OHIO GENERAL X-RAY MACHINE OPERATOR (GXMO) PRACTICE EXAM (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

1. Increasing kVp, field size, and part thickness will result in

A. Decreased scatter fog

B. No change in scatter

C. Increased image sharpness

D. Increased scatter fog

2. Increasing SID will result in?

A. Higher patient dose

B. Lower patient dose

C. No change

D. Increased image noise

3. When applying the 2 kVp per cm rule, you are adjusting

A. Kilovoltage (kVp) only

B. mA only

C. Exposure time only

D. Distance only

4. Grid Frequency is defined as

A. Number of lead strips per inch

B. Distance to which grid lines are focused

C. Height of lead strips divided by distance between strips

D. SID at which grid should be used

5. Which cells would exhibit the greatest radiation effects according to Bergonie and Tribondeau?

A. Neurons

B. Cells with greatest reproductive activity and longest mitotic phases

C. Mature bone cells

D. Highly differentiated cells

6. Cumulative dose limit for 50 year old radiation worker?

A. 5 rem

B. 0 rem

C. 500 rem

D. 50 rem

7. Which system is primarily responsible for delivering fresh chemicals to the processor at the correct rate?

A. Transport system

B. Replenishment system

C. Dryer

D. Fixer

8. Average annual dose from background radiation (in rem)?

A. 0.30 rem

B. 0.90 rem

C. 3.60 rem

D. 0.360 rem

9. Long-term somatic effects include which of the following?

A. Erythema

B. Cataractogenesis

C. Life span shortening

D. Carcinogenesis, cataractogenesis, life span shortening, leukemia

10. Using a higher screen speed and decreased mAs will result in what?

A. Decreased quantum mottle

B. Increased quantum mottle

C. No change in image quality

D. Decreased patient dose

Answers

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

Explanations

1. Increasing kVp, field size, and part thickness will result in

A. Decreased scatter fog

B. No change in scatter

C. Increased image sharpness

D. Increased scatter fog

Increasing the beam energy, irradiated area, and patient thickness all boost the amount of scatter radiation produced and reaching the image receptor. Higher kVp makes photons more energetic, which shifts interactions toward Compton scatter; more scatter produced means more of it arrives at the detector as fog, lowering image contrast. A larger field irradiates more tissue, giving more opportunities for scatter events and thus more scatter reaching the detector. Greater part thickness lengthens the photon's path through tissue, increasing the likelihood of scatter as photons traverse the material. The combined effect is increased scatter fog on the image, which degrades contrast and does not improve sharpness.

2. Increasing SID will result in?

A. Higher patient dose

B. Lower patient dose

C. No change

D. Increased image noise

Increasing SID means the X-ray source is farther from the patient. The beam spreads out more as distance grows, and according to the inverse square law, the intensity at the patient drops with the square of the distance. With the same exposure settings (mA and exposure time), less radiation reaches the patient, so the entrance skin dose is reduced. The image receptor would also receive less exposure, which is why technique adjustments are often made to maintain image brightness, but the straightforward effect on patient dose is a decrease.

3. When applying the 2 kVp per cm rule, you are adjusting

A. Kilovoltage (kVp) only

B. mA only

C. Exposure time only

D. Distance only

The main idea is using kilovoltage to compensate for changes in how much the body part attenuates the X-ray beam. When a part is thicker, it attenuates more; increasing kVp by about 2 per additional centimeter raises the beam's penetrating power so the image receptor still receives enough exposure. This rule specifically targets changing kilovoltage, not adjusting the tube current (mA), exposure time, or distance. Adjusting mA or time would change the number of photons and the overall exposure, while distance changes intensity via the inverse-square law; but the 2 kVp per cm guideline is about tweaking kVp to maintain consistent image brightness and adequate penetration.

4. Grid Frequency is defined as

A. Number of lead strips per inch

B. Distance to which grid lines are focused

C. Height of lead strips divided by distance between strips

D. SID at which grid should be used

Grid frequency is the number of lead strips in a radiographic grid per unit length, typically expressed as lines per inch (lpi). This tells you how many opaque lines appear in one inch of the grid. More strips per inch means thinner, more closely spaced lead lines, which can improve scatter absorption and reduce grid-line visibility, though it can make the grid more sensitive to misalignment or improper exposure. The other descriptions refer to different grid characteristics: how the grid lines are focused relates to grid focus distance, the height of the lead strips divided by the space between them is the grid ratio, and the SID at which a grid should be used is about placement distance, not the number of strips.

5. Which cells would exhibit the greatest radiation effects according to Bergonie and Tribondeau?

A. Neurons

B. Cells with greatest reproductive activity and longest mitotic phases

C. Mature bone cells

D. Highly differentiated cells

Radiosensitivity rises with how actively a cell divides and how undifferentiated it is. Bergonie and Tribondeau showed that cells with high reproductive activity and a long potential to divide (mitotic future) are most susceptible to radiation damage. The description of cells with the greatest reproductive activity and the longest mitotic phases fits this pattern, so they would show the greatest radiation effects. Neurons are largely non-dividing and highly differentiated, so they're relatively resistant. Mature bone cells are differentiated and not rapidly dividing, also reducing sensitivity. Highly differentiated cells in general have lower radiosensitivity than actively dividing, less differentiated cells.

6. Cumulative dose limit for 50 year old radiation worker?

A. 5 rem

B. 0 rem

C. 500 rem

D. 50 rem

Cumulative dose limit is the total radiation dose a worker may receive over their entire career. The standard guideline ties this lifetime limit to age: lifetime limit equals age in years multiplied by 5 rem (50 mSv). So for a 50-year-old, the typical cumulative limit would be 50 × 5 rem = 250 rem. The annual limit is 5 rem per year, but the cumulative limit grows with age. Therefore, 50 rem would not match the usual calculation for a 50-year-old unless a nonstandard rule is being used.

7. Which system is primarily responsible for delivering fresh chemicals to the processor at the correct rate?

A. Transport system

B. Replenishment system

C. Dryer

D. Fixer

Maintaining the right chemical strength in the processor is achieved by the replenishment system. It adds fresh developer and fixer at calculated rates to compensate for chemical loss and carryover, keeping concentrations within specification as films move through the processor. This consistency is what preserves uniform image density and overall processing quality. The transport system simply moves films, the dryer handles drying, and the fixer is one of the processing chemicals—not the mechanism that controls how much fresh chemical is added. So the replenishment system is the part that ensures fresh chemicals are delivered at the correct rate.

8. Average annual dose from background radiation (in rem)?

A. 0.30 rem

B. 0.90 rem

C. 3.60 rem

D. 0.360 rem

Background radiation is the natural radiation people receive each year from cosmic rays, the earth, and internal sources. The typical annual dose worldwide is about 3 millisieverts, which is approximately 0.3 rem, with many estimates ranging up to around 0.4 rem. The value 0.360 rem sits right in that common range, around 3.6 mSv per year, making it the best match for average annual background exposure. The other options are outside this usual range: 0.30 rem is a bit low for many estimates, 0.90 rem is several times higher than normal background, and 3.60 rem would be far above natural background levels.

9. Long-term somatic effects include which of the following?

A. Erythema

B. Cataractogenesis

C. Life span shortening

D. Carcinogenesis, cataractogenesis, life span shortening, leukemia

Long-term somatic effects are late injuries to the body that can develop months to years after radiation exposure. Among these, cancers (carcinogenesis and leukemia) are stochastic effects with risk increasing with dose and time. Cataractogenesis is a well-established late effect when the eyes or head receive exposure, with a latency period before vision changes occur. Life span shortening is another possible late consequence reflecting overall damage from radiation over time. Erythema, by contrast, is an early skin reaction that appears soon after exposure, not a long-term effect. Because long-term somatic effects encompass carcinogenesis, cataractogenesis, life span shortening, and leukemia, the option listing all four is the best fit.

10. Using a higher screen speed and decreased mAs will result in what?

A. Decreased quantum mottle

B. Increased quantum mottle

C. No change in image quality

D. Decreased patient dose

When you use a higher screen speed, the imaging system is more sensitive and requires less exposure to reach the same brightness. But using less mAs means fewer photons reach the image receptor. Photons arrive randomly, and with fewer photons the statistical variations become more noticeable, producing grainier, noisier images—quantum mottle. That's why the result is increased quantum mottle. Note: while higher screen speed with lower mAs does reduce patient dose, the trade-off is more image noise, not a loss of image quality in every case, but specifically more quantum mottle on the radiograph.

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://ohiogxmo.examzify.com

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