?**

- A. Processed Images**
- B. Raw Data**
- C. Post-processed Data Sets**
- D. Beam Attenuation Factors**

The correct choice refers to raw data, which is the foundational information collected during the CT scanning process. This raw data consists of unprocessed measurements taken by the CT scanner's detectors as it captures the X-ray attenuation profiles of the scanned object. In CT imaging, the raw data includes the various attenuation values detected from each angle around the body, and it serves as the primary input for the reconstruction algorithms used to create the final images. These values are crucial because they contain all the necessary information regarding the density and structure of tissues, which are later processed to produce the diagnostic images that radiologists interpret. Processed images and post-processed data sets are derived from this raw data, meaning they have undergone filtering, enhancement, or other manipulations. While these contribute to the visual quality and interpretability of the final images, they do not directly determine the initial data used for reconstruction. Beam attenuation factors relate more to the physics of how X-rays interact with different tissues rather than to the data handling aspect in the context of CT reconstruction. Thus, raw data is the correct answer, as it is essential in determining the information that will ultimately be available for image reconstruction.

**8. What type of filter is used in CT to compensate for a cylindrical shape of the body?**

- A. Bow-tie filter**
- B. Circular filter**
- C. Cone filter**
- D. Layered filter**

The bow-tie filter is specifically designed to compensate for the cylindrical shape of the human body in computed tomography scans. This type of filter is shaped like a bow-tie, which helps to reduce the radiation dose to areas that are closer to the center of the cylindrical scanning field, such as the abdomen or thorax, while allowing more radiation to reach the peripheries, like the limbs. This ensures a more uniform dose distribution and improves image quality by minimizing the problems associated with variations in tissue density. By shaping the filter in this manner, it also helps to correct for beam hardening effects that can occur due to the differing densities of tissues, leading to enhanced contrast and clearer images. The design is essential for optimizing the balance between image quality and patient safety during CT examinations.

**9. Which process creates artificial raw data in the iterative reconstruction loop?**

- A. Back Projection**
- B. Forward Projection**
- C. Image Reconstruction**
- D. Data Smoothing**

The process that creates artificial raw data in the iterative reconstruction loop is forward projection. In this context, forward projection involves simulating what the data would look like if an image were perfect, based on the current estimate of the image. It helps in refining the reconstruction process by allowing algorithms to compare the simulated data against the actual measured data. During an iterative reconstruction, this comparison guides adjustments to the image estimate, refining it in steps until the difference between the simulated and actual data is minimized. This process is essential for improving image quality and reducing artifacts, particularly in low-dose settings or when high-quality images are required. By generating artificial raw data, forward projection is crucial to enhancing the iterative reconstruction loop's effectiveness in producing clear, accurate images.

**10. What is used as an indication of renal function, typically ranging from 0.5-1.5 mg/dl?**

- A. Blood Urea Nitrogen (BUN)**
- B. Creatinine**
- C. eGFR**
- D. Urinalysis**

Creatinine is a waste product generated from muscle metabolism and is filtered out of the blood by the kidneys. Because it is produced at a relatively constant rate in the body, measuring serum creatinine levels provides a stable and reliable indicator of renal function. In healthy individuals, the normal range of serum creatinine is typically between 0.5 and 1.5 mg/dL, depending on factors such as muscle mass, age, and gender. A higher serum creatinine level can indicate impaired kidney function or reduced glomerular filtration rate (GFR), while lower levels can be seen in individuals with decreased muscle mass. Since creatinine is primarily used to assess kidney health, it serves as a critical biomarker in clinical settings when evaluating renal function. While Blood Urea Nitrogen (BUN) levels can also provide information about kidney function, they can be influenced by factors unrelated to renal status, such as hydration levels and protein intake. Similarly, eGFR is a derived value that estimates kidney function based on serum creatinine, age, gender, and race; it is not a direct measurement. Urinalysis can provide various insights into urinary tract health but is not a direct indicator of renal function. Thus, creatinine is recognized as

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

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

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