

IMAGE MODALITIES PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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THE FULL VERSION STUDY GUIDE**

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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 disease characterized by low bone mass and structural deterioration of bone tissue?**
 - A. Osteoporosis
 - B. Osteopenia
 - C. Rickets
 - D. Osteomalacia

- 2. In CT scanning, images are oriented how relative to the long axis of the body?**
 - A. Transverse images (perpendicular to the long axis)
 - B. Sagittal
 - C. Coronal
 - D. Oblique

- 3. Bone densitometry measures bone mineral content and density at which locations?**
 - A. Specific skeletal sites of the whole body
 - B. Only the skull
 - C. Thigh and knee only
 - D. The jawbone only

- 4. Which outcome is bone densitometry used to help predict?**
 - A. Fracture risk
 - B. Blood pressure
 - C. Visual acuity
 - D. Liver function

- 5. Which of the following is also a unit of measurement for magnet strength?**
 - A. Gauss
 - B. Tesla
 - C. Oersted
 - D. Ampere-turns

6. In SPECT, _____ detectors are used to produce tomographic images
- A. 4-6
 - B. 5-7
 - C. 8-10
 - D. 1-3
7. In which decade did Godfrey Hounsfield demonstrate the CT process?
- A. 1970s
 - B. 1960s
 - C. 1980s
 - D. 1950s
8. Which action is part of the National Osteoporosis Foundation's bone health recommendations?
- A. Weight Bearing / Resistance Exercise
 - B. Avoid Smoking Entirely
 - C. Avoid Calcium Intake
 - D. Bed Rest
9. Isoechoic describes structures that have the same reflective properties as surrounding tissue.
- A. Higher reflectivity than surrounding tissue
 - B. No reflection
 - C. The same reflective properties as surrounding tissue
 - D. Greater attenuation than surrounding tissue
10. Color-flow Doppler studies can depict which of the following?
- A. Motion, Direction, and Velocity of blood flow through
 - B. Color variation of tissue
 - C. Electrical activity
 - D. Tissue density

Answers

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

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Explanations

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1. A disease characterized by low bone mass and structural deterioration of bone tissue?

A. Osteoporosis

B. Osteopenia

C. Rickets

D. Osteomalacia

This item tests understanding of osteoporosis, a disease characterized by low bone mass and deterioration of bone tissue. In osteoporosis, bone mineral density is reduced and the microarchitecture of bone becomes progressively disrupted, making bones fragile and prone to fractures with little or no trauma. Osteopenia describes reduced bone mass without the same level of architectural breakdown, so it isn't as strongly linked to fragility. Rickets affects growing bones in children due to vitamin D deficiency and results in defective mineralization and deformities, not primarily a loss of bone mass. Osteomalacia is the adult form of defective mineralization, causing bone pain and fractures, but the central issue is mineralization rather than the structural deterioration seen in osteoporosis.

2. In CT scanning, images are oriented how relative to the long axis of the body?

A. Transverse images (perpendicular to the long axis)

B. Sagittal

C. Coronal

D. Oblique

In CT imaging, the standard orientation is transverse (axial) images, which are perpendicular to the body's long axis. The long axis runs head to toe, so a plane that cuts across it yields cross sectional slices of the body. This perpendicular, cross sectional view is the default in CT because it provides consistent anatomy and aligns with how the scanner acquires data by rotating around the patient. While data can be reformatted into coronal or sagittal views later, the primary acquired images are transverse.

3. Bone densitometry measures bone mineral content and density at which locations?

A. Specific skeletal sites of the whole body

B. Only the skull

C. Thigh and knee only

D. The jawbone only

Bone densitometry quantifies bone mineral content and density at defined skeletal sites rather than giving a single value for the entire skeleton. In practice, measurements are taken at sites most predictive of fracture risk and representative of different bone types—most commonly the lumbar spine and proximal hip—because these areas are where osteoporosis-related fractures occur most often and where density changes correlate well with fracture risk. Some devices can also measure at the forearm or provide a total-body assessment, but densities of the skull or jaw are not used for standard osteoporosis evaluation since they don't track fracture risk in the common sites. So, densitometry targets specific skeletal sites across the body rather than measuring everywhere at once.

4. Which outcome is bone densitometry used to help predict?

- A. Fracture risk**
- B. Blood pressure
- C. Visual acuity
- D. Liver function

Bone densitometry focuses on bone mineral density to gauge bone strength and the likelihood of fractures. When density is low, bones are more prone to breaking with normal or minor trauma, so the test is used to predict future fracture risk and guide osteoporosis treatment to reduce that risk. It doesn't measure cardiovascular status, vision, or liver function, which are determined by entirely different tests.

5. Which of the following is also a unit of measurement for magnet strength?

- A. Gauss**
- B. Tesla
- C. Oersted
- D. Ampere-turns

Magnet strength is described by magnetic flux density, B. In the CGS system, B is measured in gauss, with 1 gauss equal to 10^{-4} tesla, so gauss directly quantifies how strong a magnetic field is in that system. The tesla serves the same role in the SI system, so it also measures the field's strength, but the question targets the CGS unit. Oersted measures magnetic field intensity H in CGS, which is a related but different quantity, and ampere-turns quantify magnetomotive force rather than the field itself. So gauss is the direct unit for magnet strength in this CGS context.

6. In SPECT, _____ detectors are used to produce tomographic images

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

Tomographic imaging in SPECT relies on collecting gamma-ray projections from different directions as the detector(s) rotate around the patient. Even a single rotating detector can gather enough angular views to reconstruct cross-sectional images. Many systems use two or three detectors to capture multiple angles at once and speed up acquisition, but a large number of detectors isn't required to produce tomography. The essential idea is sampling from multiple angles to enable reconstruction, not having a high count of detectors.

7. In which decade did Godfrey Hounsfield demonstrate the CT process?

A. 1970s

B. 1960s

C. 1980s

D. 1950s

The question tests your knowledge of when CT imaging was first demonstrated. Godfrey Hounsfield's notable CT demonstration happened in the early 1970s—specifically, the first successful CT brain scan was performed in 1971 at EMI in London. This places the demonstration squarely in the 1970s, with rapid development and clinical adoption following in that decade (and the Nobel Prize awarded in 1979 for the work). The other decades don't fit because the actual demonstration didn't occur then.

8. Which action is part of the National Osteoporosis Foundation's bone health recommendations?

A. Weight Bearing / Resistance Exercise

B. Avoid Smoking Entirely

C. Avoid Calcium Intake

D. Bed Rest

Engaging in weight-bearing and resistance exercise directly supports bone strength. When bones are loaded through activities like walking, jogging, dancing, or lifting weights, the cells responsible for bone formation respond by building stronger bone and improving density. This type of activity also enhances muscle strength and balance, which helps prevent falls and fractures—core goals of the National Osteoporosis Foundation's guidance on bone health. In addition to this, the Foundation promotes other good habits for bones, such as not smoking and ensuring adequate calcium and vitamin D intake, while avoiding extended bed rest. However, among the given options, weight-bearing and resistance exercise is the action most clearly aligned with the Foundation's recommended approach to maintaining bone health.

9. Isoechoic describes structures that have the same reflective properties as surrounding tissue.

A. Higher reflectivity than surrounding tissue

B. No reflection

C. The same reflective properties as surrounding tissue

D. Greater attenuation than surrounding tissue

In ultrasound imaging, brightness on the screen reflects how much sound is echoed back by tissue, which depends on differences in acoustic impedance. When a structure has the same reflectivity as the surrounding tissue, it produces echoes similar to its neighbors and thus appears with the same shade as the surrounding area. That is isoechoic. Because the echoes are similar, the structure blends in and its borders are hard to distinguish. If something reflected more sound than its surroundings, it would look brighter (hyperechoic). If it reflected less or produced almost no echoes, it would appear darker or completely black (anechoic). Greater attenuation describes how the signal weakens as it travels through tissue, which can cause shadowing behind a structure, but it's about signal loss with depth rather than having identical reflectivity to nearby tissue.

10. Color-flow Doppler studies can depict which of the following?

A. Motion, Direction, and Velocity of blood flow through

B. Color variation of tissue

C. Electrical activity

D. Tissue density

Color-flow Doppler visualizes moving blood by superimposing a color map onto the grayscale image. The color overlay shows that blood is moving (motion), indicates which direction the blood is flowing relative to the transducer (toward or away), and encodes how fast that flow is (velocity) through changes in hue and brightness. This combination lets you see flow through vessels, across valves, and identify abnormal patterns like stenosis or regurgitation. It doesn't measure tissue color changes, electrical activity, or tissue density, which are assessed by other imaging or diagnostic methods.

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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.

Or visit your dedicated course page for more study tools and resources:

<https://imagemodalities.examzify.com>

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

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