

ONTARIO POWER GENERATION (OPG) ORANGE 1 PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 defines a Radioactive Work Area (RWA)?**
 - A. An area with no contamination
 - B. An area where radioactive work is performed and airborne activity ≥ 1 MPCa and any loose contamination
 - C. An area for rest breaks
 - D. An area with only sealed sources
- 2. What is a primary reason for requiring authorization before entering a radioactive area?**
 - A. To ensure proper training and authorization from the crew leader and RPC supervision
 - B. To schedule a meeting
 - C. To track cash expenses
 - D. To monitor weather
- 3. In a balanced three-phase system, how is real power P related to apparent power S and power factor PF ?**
 - A. $P = S \times PF$
 - B. $P = S / PF$
 - C. $P = \sqrt{S^2 - PF^2}$
 - D. $P = PF \times S^2$
- 4. What approval is required before entering a radioactive area?**
 - A. Authorization from the radiography crew leader, and direct supervision of an RPC
 - B. Authorization from the radiography crew leader only
 - C. Direct supervision of an RPC only
 - D. No approval needed
- 5. In a pipe of constant cross-sectional area, if the velocity of a liquid doubles, what happens to the volumetric flow rate?**
 - A. It stays the same.
 - B. It doubles.
 - C. It halves.
 - D. It increases by a factor of four.

- 6. How many meters are in 5 kilometers?**
- A. 500 meters
 - B. 5,000 meters
 - C. 50,000 meters
 - D. 5,000 kilometers
- 7. What is the maximum radiation exposure to an unborn child?**
- A. 10 rem
 - B. 1 rem
 - C. 100 rem
 - D. 0 rem
- 8. Chronic radiation exposure is best described as continuous or prolonged exposure to ionizing radiation over an extended period of time. Which statement best describes this concept?**
- A. It refers to continuous or prolonged exposure to ionizing radiation over an extended period of time.
 - B. It refers to a single exposure.
 - C. It refers to exposure only to ultraviolet radiation.
 - D. It refers to exposure to non-ionizing radiation.
- 9. Which are routes by which radioactive material can enter the body?**
- A. Ingestion only
 - B. Absorption, Ingestion, Open wound, Inhalation
 - C. Inhalation only
 - D. Open wound only
- 10. Which body parts are affected by beta radiation?**
- A. Lungs
 - B. Digestive tract
 - C. Skin, eyes and extremities
 - D. Whole body

Answers

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

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Explanations

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1. What defines a Radioactive Work Area (RWA)?

- A. An area with no contamination
- B. An area where radioactive work is performed and airborne activity ≥ 1 MPCa and any loose contamination**
- C. An area for rest breaks
- D. An area with only sealed sources

Radioactive Work Area is a space where radioactive work is being done and there is potential for radioactive material to become airborne and to contaminate surfaces. The key threshold is 1 MPCa, which means the airborne radioactivity in that area is at least the maximum permissible concentration for air. If the area has airborne activity at or above this level and there is any loose contamination on surfaces, it becomes an RWA so stricter controls, access restrictions, monitoring, and decontamination procedures apply. This setup protects workers from elevated inhalation doses and prevents the spread of contamination. Areas with no radioactive work, or areas that contain only sealed sources (which do not release contamination), do not meet the criteria for an RWA. An area used only for breaks is not involved in handling radioactive material and would not be designated as an RWA.

2. What is a primary reason for requiring authorization before entering a radioactive area?

- A. To ensure proper training and authorization from the crew leader and RPC supervision**
- B. To schedule a meeting
- C. To track cash expenses
- D. To monitor weather

In radiological work, access to a radioactive area is tightly controlled to protect people from exposure and contamination. Requiring authorization ensures the person entering has received the necessary training and is cleared to work there by the crew leader and the Radiation Protection staff. This check confirms you understand the hazards, know the required controls (time, distance, shielding, dosimetry, and PPE), and are ready to follow the documented procedures. It also means the entry is tied to a specific task with appropriate supervision, so the work stays within approved bounds and dose and contamination risks are managed. The other options don't address safety or exposure control—they relate to activities like meetings, financials, or weather, which aren't relevant to entering a radioactive area.

3. In a balanced three-phase system, how is real power P related to apparent power S and power factor PF?

- A. $P = S \times PF$**
- B. $P = S / PF$
- C. $P = \sqrt{S^2 - PF^2}$
- D. $P = PF \times S^2$

In an AC system, real power is the portion of the apparent power that actually does useful work, while apparent power is the product of voltage and current regardless of phase. The power factor tells you how much of that apparent power is being converted to real work, and it is defined as $PF = P / S$. So the real power is $P = S \times PF$. In a balanced three-phase setup, $S = \sqrt{3} V_L I_L$ and $P = \sqrt{3} V_L I_L \cos \phi$ with $PF = \cos \phi$, which leads to $P = S \cos \phi = S \times PF$. This is the straightforward relationship that ties together real power, apparent power, and power factor.

4. What approval is required before entering a radioactive area?

- A. Authorization from the radiography crew leader, and direct supervision of an RPC**
- B. Authorization from the radiography crew leader only
- C. Direct supervision of an RPC only
- D. No approval needed

Access to a radioactive area must be tightly controlled to protect workers from radiation exposure. The necessary entry approval combines both authorization and supervision. The radiography crew leader is the person who authorizes a worker to enter, confirming they have the proper training, qualifications, and assignment. The direct supervision by the RPC (Radiation Protection Coordinator) ensures ongoing safety oversight while inside the area, enforcing procedures, monitoring dosimetry, and ensuring that all controls—shielding, PPE, access logs, and work procedures—are correctly followed. Without either element, there's a risk of entering without clearance or without immediate protection and guidance, increasing exposure risk.

5. In a pipe of constant cross-sectional area, if the velocity of a liquid doubles, what happens to the volumetric flow rate?

- A. It stays the same.
- B. It doubles.**
- C. It halves.
- D. It increases by a factor of four.

Volumetric flow rate is the amount of liquid that passes a point per unit time, and it's the product of cross-sectional area and velocity: $Q = A \times v$. With a pipe of constant cross-section, the area A stays the same, so changing velocity directly scales Q . If the velocity doubles, you push the same amount of area twice as fast, so Q becomes twice its original value. The other scenarios would require different changes in velocity: staying the same would mean velocity doesn't change Q , halving would halve Q , and increasing velocity fourfold would yield a fourfold increase in Q .

6. How many meters are in 5 kilometers?

- A. 500 meters
- B. 5,000 meters**
- C. 50,000 meters
- D. 5,000 kilometers

Kilometers to meters is a straightforward scaling by 1,000, since the prefix kilo- means 1,000. To convert, multiply by 1,000. Five kilometers becomes $5 \times 1,000 = 5,000$ meters. So there are 5,000 meters in 5 kilometers. If you tried 500 meters, that would be half a kilometer; 50,000 meters would be fifty kilometers; 5,000 kilometers would be 5,000,000 meters.

7. What is the maximum radiation exposure to an unborn child?

- A. 10 rem
- B. 1 rem
- C. 100 rem
- D. 0 rem

The main idea here is fetal dose limits in radiological safety. When a worker is pregnant, the dose that the unborn child can receive is treated separately from the worker's own dose, and steps are taken to keep that fetal dose as low as reasonably achievable. In this context, the maximum permitted dose to the fetus over the entire pregnancy is set as 10 rem. That means, through shielding, reassignment, and careful operation in radiation areas, efforts are made to ensure the fetus does not accumulate more than 10 rem (100 mSv) during the pregnancy. Understanding this helps you see why 10 rem is presented as the upper bound. It's higher than what you'd aim for day to day, but it's the limit that, if reached, would require additional protective actions to stay within the allowed exposure. The idea is to minimize exposure as much as possible, keeping the actual fetal dose well below this limit whenever feasible. The other numbers are either lower than the cap or much higher than the stated limit, which is why they aren't used as the maximum in this scenario.

8. Chronic radiation exposure is best described as continuous or prolonged exposure to ionizing radiation over an extended period of time. Which statement best describes this concept?

- A. It refers to continuous or prolonged exposure to ionizing radiation over an extended period of time.
- B. It refers to a single exposure.
- C. It refers to exposure only to ultraviolet radiation.
- D. It refers to exposure to non-ionizing radiation.

Chronic exposure means a dose of radiation is delivered over a long period at a low rate, so the total amount accumulates over time. In radiation safety, this is contrasted with an acute exposure, which is a single, high-dose event. The statement is correct because it specifically points to continuous or prolonged exposure to ionizing radiation—the type that includes X-rays, gamma rays, and other particles that can cause tissue damage with cumulative effects. It's about ionizing radiation, not non-ionizing kinds like most ultraviolet light, and not about a one-time exposure. So it captures both the duration (continuous or prolonged) and the nature of the radiation (ionizing) that defines chronic exposure.

9. Which are routes by which radioactive material can enter the body?

- A. Ingestion only
- B. Absorption, Ingestion, Open wound, Inhalation
- C. Inhalation only
- D. Open wound only

Radioactive materials can enter the body through several pathways, not just one. They can be inhaled as airborne particles, ingested via contaminated hands or food, absorbed through the skin, or enter through an open wound where the skin is breached. Because all these routes are possible depending on the material and circumstances, the comprehensive answer includes all four routes. Protective controls address inhalation, ingestion, absorption, and wounds to reduce exposure across each pathway.

10. Which body parts are affected by beta radiation?

- A. Lungs
- B. Digestive tract
- C. Skin, eyes and extremities
- D. Whole body

Beta radiation consists of fast-moving electrons and has only shallow penetration into matter. Because of this, external exposure mainly affects tissues at the surface of the body. The skin and superficial tissues can be damaged, and exposed parts like the eyes and extremities (hands, feet) are at risk of burns or dermatitis from beta exposure. Lungs or the digestive tract would not be affected by external beta radiation unless the radioactive material is inhaled or ingested, bringing beta particles inside the body. Whole-body effects are more typical of radiation that deeply penetrates, such as gamma rays. So the areas most affected by beta radiation exposure are the skin, eyes, and extremities.

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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://opgorange1.examzify.com>

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

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