

# BU Dental Radiology Practice Exam (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. If the distance from the x-ray tube increases, the intensity of the x-ray beam \_\_\_\_\_.  
A. Increases  
B. Doubles  
C. Remains the same  
D. Decreases**
  
- 2. A darkroom safe light should be at least how many feet away from the film being opened?  
A. Five feet  
B. Four feet  
C. Three feet  
D. Six feet**
  
- 3. For a fixed exposure, increasing kVp while decreasing mA will primarily affect which aspect of the beam?  
A. Focal spot size increases.  
B. Exposure time becomes zero.  
C. Density more than quality.  
D. Quality of the beam more than density.**
  
- 4. ALARA stands for?  
A. As Long As Reasonably Achievable  
B. As Limited As Readily Achievable  
C. As Low As Reasonably Achievable  
D. Always Low And Readable**
  
- 5. Overlapping of teeth is caused by what?  
A. Incorrect vertical angulation  
B. Incorrect horizontal angulation  
C. Patient movement  
D. Poor film processing**

- 6. X-rays are produced when electrons collide with the tungsten target.**
- A. True**
  - B. False**
  - C. Not produced by electrons**
  - D. Only gamma rays**
- 7. According to the notes, at kVp above 70, the specified measurement in millimeters is 2.5.**
- A. 1.5**
  - B. 3.0**
  - C. 4.0**
  - D. 2.5**
- 8. What is the base of the X-ray film described as?**
- A. Glass**
  - B. Metal**
  - C. Paper**
  - D. Plastic supporting material on which the emulsion is coated with an adhesive**
- 9. Which statement about nucleus components is correct?**
- A. The Nucleus Contains Electrons and Protons**
  - B. Protons and Neutrons Are Located in the Nucleus**
  - C. Electrons Are Inside the Nucleus**
  - D. Neutrons Have Negative Charge**
- 10. How should the bump side of film be oriented on a viewbox?**
- A. Bump facing up, towards ceiling**
  - B. Bump facing down, towards floor**
  - C. Flat side up**
  - D. Flat side down**

## Answers

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

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## **Explanations**

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1. If the distance from the x-ray tube increases, the intensity of the x-ray beam \_\_\_\_\_.
- A. Increases
  - B. Doubles
  - C. Remains the same
  - D. Decreases**

Beam intensity drops with distance due to the inverse square law: intensity is proportional to  $1$  over the distance squared from the focal spot. When the tube is moved farther away, the same number of photons fan out over a larger area, so the energy per unit area reaching the receptor decreases. Doubling the distance reduces intensity to about one quarter; tripling it reduces to about one ninth. That's why increasing distance decreases intensity. In practice, if you change distance in dental imaging, you'd compensate by increasing exposure parameters (within safe and diagnostic limits) to maintain adequate receptor exposure.

2. A darkroom safe light should be at least how many feet away from the film being opened?
- A. Five feet
  - B. Four feet**
  - C. Three feet
  - D. Six feet

Safelight fogging occurs when the film emulsion is exposed to the safelight during handling. The amount of light reaching the film drops with distance, so moving the safelight farther away reduces the risk. Four feet is the recommended distance because, with a proper safelight filter and typical wattage, the light intensity at that distance is low enough to prevent fogging during the time you open and handle films. If the safelight is closer, even brief exposure can cause fogging and degrade image quality. So placing the safelight at least four feet away provides a practical balance between safe handling and minimizing fogging.

3. For a fixed exposure, increasing kVp while decreasing mA will primarily affect which aspect of the beam?
- A. Focal spot size increases.
  - B. Exposure time becomes zero.
  - C. Density more than quality.
  - D. Quality of the beam more than density.**

The key idea is distinguishing beam quality from density. Kilovoltage peak sets the energy of the X-ray photons: higher kVp makes the beam more penetrating, increasing its quality. The density on the image, however, mainly depends on how many photons reach the receptor, which is governed by mA and exposure time (the mAs product). If you raise kVp while lowering mA so that the overall exposure stays the same, the number of photons arriving at the receptor stays about the same (density stays roughly constant), but the photons have higher energy, so the beam's quality increases. The other options don't fit because focal spot size is a tube geometry issue and doesn't change with exposure settings, exposure time won't drop to zero merely by adjusting kVp and mA, and density is not increased relative to quality when exposure is fixed.

#### 4. ALARA stands for?

- A. As Long As Reasonably Achievable
- B. As Limited As Readily Achievable
- C. As Low As Reasonably Achievable**
- D. Always Low And Readable

ALARA stands for As Low As Reasonably Achievable. This safety principle guides dental radiography by aiming to minimize radiation exposure to patients and staff while still obtaining images of sufficient quality for diagnosis. In practice, it means using the smallest reasonable exposure, with proper technique, collimation, shielding, and equipment choices, and continually optimizing protocols to reduce dose without compromising diagnostic value. The other phrasings don't fit because they alter the meaning of the core idea—"low" is essential in ALARA, while the terms in the alternatives (long, limited, or readable) do not convey the intended balance between dose reduction and image quality.

#### 5. Overlapping of teeth is caused by what?

- A. Incorrect vertical angulation
- B. Incorrect horizontal angulation**
- C. Patient movement
- D. Poor film processing

The main idea is how the beam direction side-to-side affects how teeth appear on the film. Overlap occurs when the X-ray beam isn't directed horizontally across the teeth, so the central ray isn't aligned with the contact areas. If the horizontal angle is off, the image of one tooth can be projected over the neighboring tooth, making the contact areas indistinct. This is why correct horizontal angulation is essential for bitewing radiographs to clearly show adjacent teeth without shadowing one another. Vertical angulation mainly affects the length of the tooth images (elongation or foreshortening), patient movement produces blur, and poor film processing causes quality issues like poor contrast or density, not the overlap.

#### 6. X-rays are produced when electrons collide with the tungsten target.

- A. True**
- B. False
- C. Not produced by electrons
- D. Only gamma rays

X-ray production in a dental X-ray tube happens when high-energy electrons, emitted from the heated filament, are accelerated toward the tungsten target (anode) and collide with it. The energy from these collisions is released as X-ray photons, giving the imaging beam we rely on. Tungsten is used because its high atomic number and heat tolerance make collisions efficient at producing X-rays, through both Bremsstrahlung (electrons decelerating in the tungsten's electric field) and, for some interactions, characteristic radiation when inner-shell electrons are ejected. Importantly, the photons produced are X-rays, not gamma rays, since gamma rays come from nuclear processes rather than electron-target interactions. So, X-rays are indeed produced when electrons collide with the tungsten target.

**7. According to the notes, at kVp above 70, the specified measurement in millimeters is 2.5.**

- A. 1.5**
- B. 3.0**
- C. 4.0**
- D. 2.5**

When you study these notes, the idea is that some measurements are tied to the kVp setting. The rule here is that for kVp above 70, the specified measurement in millimeters is 2.5. So the best answer is the value that matches that rule: 2.5. The other numbers don't fit because they would correspond to different kVp ranges or different parts of the guidance. This kind of detail helps keep technique consistent across exposures when you're working with high kVp settings.

**8. What is the base of the X-ray film described as?**

- A. Glass**
- B. Metal**
- C. Paper**
- D. Plastic supporting material on which the emulsion is coated with an adhesive**

The base is the plastic supporting layer that holds the light-sensitive emulsion. In dental film, this base is typically a clear polyester plastic, chosen for being radiolucent, dimensionally stable, and flexible. An adhesive (or subbing) layer bonds the emulsion to the base, so the emulsion stays fixed through processing. Glass would add unwanted radiopacity and weight, metal would be even more radiopaque and stiff, and paper would swell and distort with moisture. The plastic base provides a stable, clear foundation that lets the image form properly while remaining easy to handle.

**9. Which statement about nucleus components is correct?**

- A. The Nucleus Contains Electrons and Protons**
- B. Protons and Neutrons Are Located in the Nucleus**
- C. Electrons Are Inside the Nucleus**
- D. Neutrons Have Negative Charge**

The nucleus is the dense, central region of an atom where the protons and neutrons (the nucleons) reside. Protons carry a positive charge, neutrons are electrically neutral, and electrons form a surrounding cloud held in orbit by the attraction to the positively charged nucleus. Because protons and neutrons are heavy, most of the atom's mass is concentrated in the nucleus, while electrons contribute very little mass and occupy spaces around the nucleus. The statement that best fits this arrangement is that protons and neutrons are located in the nucleus. The idea that electrons are inside the nucleus is incorrect because electrons exist outside in electron shells or orbitals. The notion that neutrons have a negative charge is also incorrect since neutrons are neutral.

**10. How should the bump side of film be oriented on a viewbox?**

- A. Bump facing up, towards ceiling**
- B. Bump facing down, towards floor**
- C. Flat side up**
- D. Flat side down**

The bump side is the emulsion side of the film, the sensitive layer that records the image. On a viewbox, orient the film with that bump side facing up toward the ceiling so the emulsion is toward the viewer. This positioning makes the radiograph easiest to read because you're looking through the emulsion against a uniform illuminated background, giving better contrast and detail. It also helps keep the emulsion away from the viewbox surface, reducing the chance of scratches or fingerprints. If the flat side were up, you'd be viewing the non-emulsion side, which can appear dull and reduce image clarity.

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

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

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