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

PRACTICE QUESTIONS

American Board of Imaging Informatics (ABII)

RAD

Radiography

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for American Board of Imaging Informatics (ABII) RAD , 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, RAD
- the question number
- the email address on your order

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

QUESTION 1

SINGLE CHOICE

If a focused grid is placed upside down on the image receptor, what is the resulting appearance of the radiographic image?

- ☐ A Uniform loss of exposure across the entire image
- ☒ B Normal exposure in the center with severe cutoff on the peripheral edges
- ☐ C Normal exposure on one side of the image with severe cutoff on the opposite side
- ☐ D Increased exposure on the peripheral edges with a loss of exposure in the center

ANSWER B

WHY A focused grid has lead strips that are angled to match the divergence of the X-ray beam. If placed upside down, the lead strips will align with the beam only at the central ray, resulting in normal exposure in the center but severe grid cutoff (absorption of primary photons) on both lateral margins/peripheral edges.

QUESTION 2

SINGLE CHOICE

According to the National Council on Radiation Protection and Measurements (NCRP) Report No. 116, what is the annual occupational effective dose limit for whole-body exposure?

- ☐ A 1 mSv
- ☐ B 5 mSv
- ☒ C 50 mSv
- ☐ D 150 mSv

ANSWER C

WHY NCRP Report No. 116 limits the annual occupational effective dose to 50 mSv (5 rem) to minimize the risk of stochastic somatic and genetic effects.

QUESTION 3

SINGLE CHOICE

Which bony landmark corresponds to the level of the T7 spinous process and is commonly used for centering a posterior-anterior (PA) chest radiograph?

- ☐ A Jugular notch
- ☐ B Xiphoid process
- ☒ C Inferior angle of the scapula
- ☐ D Vertebra prominens

ANSWER C

WHY The inferior angle of the scapula corresponds to the T7 level, making it a reliable bony landmark for centering the central ray on a PA chest radiograph. Vertebra prominens corresponds to C7, the jugular notch to T2-T3, and the xiphoid process to T9-T10.

QUESTION 4

SINGLE CHOICE

In digital radiography, which of the following factors is the primary determinant of spatial resolution?

- ☒ A Matrix size and pixel pitch
- ☐ B Look-up table (LUT)
- ☐ C Bit depth
- ☐ D Window width

ANSWER A

WHY Spatial resolution in digital systems is limited by the size of the pixel. A larger matrix size with smaller pixels (decreased pixel pitch) results in higher spatial resolution. Bit depth determines contrast resolution, while LUT and window width control image contrast display.

QUESTION 5

SINGLE CHOICE

A patient undergoing an intravenous urogram (IVU) suddenly experiences bronchospasm, laryngeal edema, and severe dyspnea after contrast administration. How should this reaction be classified, and what is the standard first-line medication?

- ☐ A Mild reaction; administer diphenhydramine
- ☐ B Moderate reaction; administer atropine
- ☒ C Severe reaction; administer epinephrine
- ☐ D Vasovagal reaction; administer nitroglycerin

ANSWER C

WHY Laryngeal edema and bronchospasm are life-threatening signs of a severe anaphylactic reaction. Epinephrine is the primary drug administered to reverse severe bronchospasm and cardiovascular collapse.

QUESTION 6

SINGLE CHOICE

Which interaction between X-ray photons and matter is primarily responsible for producing scatter radiation that contributes to occupational dose and degrades image contrast?

- ☐ A Photoelectric effect
- ☒ B Compton scattering
- ☐ C Coherent (classical) scattering
- ☐ D Pair production

ANSWER B

WHY Compton scattering involves an incoming photon interacting with an outer-shell electron, ejecting it and scattering the lower-energy photon in a new direction. This is the main source of scatter radiation in diagnostic radiology, affecting both image quality and occupational dose.

QUESTION 7

SINGLE CHOICE

An initial lateral lumbar spine radiograph is obtained using 80 kVp and 40 mAs. To reduce patient dose while maintaining approximately the same image receptor exposure, which of the following technique adjustments should be made?

- ☐ A Decrease to 68 kVp and increase to 80 mAs
- ☒ B Increase to 92 kVp and decrease to 20 mAs
- ☐ C Maintain 80 kVp and decrease to 20 mAs
- ☐ D Increase to 92 kVp and maintain 40 mAs

ANSWER B

WHY According to the 15% rule, increasing the kVp by 15% ($80 \text{ kVp} \times 1.15 = 92 \text{ kVp}$) and cutting the mAs in half ($40 \text{ mAs} / 2 = 20 \text{ mAs}$) will maintain the same receptor exposure while reducing the dose to the patient due to the higher penetrability of the beam.

QUESTION 8

SINGLE CHOICE

For a mortise projection of the ankle, how many degrees and in what direction must the patient's foot and ankle be rotated?

- ☒ A 15 to 20 degrees medially (internally)
- ☐ B 15 to 20 degrees laterally (externally)
- ☐ C 45 degrees medially (internally)
- ☐ D 45 degrees laterally (externally)

ANSWER A

WHY A mortise projection requires internal rotation of the entire leg and foot 15 to 20 degrees until the intermalleolar line is parallel to the image receptor. This demonstrates the entire ankle mortise joint space open.

QUESTION 9

MULTIPLE CHOICE

When performing a mobile (portable) radiographic examination on a patient in protective (reverse) isolation, two technologists are typically required. Which tasks are correctly assigned to the "clean" technologist and the "dirty" technologist? (Choose two.)

- ☒ **A** The "clean" technologist makes patient contact and positions the image receptor.
- ☐ **B** The "dirty" technologist makes patient contact and positions the image receptor.
- ☐ **C** The "clean" technologist operates the radiographic equipment controls.
- ☒ **D** The "dirty" technologist operates the radiographic equipment controls.

ANSWER A - D

WHY In protective (reverse) isolation, the patient is highly vulnerable to infection. To protect the patient, the "clean" technologist has contact only with the patient and sterile/clean sheets/receptors. The "dirty" technologist touches only the potentially contaminated mobile unit and controls, never touching the patient.