

# ADAA Intro to Basic Concepts in Dental 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

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- 1. Which solid-state detector is similar to the CCD but has built-in control functions, smaller pixel size, and lower power requirements?**
  - A. Complimentary metal oxide sensor (CMOS)**
  - B. Charge coupled device (CCD)**
  - C. Photodiode array**
  - D. Scintillator**
  
- 2. Which radiographic technique is best for detecting interproximal caries and assessing crestal bone levels?**
  - A. Bitewing radiographs**
  - B. Periapical radiographs**
  - C. Panoramic radiographs**
  - D. Occlusal radiographs**
  
- 3. Process in which an X-ray beam is reduced in intensity by passing through material; combination of absorption and scattering processes results in reduction of the beam intensity?**
  - A. Attenuation**
  - B. Absorption**
  - C. Artifact**
  - D. ALARA**
  
- 4. A full-mouth survey commonly consists of which combination of images?**
  - A. 14 periapical views and 4-6 bitewings**
  - B. 2 panoramic and 4 bitewings**
  - C. 8 periapical views**
  - D. 18 bitewings**
  
- 5. Device that detects and measures exposure to ionizing radiation is called what?**
  - A. Dosimeter**
  - B. Geiger counter**
  - C. Radiometer**
  - D. Calorimeter**

- 6. Which unit is mentioned as a dose unit in the context of occupational exposure?**
- A. rem**
  - B. sievert**
  - C. gray**
  - D. becquerel**
- 7. The nasal fossa is observed in which radiographic image?**
- A. Maxillary canine**
  - B. Lateral cephalometric**
  - C. Panoramic**
  - D. Mandibular molar**
- 8. What is the primary purpose of a thyroid collar in dental radiography?**
- A. Protect the clinician's neck**
  - B. Shield the patient's thyroid from scatter radiation**
  - C. Support the patient's head**
  - D. Improve image sharpness**
- 9. What forms the shape and size of the x-ray beam as it leaves the tube head?**
- A. Anode**
  - B. Filament**
  - C. Collimator**
  - D. Glass envelope**
- 10. The addition of energy to an atom by x-ray exposure that results in promoting an electron to a higher energy level without removing it is called what?**
- A. Excitation**
  - B. Ionization**
  - C. Absorption**
  - D. Scattering**

## Answers

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

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## **Explanations**

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**1. Which solid-state detector is similar to the CCD but has built-in control functions, smaller pixel size, and lower power requirements?**

**A. Complimentary metal oxide sensor (CMOS)**

**B. Charge coupled device (CCD)**

**C. Photodiode array**

**D. Scintillator**

The idea being tested is how solid-state detectors differ in how they read out the signal. CMOS sensors integrate amplification and other control electronics directly at the pixel level on the same chip, so each pixel can have its own electronics. This enables smaller pixel sizes and much lower power consumption because you don't need long charge-transfer paths or extensive external circuitry for every readout. The result is a detector that works like a CCD in producing an image but with built-in control, smaller pixels, and reduced power needs, which is ideal for compact dental sensors. A photodiode array lacks the same level of integrated, per-pixel electronics and readout capabilities on the chip, and a scintillator is just a light-producing material rather than a solid-state detector with integrated circuitry.

**2. Which radiographic technique is best for detecting interproximal caries and assessing crestal bone levels?**

**A. Bitewing radiographs**

**B. Periapical radiographs**

**C. Panoramic radiographs**

**D. Occlusal radiographs**

Bitewing radiographs are the view that best shows both the spaces between adjacent teeth and the level of the supporting bone. They are positioned to capture the crowns of the posterior teeth and the interproximal regions, plus a portion of the roots and the crestal bone between them. This combination makes them the most sensitive for detecting early caries that develop in contact areas and for assessing crestal bone levels over several teeth in one image. The images clearly show where the enamel-dentin interface is and whether there is demineralization between teeth, which is essential for proximal caries detection, while also revealing the height of the alveolar crest relative to the cemento-enamel junction. Periapical radiographs focus on a single tooth and its surrounding bone, which is great for pathology at the root tip or around a specific tooth but can miss or obscure proximal caries due to overlapping contacts. Panoramic radiographs cover the entire arch but at lower resolution with more distortion, making fine proximal caries and precise bone height measurements less reliable. Occlusal radiographs provide different perspectives of the arch or floor of the mouth and are not optimized for proximal caries or crestal bone assessment.

**3. Process in which an X-ray beam is reduced in intensity by passing through material; combination of absorption and scattering processes results in reduction of the beam intensity?**

**A. Attenuation**

**B. Absorption**

**C. Artifact**

**D. ALARA**

Attenuation is the process by which the X-ray beam loses intensity as it passes through matter. This reduction comes from two main interactions: absorption, where photons are removed from the beam by transferring energy to the atoms (often through the photoelectric effect), and scattering, where photons are redirected out of the original path (Compton scattering) or otherwise deflected. The combination of these events decreases the number of photons that reach the detector, which is what shapes the radiographic image. The extent of attenuation depends on tissue thickness, density, and atomic number, as well as the beam's energy. In contrast, ALARA refers to keeping dose low, and artifacts are image misrepresentations, so they aren't describing the physical process reducing beam intensity.

**4. A full-mouth survey commonly consists of which combination of images?**

**A. 14 periapical views and 4-6 bitewings**

**B. 2 panoramic and 4 bitewings**

**C. 8 periapical views**

**D. 18 bitewings**

Full-mouth survey aims to give a complete view of the dentition and surrounding bone. It uses two types of images: periapical radiographs to examine each tooth from crown to apex and the supporting bone, and bitewing radiographs to evaluate the interproximal surfaces and the height of the bone between teeth. The standard approach combines fourteen periapical views with a set of bitewings, typically four, though some protocols include up to six bitewings to extend coverage. This mix provides comprehensive information for caries detection, periodontal bone assessment, and identifying periapical pathology across the entire mouth. Other imaging options either rely on a panoramic image alone, which doesn't give the same detailed view of individual teeth, or omit bitewings, reducing the ability to spot interproximal caries and bone changes. So, the commonly used full-mouth survey consists of fourteen periapical views and four to six bitewings.

**5. Device that detects and measures exposure to ionizing radiation is called what?**

- A. Dosimeter**
- B. Geiger counter**
- C. Radiometer**
- D. Calorimeter**

The main idea here is monitoring cumulative exposure to ionizing radiation. A dosimeter is the device designed to detect and measure the amount of ionizing radiation a person has been exposed to, often recording the total dose and sometimes the dose rate over time. This makes it the best choice for tracking occupational radiation safety, with readings that can be reported in units like gray or sievert as appropriate for dose or dose equivalent. Think of why the others aren't as fitting: a Geiger counter measures how many radiation events occur and how fast, giving a rate of detection rather than an accumulated dose over time; it's great for surveys but not for long-term dose accounting. A radiometer gauges radiant energy across a range of wavelengths, not specifically the ionizing radiation exposure a person receives. A calorimeter measures energy by heating and is used mainly in physics experiments, not for monitoring human radiation dose in a clinical setting.

**6. Which unit is mentioned as a dose unit in the context of occupational exposure?**

- A. rem**
- B. sievert**
- C. gray**
- D. becquerel**

In occupational exposure, the important quantity is dose equivalent, which accounts for the type of radiation and the sensitivity of tissues to produce a biological effect. The rem has traditionally been used to express this dose equivalent in many occupational settings, and it remains familiar in exam contexts. The SI counterpart is the sievert, with 1 sievert equal to 100 rem, so both describe the same concept in different unit systems. The gray measures absorbed dose—energy deposited per unit mass—without weighting for radiation type, so it isn't the dose equivalent used for occupational exposure. The becquerel measures activity (decays per second) of a source, not the dose absorbed by tissue. Thus, rem is the unit specifically associated with dose equivalent in occupational exposure.

**7. The nasal fossa is observed in which radiographic image?**

- A. Maxillary canine**
- B. Lateral cephalometric**
- C. Panoramic**
- D. Mandibular molar**

The nasal fossa is the air-filled nasal cavity located above the maxillary teeth. On dental radiographs, you identify it by its appearance: a large radiolucent (dark) area bounded by a thin radiopaque line that marks the floor of the nasal cavity. This view—often used for the maxillary canine region—places the beam and film so the floor of the nasal cavity sits just above the canine root. As a result, the nasal fossa shows up clearly on this image, with the nasal floor providing a distinct radiopaque border. That projection makes it the most straightforward intraoral view to visualize the nasal fossa. Other views can show it as well (lateral cephalometric and panoramic), but they're not as precise for a single tooth region, and a mandibular molar image won't include the nasal cavity.

**8. What is the primary purpose of a thyroid collar in dental radiography?**

- A. Protect the clinician's neck**
- B. Shield the patient's thyroid from scatter radiation**
- C. Support the patient's head**
- D. Improve image sharpness**

The main idea here is protecting sensitive tissues from radiation. The thyroid collar's purpose is to shield the patient's thyroid gland from scatter radiation during dental radiography. The thyroid is highly radiosensitive, and photons scattered by the X-ray beam can reach the neck even if the thyroid isn't in the direct beam. A lead or lead-equivalent collar placed around the neck absorbs much of those scattered photons, reducing the radiation dose to the thyroid without noticeably affecting image quality when positioned properly. It isn't meant to protect the clinician, nor to support the head or improve sharpness. Its role is specifically to minimize thyroid exposure while allowing the radiograph to be taken accurately.

**9. What forms the shape and size of the x-ray beam as it leaves the tube head?**

- A. Anode**
- B. Filament**
- C. Collimator**
- D. Glass envelope**

Collimation controls the size and shape of the x-ray beam as it leaves the tube head. The collimator is the device inside the tube head that defines the beam's aperture, giving the exit field a specific shape (often rectangular or circular) and a limited size to match the image receptor. This shaping reduces patient exposure by limiting unnecessary radiation and helps ensure the beam covers only the area of interest on the receptor. The other components—filament (which produces electrons), anode (the target that generates x-rays when struck by electrons), and the glass envelope (which houses and protects the tube in vacuum)—do not determine the beam's geometry.

**10. The addition of energy to an atom by x-ray exposure that results in promoting an electron to a higher energy level without removing it is called what?**

- A. Excitation**
- B. Ionization**
- C. Absorption**
- D. Scattering**

Excitation is the process of moving an electron to a higher bound energy level without removing it from the atom. This happens when the energy delivered by the incoming photon matches the energy gap between two bound states, so the electron stays bound to the nucleus but occupies a higher orbital. The atom can later relax back to a lower state, emitting energy in the process. If the energy were sufficient to overcome the binding energy and eject the electron entirely, ionization would occur. Absorption is the general uptake of energy by the atom, but the defining feature here is that the electron remains bound in a higher level, which is exactly what excitation describes. Scattering describes deflection of the photon, not promotion of an electron within the atom.

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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://adaaintrotobasicindentalarad.examzify.com>**

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

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