

ASNT RADIOGRAPHIC TESTING (RT) LEVEL II PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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

<https://asntrtlvl2.examzify.com>



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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 role of kilovoltage in radiographic techniques involving film?**
 - A. To calibrate the machine
 - B. To influence the resolution of the image
 - C. To control the penetrating power of the x-rays
 - D. To enhance film speed
- 2. In fluoroscopic testing, what method can be used to increase image brightness?**
 - A. Using a larger film!
 - B. Employing a digital camera system
 - C. Utilizing an image amplifier or intensifier
 - D. Increasing the radiation dose
- 3. What does the term "rectification" refer to in X-ray equipment?**
 - A. Changing direct current to alternating current
 - B. Filtering radiation
 - C. Converting alternating current to direct current
 - D. Ionizing particles
- 4. What might cause mottling in a radiograph of a steel weldment?**
 - A. Excessive exposure time
 - B. Failure to use a lead screen during exposure
 - C. The quality of the weld itself
 - D. Improper film processing
- 5. Which isotope is known to have the longest half-life?**
 - A. Carbon-14
 - B. Cobalt-60
 - C. Cesium-137
 - D. Iridium-192

- 6. What is the shape of the characteristic curve of an x-ray film dependent on?**
- A. The quality of x or gamma radiation
 - B. The exposure time
 - C. The processing chemicals used
 - D. The film itself
- 7. What is one primary risk associated with exposure to X-ray radiation?**
- A. Electrical burns
 - B. Radiation sickness
 - C. Chemical exposure
 - D. Thermal burns
- 8. When cobalt-59 is placed in a nuclear reactor, what particle does it capture to become cobalt-60?**
- A. A proton
 - B. A neutron
 - C. An electron
 - D. A photon
- 9. Film contrast refers to the ability to show what, given a change in radiation exposure?**
- A. A difference in texture
 - B. A difference in density
 - C. A difference in clarity
 - D. A difference in brightness
- 10. What primarily prevents the intensity of radiation emitted from an x-ray tube from being exactly proportional to tube current?**
- A. The type of x-ray tube used
 - B. The voltage and voltage waveform of the transformer
 - C. The distance from the specimen
 - D. The size of the x-ray film

Answers

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

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Explanations

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1. What is the role of kilovoltage in radiographic techniques involving film?

- A. To calibrate the machine
- B. To influence the resolution of the image
- C. To control the penetrating power of the x-rays**
- D. To enhance film speed

The role of kilovoltage in radiographic techniques involving film primarily pertains to controlling the penetrating power of the x-rays produced during the imaging process. Kilovoltage, or kV, affects the energy level of the x-ray photons generated, with higher kilovoltage resulting in higher energy x-rays that can penetrate denser materials more effectively. This is critical in radiographic testing, as it determines the quality and density of the resulting film image. When the kilovoltage is adjusted, it directly affects the contrast of the radiograph. For instance, lower kilovoltage settings produce softer x-rays that may result in higher contrast images but with limited penetration capabilities. Conversely, higher kilovoltage settings allow for greater penetration through thicker materials, potentially leading to lower contrast images but with the ability to visualize structures located deeper within the tested object. Understanding the role of kilovoltage allows technicians to select appropriate settings tailored to the specific material thickness, type, and diagnostic requirements, thus ensuring that the radiographic image accurately represents the internal features of the object being examined.

2. In fluoroscopic testing, what method can be used to increase image brightness?

- A. Using a larger film!
- B. Employing a digital camera system
- C. Utilizing an image amplifier or intensifier**
- D. Increasing the radiation dose

In fluoroscopic testing, utilizing an image amplifier or intensifier is the effective method for increasing image brightness. This device enhances the brightness of the image by amplifying the weak light levels produced during the x-ray exposure. The image intensifier converts x-rays into visible light, and by using a photoconductive material, it significantly increases the brightness of the image, enabling clearer visualization of the structures being examined. This is particularly important in fluoroscopy since operators often need to see real-time images clearly while minimizing radiation exposure. The image intensifier not only improves the quality of the images displayed but also allows for lower doses of radiation because it makes the resulting images much brighter. Other methods listed, such as increasing the radiation dose, can lead to unnecessary exposure and do not necessarily guarantee improved image quality. Employing a digital camera system may enhance image capture, but it primarily pertains to post-processing and does not address the real-time aspect of brightness during fluoroscopy. Using a larger film may affect the size of the image but does not inherently increase the brightness of the displayed image.

3. What does the term "rectification" refer to in X-ray equipment?

- A. Changing direct current to alternating current
- B. Filtering radiation
- C. Converting alternating current to direct current**
- D. Ionizing particles

The term "rectification" specifically refers to the process of converting alternating current (AC) to direct current (DC) in X-ray equipment. In the context of X-ray technology, this is critical because X-ray tubes require a stable and consistent flow of direct current to generate X-rays effectively. Direct current provides a unidirectional flow, which is essential for maintaining the correct operating conditions within the tube. When alternating current is applied to an X-ray tube, it can lead to fluctuations in the energy and intensity of the X-rays produced, which can affect image quality and consistency. Rectification ensures that the power supply delivers a steady output that meets the needs of the X-ray system, allowing for reliable and effective radiation production. This concept is fundamental in ensuring that the X-ray equipment operates efficiently and safely, helping to produce high-quality imaging needed for diagnoses and examinations in medical and industrial applications.

4. What might cause mottling in a radiograph of a steel weldment?

- A. Excessive exposure time
- B. Failure to use a lead screen during exposure**
- C. The quality of the weld itself
- D. Improper film processing

Mottling in a radiograph of a steel weldment can be attributed to various factors affecting the exposure and development of the radiographic film. One significant cause is the failure to use a lead screen during exposure. Lead screens are employed to enhance the image quality of the radiograph by reducing the amount of scattered radiation that reaches the film. When these screens are not used, scattered radiation can lead to non-uniform exposure on the film, which manifests as mottling or uneven density in the resulting image. Using a lead screen helps to produce a clearer and more consistent image by allowing more of the primary radiation to reach the film while minimizing the effects of scatter. Consequently, when the lead screen is omitted, the radiograph may display mottled patterns due to this lack of control over the exposure conditions. While factors such as excessive exposure time, the quality of the weld, and improper film processing can affect radiographic images, they do not specifically cause mottling in the same way that the absence of a lead screen does. Excessive exposure time typically results in overexposure rather than mottling, and issues with the weld quality would show up as flaws or discontinuities rather than mottling. Improper film processing affects image clarity and sharpness but does

5. Which isotope is known to have the longest half-life?

- A. Carbon-14
- B. Cobalt-60
- C. Cesium-137**
- D. Iridium-192

The isotope known to have the longest half-life among the choices provided is Carbon-14. Carbon-14 has a half-life of approximately 5,730 years, making it significantly longer-lived than the other isotopes listed. Cobalt-60, Cesium-137, and Iridium-192 all have much shorter half-lives. For instance, Cobalt-60 has a half-life of about 5.27 years, Cesium-137 about 30 years, and Iridium-192 approximately 74 days. This extended half-life of Carbon-14 allows it to be used effectively in radiocarbon dating, which is a critical tool in archaeology and geology for determining the age of organic materials. The longevity of Carbon-14 makes it especially valuable for dating items that are thousands of years old, as it remains detectable and can provide accurate age estimates well beyond the time frames suitable for the other isotopes listed.

6. What is the shape of the characteristic curve of an x-ray film dependent on?

- A. The quality of x or gamma radiation**
- B. The exposure time
- C. The processing chemicals used
- D. The film itself

The shape of the characteristic curve of an x-ray film is fundamentally dependent on the quality of the radiation used, which includes factors such as its energy, wavelength, and overall radiation type (x-ray or gamma). The characteristic curve, also known as the H&D curve (H & D for Hurter and Driffield), illustrates the relationship between the exposure of film to radiation and the resultant optical density after processing. When the quality of the incoming radiation changes, it directly impacts how the film responds to exposure. Higher energy radiation can penetrate the emulsion more effectively, thereby affecting the film's response and altering the shape of the characteristic curve. This, in turn, influences how much density is produced for a given level of exposure, leading to different interpretations of the curve's slope and shape based on film sensitivity and latitude. The other factors listed, while they can influence the overall performance and quality of the image produced, do not primarily determine the inherent shape of the characteristic curve itself. For example, exposure time and processing chemicals can affect image quality and contrast but do not alter the fundamental relationship represented in the characteristic curve. The film itself has a composition that defines its characteristics, yet it is ultimately the quality of the radiation that dictates the curve's shape

7. What is one primary risk associated with exposure to X-ray radiation?

- A. Electrical burns
- B. Radiation sickness**
- C. Chemical exposure
- D. Thermal burns

Radiation sickness is a primary risk associated with exposure to X-ray radiation due to the biological effects that high levels of radiation can have on the human body. When an individual is exposed to a significant amount of ionizing radiation, such as that produced by X-rays, it can damage living cells, leading to conditions like nausea, vomiting, or more severe health consequences, depending on the dose and duration of exposure. X-rays are a form of ionizing radiation, and prolonged or high levels of exposure can overwhelm the body's ability to repair and regenerate its cells, potentially leading to radiation sickness. This risk is particularly relevant in settings where personnel may be exposed to higher doses, such as during medical imaging procedures or industrial radiographic testing. In contrast, electrical burns, chemical exposure, and thermal burns are associated with other types of hazards that are not primarily related to radiation exposure. Electrical burns result from electric shock, chemical exposure involves reactions with toxic substances, and thermal burns arise from contact with hot surfaces or flames. Thus, when evaluating risks in the context of X-ray radiation exposure specifically, radiation sickness is the leading concern, making it the correct choice.

8. When cobalt-59 is placed in a nuclear reactor, what particle does it capture to become cobalt-60?

- A. A proton
- B. A neutron**
- C. An electron
- D. A photon

Cobalt-59 captures a neutron to become cobalt-60, which is a key process in the context of nuclear reactions. Neutron capture occurs when an unstable atomic nucleus captures a neutron. Cobalt-59 is stable and has 27 protons and 32 neutrons. When it captures a neutron, the atomic mass increases by one, resulting in cobalt-60, which has 27 protons and 33 neutrons. This process is significant in nuclear technology and various applications such as the production of radioactive isotopes. The properties of cobalt-60 make it useful in fields like medical radiotherapy and industrial radiography. Understanding neutron capture is crucial for anyone studying nuclear physics or radiographic testing, as it underlines the foundational principles of how isotopes are formed and transformed in nuclear reactors.

9. Film contrast refers to the ability to show what, given a change in radiation exposure?

- A. A difference in texture
- B. A difference in density**
- C. A difference in clarity
- D. A difference in brightness

Film contrast is a critical concept in radiographic testing, as it pertains to the film's ability to differentiate between varying levels of radiation exposure. It primarily reflects how well the film can demonstrate differences in density. When an image is exposed to radiation, the varying degrees of exposure lead to different levels of blackening on the film; this results in a visible contrast between areas of different radiation absorption. In radiography, density refers to the darkening of the film, which occurs due to the amount of silver halide crystals that have been exposed to light during the processing. The more radiation that hits a particular area, the denser (dark) it becomes on the film. Therefore, when discussing film contrast, we focus on how well the film can delineate these density differences. High contrast means there is a clear distinction between the dark and light areas, while low contrast indicates a more gradual transition between these densities. This understanding is essential for interpreting radiographs effectively, as certain features of the test object can only be observed with adequate contrast. Thus, film contrast is fundamentally linked to differences in density, making it the correct choice.

10. What primarily prevents the intensity of radiation emitted from an x-ray tube from being exactly proportional to tube current?

- A. The type of x-ray tube used
- B. The voltage and voltage waveform of the transformer**
- C. The distance from the specimen
- D. The size of the x-ray film

The primary factor that affects the intensity of radiation emitted from an x-ray tube and prevents it from being exactly proportional to tube current is the voltage and voltage waveform of the transformer. In an x-ray tube, the tube current refers to the flow of electrons from the cathode to the anode, which is indeed influenced by the tube current; however, the resultant x-ray intensity also heavily depends on the voltage applied across the x-ray tube. When the voltage is increased, not only does it influence the kinetic energy of the electrons, but it also affects the shape and quality of the x-ray output. The waveform of the voltage can describe how consistently the voltage is applied; for example, a more constant waveform will generally produce more consistent x-ray intensity across time. If the voltage fluctuates, the wattage, and consequently the intensity of the emitted radiation, will not directly correlate to the tube current. The interplay between voltage and current ultimately determines the efficiency of x-ray production, as higher voltage typically allows for a more efficient conversion of electron energy to x-ray photons, leading to variations that deviate from a simplistic linear relationship based solely on tube current. While the other options, such as the type of x-ray tube, distance from the specimen,

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://asntrtlvl2.examzify.com>

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

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