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36	A	B	C	D	E
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38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

American Society for Nondestructive Testing, Inc. (ASNT)

RA

IRRSP Radioactive Materials (RAM)

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for American Society for Nondestructive Testing, Inc. (ASNT) RA , each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, RA
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

SINGLE CHOICE

Which of the following is NOT one of the three basic methods used to minimize personnel exposure to radiation in industrial radiography (ALARA principles)?

- ☐ A Time
- ☐ B Distance
- ☐ C Shielding
- ☒ D Filtration

ANSWER D

WHY The three basic ALARA methods for reducing exposure are time, distance, and shielding. Filtration relates to beam quality, not exposure reduction technique.

QUESTION 2

SINGLE CHOICE

If the dose rate at 2 feet from a source is 80 mR/hr, what is the approximate dose rate at 8 feet from the same source?

- ☐ A 20 mR/hr
- ☐ B 10 mR/hr
- ☒ C 5 mR/hr
- ☐ D 40 mR/hr

ANSWER C

WHY Using the inverse square law: $I_1(d_1)^2 = I_2(d_2)^2$. $80 \times 2^2 = I_2 \times 8^2$, so $I_2 = 320/64 = 5$ mR/hr.

QUESTION 3 SINGLE CHOICE

Which radioactive isotope commonly used in industrial gamma radiography has a half-life of approximately 74 days?

- ☐ A Cobalt-60
- ☒ B Iridium-192
- ☐ C Cesium-137
- ☐ D Ytterbium-169

ANSWER B

WHY Iridium-192 has a half-life of approximately 74 days and is one of the most commonly used gamma sources in industrial radiography.

QUESTION 4 SINGLE CHOICE

Under NRC and Agreement State regulations, who is required to hold a specific license to possess and use radioactive materials for industrial radiography?

- ☐ A Any individual technician performing radiography
- ☒ B The company or organization performing radiographic operations
- ☐ C Only the Radiation Safety Officer personally
- ☐ D The manufacturer of the sealed source

ANSWER B

WHY NRC and Agreement State regulations require the company/organization conducting radiographic operations to hold a specific license authorizing possession and use of radioactive materials.

QUESTION 5 MULTIPLE CHOICE

Which of the following are commonly used personnel dosimetry devices in industrial radiography operations? (Choose two.)

- ☒ **A** Direct reading dosimeter (pocket dosimeter)
- ☒ **B** Thermoluminescent dosimeter (TLD) or optically stimulated luminescence (OSL) badge
- ☐ **C** Survey meter
- ☐ **D** Collimator

ANSWER A • B

WHY Direct reading dosimeters and TLD/OSL badges are worn by personnel to monitor accumulated dose. Survey meters measure ambient dose rate rather than personal exposure, and collimators shape the beam.

QUESTION 6 SINGLE CHOICE

According to typical NRC/Agreement State regulations, what is the maximum permissible dose rate at the boundary of a restricted area during radiographic operations to allow it to be treated as unrestricted?

- ☒ **A** 2 mR/hr
- ☐ **B** 5 mR/hr
- ☐ **C** 100 mR/hr
- ☐ **D** 500 mR/hr

ANSWER A

WHY Boundaries must be established such that the dose rate does not exceed 2 mR/hr in unrestricted areas during radiographic operations, per typical NRC/Agreement State requirements.

QUESTION 7

TRUE FALSE

A radiation survey must be performed after each radiographic exposure to confirm the source has fully returned to its shielded position.

☒ **A** True☐ B False**ANSWER A**

WHY Radiographers are required to survey the exposure device and source guide tube after each exposure to verify the source has returned to the fully shielded position before approaching or leaving the area.

QUESTION 8

SINGLE CHOICE

If a radiographic source becomes stuck outside its shielded position and cannot be retrieved by normal means, what is the FIRST action the radiographer should take?

☐ A Attempt to manually pull the source cable with bare hands☒ **B** Secure and restrict access to the area, then notify the Radiation Safety Officer☐ C Leave the source in place and end the work shift without reporting☐ D Cut the source cable to remove the exposure device**ANSWER B**

WHY The immediate priority is to secure the area to prevent unauthorized exposure and notify the Radiation Safety Officer, who will implement emergency procedures. Physical handling of the source without proper tools/shielding risks severe overexposure.

QUESTION 9

MULTIPLE CHOICE

Which of the following are standard components or safety features of a typical gamma radiography exposure device (camera)? (Choose two.)

- ☒ **A** Source guide tube (drive cable)
- ☒ **B** Lock and key-controlled locking mechanism
- ☐ **C** Beam filtration housing for X-ray tube heating
- ☐ **D** Anode rotation assembly

ANSWER A • B

WHY Gamma exposure devices include a source guide tube through which the source travels and a lock/key mechanism to secure the source in the shielded position. Anode rotation and X-ray tube filtration relate to X-ray generators, not sealed source devices.