

RADIATION THERAPY 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. What range of kilovolts is typical for the operation of orthovoltage machines?**
 - A. 10-40 KV
 - B. 100 KV
 - C. 100-200 KV
 - D. 150-500 KV
- 2. What term describes the volume percentage of red blood cells in whole blood per 100 mL?**
 - A. Erythrocytes
 - B. Leukocytes
 - C. Hematocrit
 - D. Hemoglobin
- 3. What is the standard unit of exposure in air?**
 - A. Roentgen
 - B. Planck
 - C. Curie
 - D. REM
- 4. What is the term for nutrition that bypasses the gastrointestinal tract and introduces nutrients directly into the veins?**
 - A. Enteral
 - B. Parenteral
 - C. Gastrostomy
 - D. Nasogastrostomy
- 5. Which response is typically generated by the immune system in reaction to cancer?**
 - A. Antibody production
 - B. Cellular apoptosis
 - C. Enhanced inflammatory response
 - D. All of the above

6. What is the half-life of Gold-198?

- A. 2.7 days
- B. 17 days
- C. 30 years
- D. 74 days

7. Which type of skin cancer has the worst prognosis?

- A. Basal cell
- B. Squamous cell
- C. Bowen's disease
- D. Melanoma

8. If the lower mantle is treated in a female patient with Hodgkin's disease, gonadal protection may consist of:

- A. Deliver treatment using posterior ports
- B. Place patient in prone position
- C. Place lead apron over the ovaries during treatment
- D. Move ovaries away from treatment sight with surgery

9. A reduction in overall treatment time without change in total dose is known as:

- A. Hypofractionation
- B. Accelerated fractionation
- C. Protraction
- D. Elapsed day reduction

10. Fibrosarcoma is a form of cancer originating from which type of tissue?

- A. Soft tissue
- B. Bone
- C. Nervous tissue
- D. Muscle tissue

Answers

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

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Explanations

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1. What range of kilovolts is typical for the operation of orthovoltage machines?

- A. 10-40 KV
- B. 100 KV
- C. 100-200 KV
- D. 150-500 KV**

Orthovoltage machines are designed to operate within a specific range of kilovoltage to effectively deliver radiation therapy treatments, particularly for superficial tumors. Typically, these machines function within the range of 150 to 500 kilovolts. This range is significant because it allows the machines to penetrate various tissue depths while still ensuring adequate dose distribution to the targeted areas. Using kilovoltage in this range contributes to the treatment's effectiveness, particularly for tumors that are not located deep within the body. The higher energy levels within the specified range also enable better sparing of surrounding healthy tissues, making the treatment safer and more focused on the tumor itself. In contrast, the other options fall outside the operational characteristics of orthovoltage machines, with options representing either lower ranges or single values that do not encompass the functionality required. Specifically, lower energy ranges would not suffice for penetrating treatment depths, and therefore do not align with the intended use of orthovoltage techniques.

2. What term describes the volume percentage of red blood cells in whole blood per 100 mL?

- A. Erythrocytes
- B. Leukocytes
- C. Hematocrit**
- D. Hemoglobin

The term that describes the volume percentage of red blood cells in whole blood per 100 mL is known as hematocrit. This measurement is crucial in evaluating an individual's blood health, particularly in relation to anemia or polycythemia. Hematocrit indicates how much of the total blood volume is comprised of red blood cells, which are essential for transporting oxygen throughout the body. Erythrocytes refer to the red blood cells themselves rather than a measurement or volume percentage. Leukocytes are white blood cells, which play a role in the immune response but do not contribute to the hematocrit value. Hemoglobin is a protein found within red blood cells that carries oxygen; while closely related to red blood cell function, it is not a measure of the volume percentage of these cells in the blood. This distinction is essential for understanding blood composition and the physiological roles of its components.

3. What is the standard unit of exposure in air?

A. Roentgen

B. Planck

C. Curie

D. REM

The standard unit of exposure in air is the Roentgen, which measures the amount of ionization produced in air by X-rays or gamma radiation. It specifically quantifies the radiation intensity in terms of the charge produced in a given volume of air. This unit is particularly useful in radiation protection and dosimetry because it correlates well with the biological effects of X-rays and gamma rays on living tissues. In contrast, the other units mentioned serve different purposes in the field of radiation. The Planck constant is a fundamental constant that relates energy and frequency in quantum mechanics but is not a measure of radiation exposure. The Curie is a unit that measures radioactivity, indicating the rate of decay of radioactive material, while the REM (Roentgen Equivalent Man) is a unit used to measure the biological effect of ionizing radiation on human tissue, reflecting not just the energy deposited but also the type of radiation involved. Thus, the Roentgen's specific focus on exposure in air makes it the correct choice for measuring radiation intensity in this context.

4. What is the term for nutrition that bypasses the gastrointestinal tract and introduces nutrients directly into the veins?

A. Enteral

B. Parenteral

C. Gastrostomy

D. Nasogastrostomy

The term for nutrition that bypasses the gastrointestinal tract and introduces nutrients directly into the veins is parenteral nutrition. This method is utilized when a patient is unable to ingest food orally or has a non-functional gastrointestinal system. By delivering nutrients directly into the bloodstream, parenteral nutrition provides essential macros and micros, ensuring that the body receives the necessary caloric intake and nutritional support required for recovery or maintenance of health. Enteral nutrition, on the other hand, involves supplying nutrients directly to the gastrointestinal tract, typically through feeding tubes that access the stomach or intestines. Gastrostomy refers to a specific surgical procedure where an opening is created in the stomach for feeding, while nasogastrostomy involves placing a tube through the nose into the stomach. Both of these techniques are forms of enteral nutrition rather than parenteral, as they utilize the digestive system rather than bypassing it entirely.

5. Which response is typically generated by the immune system in reaction to cancer?

- A. Antibody production
- B. Cellular apoptosis
- C. Enhanced inflammatory response
- D. All of the above**

The immune system plays a multifaceted role when responding to cancer. Each of the options reflects different aspects of immune activity. Antibody production is a key response where B lymphocytes (B cells) produce antibodies against specific tumor antigens. These antibodies help in recognizing and targeting cancer cells, marking them for destruction by other immune cells. Cellular apoptosis, or programmed cell death, can occur in response to the detection of abnormal cells, including cancer cells. This process is essential for eliminating potentially dangerous cells and is part of the body's effort to maintain homeostasis and prevent tumor progression. An enhanced inflammatory response is also part of the immune reaction to cancer. Inflammation can create a microenvironment that is hostile to tumor growth. Immune cells are recruited to the site of tumorigenesis, increasing the likelihood of cancer cell recognition and elimination. Given that the immune response in cancer involves all of these mechanisms—antibody production, the triggering of apoptosis, and an enhanced inflammatory response—the most comprehensive answer is that all of these responses are typically generated by the immune system in reaction to cancer.

6. What is the half-life of Gold-198?

- A. 2.7 days**
- B. 17 days
- C. 30 years
- D. 74 days

The half-life of Gold-198 is 2.7 days, making it significant in the context of radiation therapy, particularly in brachytherapy for cancer treatment. Gold-198 is a radioisotope that emits beta particles and gamma radiation, which can be used to target tumors while minimizing exposure to surrounding healthy tissues. Understanding the half-life is essential because it influences the duration of radiation exposure and its therapeutic effectiveness. A shorter half-life means that the isotope will decay quickly, providing a concentrated dose of radiation in a brief period which can be ideal for certain types of tumors. In practical terms, this allows medical professionals to plan the administration and timing of treatments more effectively. In contrast, isotopes with longer half-lives, such as 17 days or 74 days, would not provide the rapid decay characteristics that can be beneficial for specific treatment regimens where a more immediate therapeutic effect is desired. Therefore, knowing that Gold-198 has a half-life of 2.7 days is crucial for its application and the planning of radiation therapy protocols.

7. Which type of skin cancer has the worst prognosis?

- A. Basal cell
- B. Squamous cell
- C. Bowen's disease

D. Melanoma

The type of skin cancer with the worst prognosis is melanoma. This is primarily due to its aggressive nature and the propensity for early metastasis compared to other skin cancers. Melanoma arises from melanocytes, the pigment-producing cells in the skin, and is less common than basal cell carcinoma and squamous cell carcinoma, but it is significantly more dangerous. When diagnosed early, melanoma can often be treated effectively, but as it progresses, it can quickly spread to other parts of the body, including vital organs, making treatment more difficult and reducing survival rates. The potential for metastasis is a key factor that affects the prognosis, as the presence of cancer cells in lymph nodes or distant organs can complicate treatment and lead to poorer outcomes. In contrast, basal cell carcinoma and squamous cell carcinoma are generally less aggressive and have high cure rates when detected early. Although they can cause significant local destruction and can be serious if left untreated, they are much less likely to metastasize compared to melanoma. Bowen's disease, which is a form of squamous cell carcinoma in situ, is typically confined to the epidermis and has an excellent prognosis with proper treatment. Therefore, the characteristics and behavior of melanoma make it the type of skin cancer with the worst

8. If the lower mantle is treated in a female patient with Hodgkin's disease, gonadal protection may consist of:

- A. Deliver treatment using posterior ports
- B. Place patient in prone position
- C. Place lead apron over the ovaries during treatment

D. Move ovaries away from treatment sight with surgery

When treating the lower mantle in a female patient with Hodgkin's disease, protecting the gonads is crucial to minimize the risk of radiation-induced damage and preserve ovarian function. Surgical relocation of the ovaries away from the treatment field is a proactive strategy that directly addresses the concern of radiation exposure. By surgically repositioning the ovaries, they are effectively moved out of the direct path of the radiation beams, thereby significantly reducing the likelihood of dose exposure and the associated risks, such as infertility or long-term endocrine effects. This intervention is particularly effective because it provides a physical barrier against the radiation, ensuring that the ovaries are not inadvertently exposed during the treatment planning and delivery phases. The decision to undertake such a procedure is based on considerations of the patient's overall health, age, and the specific treatment regimen being planned. In contrast, other methods, such as using posterior treatment ports or positioning the patient in a prone position, may not adequately protect the gonads, as they can still allow for incidental radiation exposure to the ovaries. Similarly, while a lead apron could provide some degree of protection, it may not be sufficient if the ovaries are within the treatment field or close to it. Thus, moving the ovaries surgically stands out as the most

9. A reduction in overall treatment time without change in total dose is known as:

- A. Hypofractionation
- B. Accelerated fractionation**
- C. Protraction
- D. Elapsed day reduction

The correct answer refers to a treatment approach where the total dose of radiation remains the same, but the overall treatment time is reduced by increasing the frequency of treatments. This method is known as accelerated fractionation. In accelerated fractionation, patients receive additional doses of radiation in a given timeframe, which can lead to a more effective treatment outcome by minimizing the time cancer cells have to recover between doses. This strategy is particularly beneficial for certain types of tumors where rapid treatment can improve local control and potentially enhance patient prognosis. The other treatment options mentioned serve different purposes. Hypofractionation involves delivering a higher dose per session over fewer sessions but is not specifically about reducing the overall treatment time while maintaining the same total dose. Protraction refers to the method of spreading the total dose over a longer period, which is the opposite of what is being asked. Elapsed day reduction is not a standard term used in radiation therapy to describe a treatment strategy, particularly one focused on maintaining total dose while decreasing duration.

10. Fibrosarcoma is a form of cancer originating from which type of tissue?

- A. Soft tissue**
- B. Bone
- C. Nervous tissue
- D. Muscle tissue

Fibrosarcoma is indeed categorized as a type of cancer that arises from soft tissue. This malignancy originates specifically from the fibrous connective tissue, which is responsible for providing support to various structures in the body. Soft tissue sarcomas, including fibrosarcoma, are indicative of tumors that form in non-epithelial tissues, such as fat, muscle, nerves, blood vessels, and the surrounding supportive tissue. By contrast, the other tissue types listed are associated with different kinds of cancers. Bone tumors, for instance, originate from osseous tissue, while tumors arising from nervous tissue would be classified distinctly, such as gliomas or neuroblastomas. Muscle tissue can give rise to sarcomas such as rhabdomyosarcoma, but these are different from fibrosarcomas. Understanding the origin of fibrosarcoma being specifically from soft tissue helps differentiate it from other cancer forms.

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://radiationtherapyboard.examzify.com>

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

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