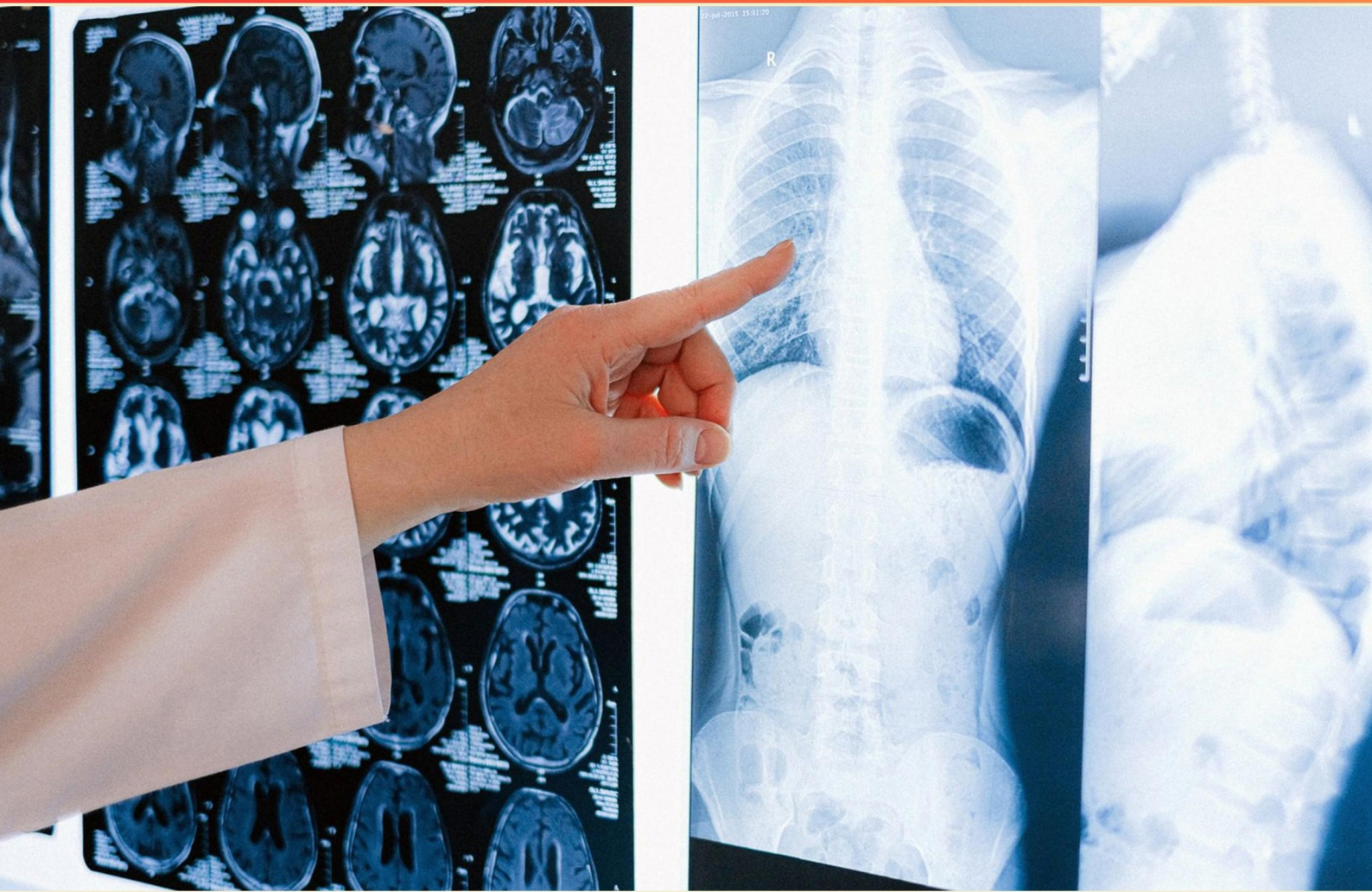


NMTCB COMPUTED TOMOGRAPHY (CT) BOARD PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR
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 Stanford type A dissecting aneurysm primarily affects which part of the aorta?**
 - A. Descending aorta
 - B. Aortic arch
 - C. Ascending aorta
 - D. Abdominal aorta
- 2. In which anatomical location are the kidneys found?**
 - A. Intraperitoneum
 - B. Retroperitoneum
 - C. Pelvic cavity
 - D. Pericardial space
- 3. Which of the following is not a parenteral route of administration?**
 - A. Intravenous
 - B. Intramuscular
 - C. Subcutaneous
 - D. Oral
- 4. What is the typical range for creatinine levels in the blood?**
 - A. 0.2-1.0 mg / dL
 - B. 0.5-1.5 mg / dL
 - C. 1.0-2.0 mg / dL
 - D. 1.5-2.5 mg / dL
- 5. Which filter is primarily implemented to improve the quality of MDCT images while reducing patient dose?**
 - A. Bow-tie filter
 - B. High-pass filter
 - C. Low-pass filter
 - D. Gaussian filter

- 6. What type of tumors are usually characterized as hypervascular in the context of contrast enhancement?**
- A. Hypovascular tumors
 - B. Benign tumors
 - C. Malignant tumors
 - D. Neurogenic tumors
- 7. Which of the following is used for the assessment of T-wave on an EKG?**
- A. Atrial systole
 - B. Ventricular systole
 - C. Diastole
 - D. Heart rate
- 8. What is an example of an iso-osmolar contrast media?**
- A. Iopamidol
 - B. Iodixanol (Visipaque)
 - C. Ioversol
 - D. Iohexol
- 9. In which kidney contrast enhancement phase are the renal cortex and renal veins observed?**
- A. Corticomedullary phase
 - B. Nephrographic phase
 - C. Excretory phase
 - D. Delayed phase
- 10. Which of the following contrasts is often associated with less risk of contrast-induced nephropathy?**
- A. Ioversol
 - B. Iopamidol
 - C. Iodixanol (Visipaque)
 - D. Iohexol

Answers

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

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Explanations

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1. A Stanford type A dissecting aneurysm primarily affects which part of the aorta?

- A. Descending aorta
- B. Aortic arch
- C. Ascending aorta**
- D. Abdominal aorta

A Stanford type A dissecting aneurysm primarily affects the ascending aorta. This type involves a dissection that originates in the ascending aorta and may extend towards the aortic arch and beyond. The classification of aortic dissections into Stanford type A and type B is based on the location of the tear in the aorta. In type A dissections, the critical involvement of the ascending aorta poses a higher risk of complications such as cardiac tamponade and aortic rupture, making it a more acute and life-threatening condition. In contrast, Stanford type B dissections generally originate in the descending aorta, affecting areas beyond the arch. Understanding these distinctions is crucial for both diagnosis and management of aortic pathologies.

2. In which anatomical location are the kidneys found?

- A. Intraperitoneum
- B. Retroperitoneum**
- C. Pelvic cavity
- D. Pericardial space

The kidneys are located in the retroperitoneum, which is the area of the abdomen that lies behind the peritoneum, the membrane that lines the abdominal cavity. This positioning allows for the protection of the kidneys while still enabling them to have critical vascular and nervous connections to the body. In terms of anatomy, the retroperitoneal space includes not only the kidneys but also structures such as the ureters, abdominal aorta, and inferior vena cava. This area is distinct from the intraperitoneal space, where organs such as the stomach and liver reside, which are surrounded by peritoneum. The pelvic cavity is lower than the retroperitoneum and does not contain the kidneys; rather, it houses organs such as the bladder and reproductive organs. The pericardial space is located in the thoracic cavity, surrounding the heart, and is unrelated to the location of the kidneys. Therefore, identifying the kidneys in the retroperitoneum is essential for understanding their anatomical relationship and function within the body's organ systems.

3. Which of the following is not a parenteral route of administration?

- A. Intravenous
- B. Intramuscular
- C. Subcutaneous
- D. Oral**

The choice indicating the oral route is not a parenteral method of administration because parenteral routes refer specifically to methods that bypass the gastrointestinal tract. Parenteral administration involves delivering medication directly into the body through injections, which include intravenous, intramuscular, and subcutaneous routes. These routes allow for rapid absorption and immediate effect, which is essential for certain medical conditions or treatments where oral administration may be ineffective or delayed. In contrast, the oral route involves passing medications through the digestive system, where they are absorbed in the gastrointestinal tract. This significant difference in the mechanism of action clearly identifies the oral route as the one that does not fall within the definition of parenteral administration.

4. What is the typical range for creatinine levels in the blood?

- A. 0.2-1.0 mg / dL
- B. 0.5-1.5 mg / dL**
- C. 1.0-2.0 mg / dL
- D. 1.5-2.5 mg / dL

The typical range for creatinine levels in the blood is significant for evaluating kidney function. In healthy adults, normal serum creatinine levels typically fall between 0.5 and 1.5 mg/dL. This range can vary slightly depending on factors like muscle mass, age, and gender, but the majority of clinical references agree on this range for general assessments. Creatinine is a byproduct of muscle metabolism and is usually produced at a fairly constant rate. The kidneys filter creatinine out of the blood, and the levels of creatinine can indicate how well the kidneys are functioning. When interpreting these values, elevated levels can suggest impaired kidney function, while lower levels usually indicate good kidney health. Recognizing and understanding the typical creatinine levels helps healthcare professionals make informed decisions related to renal function, which is crucial in fields such as radiology, particularly when considering imaging procedures that may require contrast agents.

5. Which filter is primarily implemented to improve the quality of MDCT images while reducing patient dose?

- A. Bow-tie filter**
- B. High-pass filter
- C. Low-pass filter
- D. Gaussian filter

The bow-tie filter is designed specifically for use in multi-detector computed tomography (MDCT) to enhance image quality and minimize patient dose. This filter is shaped in a fashion that varies in thickness, being thicker at the edges and thinner in the center. This unique design is aimed at compensating for the beam profile of the X-ray source, which tends to be more intense at the center and less so at the edges. By using the bow-tie filter, the radiation dose can be evenly distributed, helping to provide high-quality images while lowering exposure to the patient. In addition to improving image quality, the bow-tie filter effectively reduces the likelihood of artifacts by enhancing contrast resolution and maintaining the uniformity of the image brightness. The specific contour of the filter allows it to optimize the areas of interest, making it especially useful in clinical settings where dose optimization is crucial. While other filters like high-pass, low-pass, and Gaussian filters serve purposes such as enhancing edges or reducing noise, they do not specifically address the dual goals of image quality improvement and dose reduction to the same extent as the bow-tie filter in MDCT.

6. What type of tumors are usually characterized as hypervascular in the context of contrast enhancement?

- A. Hypovascular tumors
- B. Benign tumors
- C. Malignant tumors**
- D. Neurogenic tumors

In the context of contrast enhancement during imaging studies, malignant tumors are frequently described as hypervascular. This increased vascularity is due to the rapid and abnormal growth of cancerous cells, which often leads to the formation of new blood vessels—a process known as angiogenesis. These new blood vessels are essential for supplying the growing tumor with the necessary nutrients and oxygen, leading to a more pronounced uptake of contrast agents during imaging. Additionally, hypervascularity can be a characteristic feature of certain malignant tumors that enhances their visibility on CT scans. This is in contrast to other types of tumors, such as hypovascular tumors, which show reduced blood flow and consequently exhibit less enhancement. Benign tumors can also show variability in vascularity, but they typically do not demonstrate the aggressive angiogenic characteristics associated with malignant tumors. Neurogenic tumors, while they can be hypervascular, are not exclusively characterized as such, as their vascularity can vary widely depending on their nature and location. Thus, malignant tumors stand out in this context due to their consistent association with hypervascularity and significant contrast enhancement during imaging.

7. Which of the following is used for the assessment of T-wave on an EKG?

- A. Atrial systole
- B. Ventricular systole
- C. Diastole**
- D. Heart rate

The correct choice reflects an understanding of the cardiac cycle and the specific timing associated with the T-wave on an electrocardiogram (EKG). The T-wave represents ventricular repolarization, which occurs during the diastolic phase of the cardiac cycle. During diastole, the ventricles relax and refill with blood, and the electrical activity reflected by the T-wave corresponds to the recovery of the ventricles after contraction. In contrast, during atrial systole and ventricular systole, the heart is either contracting (systole) or actively pumping blood, making it less relevant for assessing the status of the T-wave. Heart rate is an important aspect of overall cardiac function but does not specifically pertain to the T-wave itself. Thus, diastole is the correct phase of the cardiac cycle for assessing the T-wave on an EKG.

8. What is an example of an iso-osmolar contrast media?

- A. Iopamidol
- B. Iodixanol (Visipaque)**
- C. Ioversol
- D. Iohexol

Iodixanol, marketed under the brand name Visipaque, is recognized as an iso-osmolar contrast media because it has an osmolality comparable to that of human plasma. This property minimizes the risk of osmotic reactions, making it a safer choice for patients, particularly those with compromised renal function or at higher risk for contrast-induced nephropathy. Iso-osmolar contrast agents are designed to reduce the potential for adverse reactions when administered, as they create less osmotic stress on cells, which can lead to better patient tolerability during procedures such as computed tomography (CT) scans. Compared to hypo-osmolar and hyper-osmolar contrast media, iso-osmolar agents like iodixanol maintain a balance that helps to ensure patient safety and comfort. The other contrast agents mentioned either fall into the hypo-osmolar or hyper-osmolar categories. For instance, Iopamidol, Ioversol, and Iohexol generally have lower osmolality than plasma, which can sometimes lead to discomfort or reactions during administration, particularly in sensitive populations.

9. In which kidney contrast enhancement phase are the renal cortex and renal veins observed?

- A. Corticomedullary phase**
- B. Nephrographic phase
- C. Excretory phase
- D. Delayed phase

In the corticomedullary phase, the renal cortex and renal veins are observed due to the timing of contrast agent enhancement. This phase occurs shortly after the intravenous administration of the contrast agent, typically around 30 to 70 seconds post-injection. During this time, the contrast material primarily enhances the renal cortex due to its functional blood supply, leading to a clear differentiation between the cortex and the medulla, while also outlining the renal veins. This timing is critical for imaging studies aimed at assessing renal function and structure, as it provides valuable information about perfusion and vascularization. In contrast, other phases such as the nephrographic phase primarily show the entire nephron, including the renal parenchyma, while the excretory phase emphasizes aspects related to urine production and excretion, and the delayed phase focuses on the kidneys' filtration capability over a longer duration post-contrast administration.

10. Which of the following contrasts is often associated with less risk of contrast-induced nephropathy?

- A. Ioversol
- B. Iopamidol
- C. Iodixanol (Visipaque)
- D. Iohexol

Iodixanol, marketed under the brand name Visipaque, is an iso-osmolar contrast agent that is noted for having a lower incidence of contrast-induced nephropathy (CIN) compared to other types of contrast media. The iso-osmolar property helps to reduce the risk of osmotic nephrotoxicity, making it safer for patients who may be at risk of renal impairment. This is particularly important in patients with pre-existing kidney conditions or those undergoing procedures where renal function may be compromised. The lower viscosity of iodixanol also allows for easier injection and may enhance the quality of imaging studies, further highlighting its advantages. In contrast, other agents might have varying osmolarity levels which can potentially increase the risk of CIN, especially in susceptible populations. Therefore, the safe profile of iodixanol in patients with renal concerns makes it a preferred choice in many clinical situations, contributing to its association with reduced risk of nephropathy related to contrast use.

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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://nmtcbctboard.examzify.com>

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

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