

CQR Radiology 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

- 1. What does the SI unit Sv stand for in radiation measurement?**
 - A. Standard variance**
 - B. Seivert**
 - C. Silicon volume**
 - D. Substance value**
- 2. Which material is primarily used for the anode in x-ray tubes?**
 - A. Copper**
 - B. Tungsten**
 - C. Lead**
 - D. Aluminum**
- 3. What are the three main methods of indirect transmission?**
 - A. Airborne, vehicle, vector**
 - B. Contact, droplet, airborne**
 - C. Vehicle, droplet, surface**
 - D. Airborne, surface, vector**
- 4. What type of imaging does photostimulable phosphor (PSP) technology replace?**
 - A. Ultrasound imaging**
 - B. Conventional film-screen radiography**
 - C. Magnetic resonance imaging**
 - D. Computed tomography imaging**
- 5. What effect does adding filtration have on the overall energy of the X-ray beam?**
 - A. It decreases the energy**
 - B. It has no effect**
 - C. It increases the overall energy**
 - D. It stabilizes the energy**

- 6. What is the purpose of edge enhancement in image processing?**
- A. To improve the brightness of the entire image**
 - B. To enhance edge contrast and improve apparent sharpness**
 - C. To reduce the size of the image file**
 - D. To ensure color accuracy in the image**
- 7. In radiology, what is meant by image brightness?**
- A. Window level**
 - B. The overall exposure of the film**
 - C. The enhancement of contrast in the image**
 - D. The total absorption of x-rays**
- 8. Which term describes the nature of the x-ray beam?**
- A. Homogeneous**
 - B. Continuous**
 - C. Heterogeneous**
 - D. Uniform**
- 9. Which organization is represented by the acronym AHA?**
- A. American Health Association**
 - B. American Hospital Association**
 - C. Association of Health Administrators**
 - D. American Healthcare Agency**
- 10. Which statement is true about pixel characteristics in digital imaging?**
- A. Pixel values are continuous**
 - B. Each pixel is a picture element assigned a number**
 - C. Pixels can vary in size significantly**
 - D. All pixels have the same intensity representation**

Answers

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

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Explanations

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1. What does the SI unit Sv stand for in radiation measurement?

- A. Standard variance**
- B. Sievert**
- C. Silicon volume**
- D. Substance value**

The SI unit Sv stands for Sievert, which is a unit used to measure the biological effects of ionizing radiation. It quantifies the dose of radiation in terms of its potential impact on human health and safety. The Sievert accounts for the type of radiation and its relative biological effectiveness, making it a crucial measurement in radiation protection and risk assessment. The Sievert is particularly important in the fields of radiology and nuclear science, as it helps professionals understand the risks associated with exposure to different types of radiation. This unit is commonly used in safety standards, regulatory frameworks, and health guidelines, emphasizing its role in ensuring that radiation exposure remains within safe limits for individuals and populations.

2. Which material is primarily used for the anode in x-ray tubes?

- A. Copper**
- B. Tungsten**
- C. Lead**
- D. Aluminum**

The primary material used for the anode in x-ray tubes is tungsten. This is because tungsten has a high atomic number, which is beneficial for producing x-rays effectively. The high atomic number increases the efficiency of x-ray production since the probability of x-ray generation increases with the atomic number of the material. Additionally, tungsten has a high melting point (about 3,422 degrees Celsius), which allows it to withstand the intense heat generated during the x-ray production process without melting or degrading. This ability to endure high temperatures is crucial, as the anode is where the electrons collide to generate x-rays, resulting in a significant amount of heat. Therefore, tungsten's properties make it ideal for use in the anode of x-ray tubes, ensuring both effective x-ray generation and durability under operational conditions.

3. What are the three main methods of indirect transmission?

- A. Airborne, vehicle, vector**
- B. Contact, droplet, airborne**
- C. Vehicle, droplet, surface**
- D. Airborne, surface, vector**

The three main methods of indirect transmission are airborne, vehicle, and vector. Airborne transmission refers to the presence of infectious agents in the air, where they can be inhaled by individuals. This method is significant because it allows pathogens to spread across distances, often in enclosed spaces or through aerosolized droplets. Vehicle transmission involves the transfer of pathogens via fomites or inanimate objects, such as contaminated food, water, or surfaces that can harbor infectious microorganisms. This method is crucial as it highlights the role of indirect contact in disease spread, especially in environments where hygiene protocols may be lacking or compromised. Vector transmission pertains to the transfer of pathogens through a living organism, often insects like mosquitoes or ticks. These vectors can carry diseases from one host to another, illustrating a complex interaction between the disease-causing agents and their carriers. Understanding these three methods is essential for managing infection control and implementing effective public health strategies. The other options do not accurately encapsulate the key methods of indirect transmission as defined in epidemiology.

4. What type of imaging does photostimulable phosphor (PSP) technology replace?

- A. Ultrasound imaging**
- B. Conventional film-screen radiography**
- C. Magnetic resonance imaging**
- D. Computed tomography imaging**

Photostimulable phosphor (PSP) technology is a key component of digital radiography, which directly replaces conventional film-screen radiography. In traditional film-screen radiography, x-ray images are captured on film that requires chemical processing to develop the images. PSP technology, on the other hand, uses a storage phosphor to capture the x-ray images digitally. When exposed to x-rays, the phosphor absorbs the energy and stores it. Subsequently, a reader scans the phosphor plate with a laser, stimulating it to emit light, which is then converted into a digital image. This technology allows for several advantages over conventional film, including enhanced image quality, reduced radiation dose to patients, and instant image availability without the need for chemical processing. The move from film to PSP signifies a significant advancement in radiographic techniques, allowing for more efficient workflows in radiology departments. Other imaging modalities, such as ultrasound, magnetic resonance imaging, and computed tomography, each use different principles and technologies, and they are not replaced by PSP technology. Therefore, the association between PSP technology and conventional film-screen radiography serves as a pivotal transition in the field of radiology.

5. What effect does adding filtration have on the overall energy of the X-ray beam?

- A. It decreases the energy**
- B. It has no effect**
- C. It increases the overall energy**
- D. It stabilizes the energy**

Adding filtration to an X-ray beam causes an increase in the overall energy of the beam. This occurs because filtration selectively absorbs lower-energy (soft) X-rays, which have less penetrating ability and are not as useful for imaging. By removing these lower-energy photons, the average energy of the remaining X-ray beam is increased, since the higher-energy (harder) photons are left intact. The process enhances the quality of the X-ray beam, improving contrast and definition in the images produced while minimizing patient exposure to unnecessary radiation. In summary, the correct choice reflects how filtration improves the penetrating power of the beam by eliminating less energetic photons.

6. What is the purpose of edge enhancement in image processing?

- A. To improve the brightness of the entire image**
- B. To enhance edge contrast and improve apparent sharpness**
- C. To reduce the size of the image file**
- D. To ensure color accuracy in the image**

The purpose of edge enhancement in image processing is primarily to enhance the contrast at the boundaries of objects within an image, which improves the apparent sharpness and detail. When edges are made more distinct, it helps in making the features of the image more recognizable, especially in medical imaging where the delineation between different tissue types is critical for accurate diagnosis. By increasing the visibility of edges, edge enhancement makes it easier for the viewer to interpret and analyze the image effectively. The process does not focus on improving the brightness of the entire image, reducing file size, or ensuring color accuracy, which are associated with different image processing techniques. Edge enhancement specifically targets the clarity and contrast of edges, which is vital in radiological assessments for better visualization of anatomical structures.

7. In radiology, what is meant by image brightness?

A. Window level

B. The overall exposure of the film

C. The enhancement of contrast in the image

D. The total absorption of x-rays

Image brightness in radiology refers to the level of illumination of the displayed image on a monitor or film. It is typically controlled by the window level setting in digital imaging systems. The window level determines the midpoint of the range of grayscale values displayed, which directly affects how bright or dark the image appears to the viewer. When the window level is adjusted, it shifts the brightness of the entire image, allowing for better visualization of structures depending on their density and the amount of attenuation they cause. This setting is crucial when interpreting images, as it helps radiologists discern details that may be obscured due to poor brightness. The overall exposure of the film, enhancing contrast, and total absorption of x-rays each play significant roles in radiographic imaging but do not directly define image brightness. Overall exposure relates to the quantity of radiation that reaches the film, contrast concerns the difference between various densities within the image, and absorption pertains to how x-rays are absorbed by different tissues. Thus, window level is the most precise term related to adjusting image brightness.

8. Which term describes the nature of the x-ray beam?

A. Homogeneous

B. Continuous

C. Heterogeneous

D. Uniform

The term that best describes the nature of the x-ray beam is "heterogeneous." This means that the x-ray beam consists of photons with a range of energies and wavelengths. Unlike a homogeneous beam, where all the photons would be of the same energy, the heterogeneous x-ray beam has various energy levels that contribute to its penetration power when interacting with different tissues in the body. This variability is essential in radiology because it allows for different levels of absorption by various anatomical structures, facilitating the process of distinguishing between different tissues and abnormalities on the radiographic images. In contrast, terms like "homogeneous," "continuous," and "uniform" imply a consistency in energy levels or characteristics that doesn't accurately reflect the diverse range of energies present in an x-ray beam. Therefore, the concept of heterogeneity is a fundamental aspect of understanding how x-rays function in diagnostic imaging.

9. Which organization is represented by the acronym AHA?

- A. American Health Association**
- B. American Hospital Association**
- C. Association of Health Administrators**
- D. American Healthcare Agency**

The acronym AHA stands for the American Hospital Association. This organization plays a critical role in representing the interests of hospitals and healthcare networks in the United States. It focuses on advocating for quality healthcare delivery, influencing public policy, providing education and networking opportunities for healthcare executives, and conducting research to improve health services. The American Hospital Association's primary mission is to promote the health of individuals and communities by supporting hospitals in delivering care effectively and efficiently. This organization works on various initiatives, including healthcare finances, improving patient safety, and enhancing healthcare quality. While other options may seem plausible, they do not reflect the established organizations recognized in the healthcare field. The other associations listed either do not exist with those specific names or serve different purposes that are not centered solely on hospitals and healthcare associations.

10. Which statement is true about pixel characteristics in digital imaging?

- A. Pixel values are continuous**
- B. Each pixel is a picture element assigned a number**
- C. Pixels can vary in size significantly**
- D. All pixels have the same intensity representation**

The statement that each pixel is a picture element assigned a number is accurate because, in digital imaging, each pixel represents the smallest unit of graphic information and is assigned a specific number that corresponds to its intensity or color value. This numerical value allows the digital system to display varying shades of gray or color in an image, which is crucial for accurate imaging and analysis, especially in radiology. Each pixel's value plays an integral role in how the image is formed visually and how details are interpreted when examining diagnostic images. Understanding that pixels are assigned numerical values helps to grasp concepts such as image resolution and contrast, which are fundamental in diagnostic imaging techniques. The other options relate to characteristics of pixels but do not accurately represent the key attribute of pixels in digital imaging. For instance, while pixel values are typically discrete rather than continuous and pixels are reasonably standardized in size to maintain consistency across images, those characteristics may not be universally applicable, especially in systems with different resolutions or imaging modalities. The uniformity of pixel intensity representation can vary based on the imaging technique and the settings used, making B the most accurate recognition of pixel characteristics in digital imaging.

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://cqrradiology.examzify.com>

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