

LMRT ARRT PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. A grid is typically used when the body part exceeds what size?
 - A. 5 to 8 cm
 - B. 8 to 10 cm
 - C. 10 to 12 cm
 - D. 12 to 15 cm
2. Which of the following best defines "Vectors" in the context of disease transmission?
 - A. Contaminated surfaces
 - B. Dust particles
 - C. Airborne pathogens
 - D. Insects and other arthropods
3. What term describes the loss of intensity of the x-ray beam as it passes through the patient?
 - A. Scattering
 - B. Attenuation
 - C. Radiation exposure
 - D. Conversion
4. Which type of radiation is primarily responsible for patient dose during diagnostic imaging?
 - A. Primary radiation
 - B. Secondary radiation
 - C. Controlled radiation
 - D. Scattered radiation
5. What type of tube did Roentgen work with when he discovered x-rays?
 - A. Crookes
 - B. Thomson
 - C. Geissler
 - D. Electric

6. If the source-to-image distance (SID) is increased or decreased, how is the density on the image affected?
- A. It remains unchanged
 - B. It always increases
 - C. It always decreases
 - D. It can vary erratically
7. Which term refers to the decrease in the number of photons in an x-ray beam as it passes through matter?
- A. Scattering
 - B. Attenuation
 - C. Reflection
 - D. Refraction
8. What does mAs stand for in X-ray exposure settings?
- A. Millivolt-seconds
 - B. Milliamperes-seconds
 - C. Megavolt-amps
 - D. Milligray-seconds
9. The anode heel effect is most pronounced when using which size of imaging receptor (IR)?
- A. 8x10 in IR
 - B. 10x12 in IR
 - C. 14x17 in IR
 - D. 16x20 in IR
10. What is the monthly equivalent dose limit for a pregnant radiation worker?
- A. 1.0 mSv
 - B. 0.5 mSv
 - C. 2.0 mSv
 - D. 0.1 mSv

Answers

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

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Explanations

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1. A grid is typically used when the body part exceeds what size?

- A. 5 to 8 cm
- B. 8 to 10 cm
- C. 10 to 12 cm**
- D. 12 to 15 cm

A grid is an essential tool in radiography used to reduce the amount of scatter radiation that reaches the film or digital detector, which improves the overall image quality. Grids function by allowing only the primary radiation, which provides useful diagnostic information, to reach the imaging receptor while absorbing scattered radiation that can blur the image. The commonly accepted threshold for the use of a grid is when the body part being imaged exceeds approximately 10 to 12 cm in thickness. This is because thicker body parts tend to produce more scatter radiation due to increased interaction with the tissues and the subsequent scattering of the x-rays. Using a grid at this thickness helps to enhance the contrast between different tissues in the image, allowing for clearer visualization of anatomical structures and pathologies. Utilizing a grid determines how well the radiograph will represent the anatomy by focusing on the primary radiation while minimizing scatter, particularly in areas where thickness can significantly contribute to this scatter effect. Therefore, the choice that states a grid is typically needed when the body part exceeds the size of 10 to 12 cm aligns with the standard practices in radiography.

2. Which of the following best defines "Vectors" in the context of disease transmission?

- A. Contaminated surfaces
- B. Dust particles
- C. Airborne pathogens
- D. Insects and other arthropods**

Vectors, in the context of disease transmission, specifically refer to living organisms that can carry and transmit pathogens to humans or other hosts. In this case, insects and other arthropods, such as mosquitoes, ticks, and fleas, serve as vectors because they can carry infectious agents like bacteria, viruses, and protozoa. They often do so by biting humans or other animals, facilitating the transfer of these pathogens and playing a crucial role in the spread of various diseases. This definition contrasts with other choices. Contaminated surfaces are related to indirect transmission through contact but do not involve living carriers. Dust particles might harbor pathogens but are not typically classified as vectors since they don't actively transmit diseases. Airborne pathogens refer to pathogens that are spread through the air, often through droplets, and again do not involve a living vector. Understanding vectors is essential in epidemiology and public health to focus preventive measures effectively against diseases.

3. What term describes the loss of intensity of the x-ray beam as it passes through the patient?

- A. Scattering
- B. Attenuation**
- C. Radiation exposure
- D. Conversion

The correct term for the loss of intensity of the x-ray beam as it traverses through the patient is attenuation. Attenuation refers to the reduction in the number of x-ray photons as they interact with the various tissues within the patient. This process occurs due to various factors, including absorption and scattering of the x-rays by the body tissues. When x-rays encounter matter (like human tissues), some photons can be absorbed and converted into other forms of energy, while others may be scattered, leading to a decrease in intensity. The degree of attenuation depends on the density and composition of the tissues being penetrated; for example, denser tissues such as bone will cause greater attenuation than softer tissues like muscle or fat. In this context, attenuation is a critical concept in radiography, as it influences the quality of the images produced and the accurate representation of the internal structures of the body. Understanding attenuation helps radiologic technologists make informed decisions regarding exposure factors to achieve optimal image quality while minimizing patient dose.

4. Which type of radiation is primarily responsible for patient dose during diagnostic imaging?

- A. Primary radiation**
- B. Secondary radiation
- C. Controlled radiation
- D. Scattered radiation

The type of radiation primarily responsible for patient dose during diagnostic imaging is primary radiation. Primary radiation refers to the direct beam of photons emitted from the X-ray tube that travels through the patient and contributes to the formation of the diagnostic image. It is this radiation that first interacts with body tissues, leading to absorption, scattering, and transmission of photons. Understanding the role of primary radiation is crucial because it directly affects the quality of the images produced and the amount of exposure the patient receives. Effective imaging techniques prioritize minimizing unnecessary exposure to primary radiation while ensuring that the necessary information is captured for accurate diagnosis. Other types of radiation, such as secondary radiation and scattered radiation, result from interactions of primary radiation with the patient's tissues. While scattering can contribute to overall radiation exposure, it does not represent the direct contribution of radiation that is necessary for imaging, thus making primary radiation the key player in patient dose considerations during diagnostic imaging procedures.

5. What type of tube did Roentgen work with when he discovered x-rays?

- A. Crookes**
- B. Thomson
- C. Geissler
- D. Electric

Roentgen discovered x-rays while working with a Crookes tube, which is a type of vacuum tube. This tube was one of the earliest forms of electron tubes and played a crucial role in the development of early x-ray technology. The Crookes tube contains a low-pressure gas and has electrodes, which allowed for the observation of cathode rays. It was during an experiment with this tube that Roentgen noticed a fluorescent glow emanating from a nearby screen, leading to his landmark discovery of x-rays. The characteristics of the Crookes tube, including its ability to generate cathode rays, were fundamental to understanding the mechanisms that would later lead to the identification and application of x-rays in medical imaging. Other types of tubes, such as Thomson or Geissler tubes, had their own specific uses in early physics experiments but did not relate directly to the discovery of x-rays in the same manner as the Crookes tube. For instance, the Thomson tube was associated with experiments on cathode rays, while Geissler tubes were primarily used for gas discharge studies.

6. If the source-to-image distance (SID) is increased or decreased, how is the density on the image affected?

- A. It remains unchanged**
- B. It always increases
- C. It always decreases
- D. It can vary erratically

When discussing how changing the source-to-image distance (SID) affects image density, it is important to understand the principles of radiographic image formation and the inverse square law. The density of an image is influenced by the quantity of radiation that reaches the film or detector, which is determined by factors such as SID. Increasing the SID reduces the intensity of the radiation reaching the image receptor due to the inverse square law, which states that radiation intensity is inversely proportional to the square of the distance from the source. Conversely, decreasing the SID increases the radiation intensity reaching the receptor. However, when these changes are made while keeping other exposure factors (such as milliampere-seconds and kilovolt peak) constant, the overall image density remains largely unchanged. In practice, adjustments may be needed to exposure settings to maintain optimal density, but the inherent relationship dictated by SID itself suggests that under controlled conditions, the density will not be significantly affected by merely changing the distance. Therefore, option A is correct in stating that density remains unchanged in this context, provided that all other exposure parameters are kept constant.

7. Which term refers to the decrease in the number of photons in an x-ray beam as it passes through matter?

- A. Scattering
- B. Attenuation**
- C. Reflection
- D. Refraction

The term that refers to the decrease in the number of photons in an x-ray beam as it passes through matter is attenuation. This process occurs due to the interaction of x-ray photons with the material, leading to a reduction in the intensity of the x-ray beam. Attenuation encompasses both absorption and scattering of the x-rays; as photons pass through substances, they can be either absorbed by the material or scattered in different directions, thus resulting in a diminished number of photons exiting the material. Attenuation is a critical concept in radiography and radiology, as it helps in understanding how x-rays interact with various tissues, informing imaging techniques and levels of exposure necessary for optimal visualizations. Understanding this concept allows healthcare professionals to optimize image quality and patient safety during procedures involving x-ray technology.

8. What does mAs stand for in X-ray exposure settings?

- A. Millivolt-seconds
- B. Milliampere-seconds**
- C. Megavolt-amps
- D. Milligray-seconds

mAs stands for milliampere-seconds, which is a crucial parameter in X-ray exposure settings. This measurement combines the current flowing through the X-ray tube (measured in milliamperes) with the duration of exposure (measured in seconds). The product of these two values determines the total amount of exposure delivered to the imaging receptor. In practical terms, a higher mAs value results in a greater number of X-ray photons being produced, which increases the overall exposure on the film or digital detector. Consequently, this typically leads to better image quality, with improved contrast and reduced noise. Understanding mAs is essential for radiographers as it helps them optimize image quality while also being mindful of patient radiation dose. Other options like millivolt-seconds, megavolt-amps, and milligray-seconds do not accurately represent the components necessary for X-ray exposure. Millivolt-seconds is not standard terminology in X-ray settings; megavolt-amps pertains more to high-energy applications; and milligray-seconds incorrectly mixes two different concepts by referencing a unit of absorbed dose with a time measurement. Thus, the correct answer emphasizes the importance of both the current and time duration related to X-ray exposure in imaging

9. The anode heel effect is most pronounced when using which size of imaging receptor (IR)?

- A. 8x10 in IR
- B. 10x12 in IR
- C. 14x17 in IR**
- D. 16x20 in IR

The anode heel effect refers to the phenomenon where x-ray intensity is greater on the cathode side of the x-ray beam than on the anode side. This effect is particularly significant with larger imaging receptors because the angle of the anode disperses x-rays more unevenly across the receptor. When using larger imaging receptors, such as a 14x17 inch IR, the anode heel effect becomes more pronounced because the longer dimension of the receptor allows for greater variance in x-ray intensity across the surface. The larger size captures a broader range of x-rays and thus is more likely to show the discrepancy in exposure levels due to the heel effect. In clinical practice, this characteristic can help radiographers make informed decisions about positioning and technique to ensure optimal image quality. In contrast, smaller-sized imaging receptors like the 8x10 inch or 10x12 inch IRs do not exhibit the heel effect as dramatically because their dimensions minimize the disparity in x-ray intensity. Furthermore, the 16x20 inch receptor, while still large, often falls under a similar category as 14x17 in terms of the anode heel effect, but tends to be less commonly used, which can affect overall observations in practice. Thus, the 14

10. What is the monthly equivalent dose limit for a pregnant radiation worker?

- A. 1.0 mSv
- B. 0.5 mSv**
- C. 2.0 mSv
- D. 0.1 mSv

The monthly equivalent dose limit for a pregnant radiation worker is set at 0.5 mSv. This limit is designed to ensure the health and safety of both the pregnant worker and the developing fetus. The principle behind this limit is to minimize radiation exposure during critical periods of fetal development, particularly during the first trimester when the fetus is most vulnerable to the effects of radiation. Regulatory agencies, such as the National Council on Radiation Protection and Measurements (NCRP) and the Occupational Safety and Health Administration (OSHA), emphasize the importance of stringent dose limits for pregnant workers to protect against potential risks, including teratogenic effects and developmental issues that can arise from significant radiation exposure. This limit reflects the precautionary approach adopted in occupational radiation safety, ensuring that the total accumulated dose does not exceed the recommended threshold for pregnant workers. When working in environments where radiation exposure is a concern, adhering to these limits is crucial for maintaining the safety of both workers and patients.

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:

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

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