# ***30 MCQs:*** Quality Control in Radiography

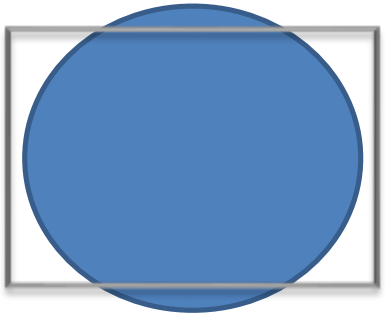
**1. What is the acceptable limit for collimator misalignment in quality control testing?**

A. 1% of SID

B. 2% of SID

C. 5% of SID

D. 10% of SID



Correct answer: B. 2% of SID

According to quality control guidelines, collimator alignment must not exceed 2% of the Source-to-Image Distance (SID).

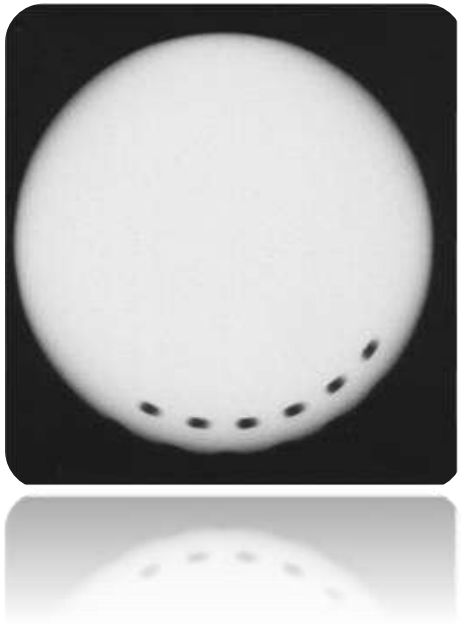
2. **The spinning top test is used to evaluate:**

A. Focal spot size

B. Timer accuracy

C. Beam alignment

D. kVp calibration



Correct answer: : B. Timer accuracy

A spinning top test is used for single-phase generators to check timer accuracy through the number of dots produced on the image.

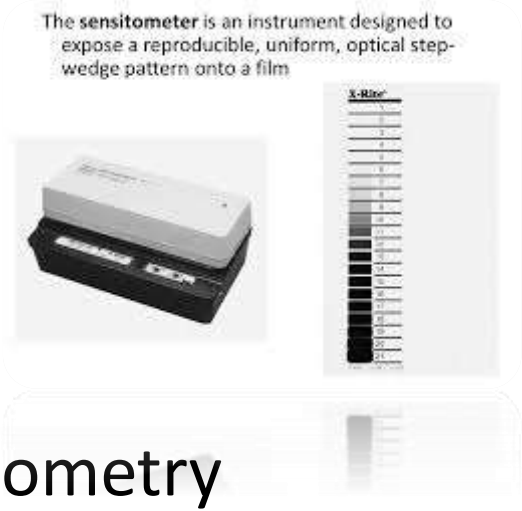
3. **Which of the following QC tests is performed daily?**

A. Focal spot size measurement

B. Filtration test

C. Processor sensitometry

D. Reproducibility of exposure




Correct answer: C. Processor sensitometry

Processor sensitometry is a daily QC check that ensures consistent film development using a step wedge or sensitometer.

Red Tech

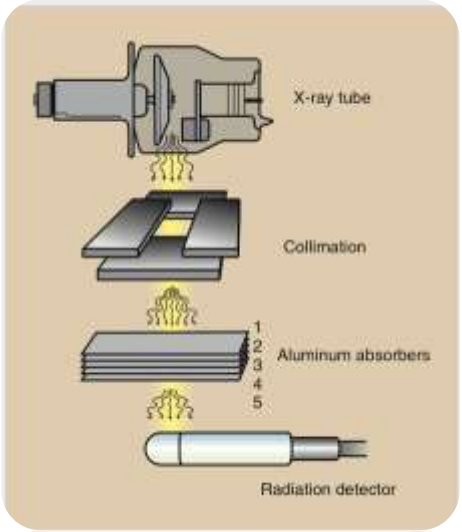
4. **Half-value layer (HVL) testing is essential to evaluate:**

A. Exposure reproducibility

B. Beam filtration

C. Image density

D. Grid performance




Correct answer: B. Beam filtration

HVL measures the thickness of a material that reduces the x-ray beam intensity by half and is used to assess filtration adequacy.

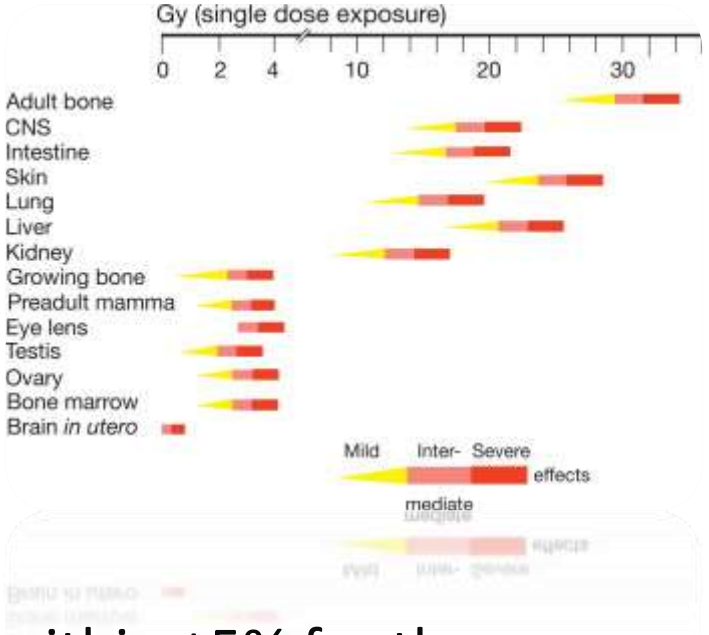
5. **What is the tolerance limit for reproducibility of exposure?**

A. ±2%

B. ±5%

C. ±10%

D. ±20%




Correct answer: B. ±5%

Exposure reproducibility should be within ±5% for the same technical settings on repeated exposures.

6. **Which test is used to evaluate focal spot size?**

A. Pinhole camera

B. Star test pattern

C. Slit camera

D. All of the above

Correct answer: D. All of the above

7. **The kVp accuracy test tolerance is typically within:**

A. ±2%

B. ±5%

C. ±10%

D. ±15%

Correct answer: B. ±5%

kVp accuracy should be within ±5% of the indicated value for QC compliance.

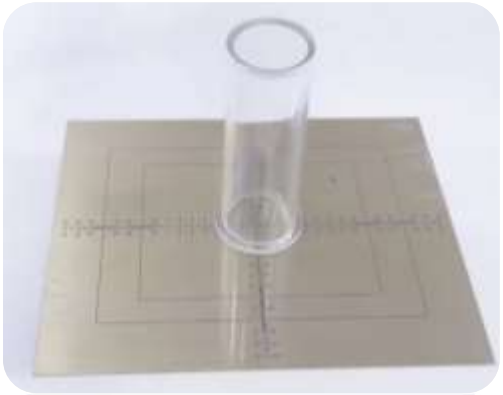
8. **Which device is used to evaluate beam alignment?**

A. Step wedge

B. Coin test

C. Beam alignment test tool

D. Line pair phantom



Correct answer: C. Beam alignment test tool

Beam alignment test tools check congruence between the light field and radiation field.

9. **An increase in base + fog value on a sensitometric strip indicates:**

A. Poor contrast

B. Increased developer activity

C. Fogged film

D. High exposure latitude

Correct answer: C. Fogged film

A rise in base + fog means unintended film darkening, usually due to improper handling or processing.

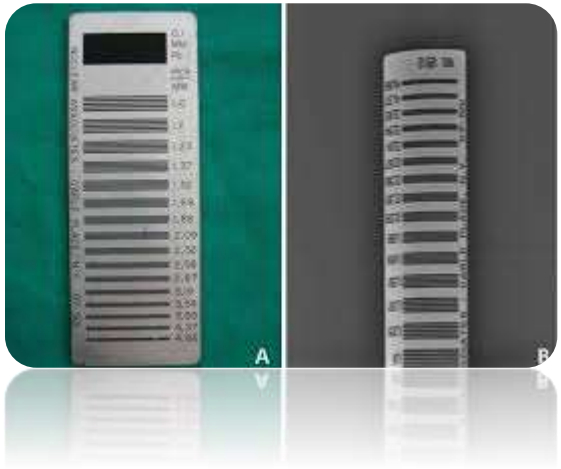
10. **Line pair phantom is used to assess:**

A. Beam quality

B. Spatial resolution

C. Density reproducibility

D. Timer accuracy




Correct answer: B. Spatial resolution

Line pair resolution phantoms assess the ability of the system to display small, high-contrast objects.

11. **Which QC test is done weekly for film-screen systems?**

A. Film-screen contact test

B. Timer accuracy

C. Focal spot measurement

D. kVp calibration

Correct answer: A. Film-screen contact test

A wire mesh or screen contact test is conducted weekly to check for screen deterioration or warping.

12. **The densitometer in QC is used for measuring:**

A. Radiation dose

B. Light field accuracy

C. Optical density

D. mAs output

Correct answer: C. Optical density

A densitometer measures optical density on processed films and is vital in processor QC.

13. **Which is a key indicator for processing system quality?**

A. Contrast index

B. Speed index

C. Base + fog

D. All of the above

Correct answer: D. All of the above

These three parameters reflect chemical and mechanical efficiency in film processors.

14. **To test exposure linearity, one evaluates:**

A. kVp vs. density

B. mAs vs. output

C. SID vs. magnification

D. Filtration vs. HVL

Correct answer: B. mAs vs. output

Exposure linearity ensures that output increases proportionally with mAs changes.

15. **Grid uniformity testing evaluates:**

A. Grid lines

B. Field size

C. Exposure index

D. Beam centering

Correct answer: A. Grid lines

Uniformity testing ensures consistent exposure across the grid without artifacts or cutoff.

16. **A sudden drop in contrast index may indicate:**

A. Overexposure

B. Developer exhaustion

C. Misalignment

D. Filter failure

Correct answer: B. Developer exhaustion

Poor development chemistry can reduce contrast in processed films.

17. **Acceptable variance in optical density between exposures in reproducibility testing is:**

A. 0.02

B. 0.05

C. 0.10

D. 0.20

Correct answer: B. 0.05

OD differences should not exceed 0.05 to pass reproducibility standards.

18. **For digital systems, QC evaluation of bit depth is related to:**

A. Matrix size

B. Noise

C. Contrast resolution

D. Field uniformity

Correct answer: C. Contrast resolution

Bit depth affects grayscale and is directly related to contrast resolution.

19. **The primary goal of quality control is to:**

A. Reduce patient complaints

B. Increase radiologist performance

C. Ensure consistent image quality

D. Increase exposure times

Correct answer: C. Ensure consistent image quality

QC aims to optimize diagnostic image quality while ensuring equipment efficiency and safety.

20. **The term ‘sensitometry’ is associated with:**

A. Measuring exposure index

B. Evaluating film response

C. Measuring filtration

D. Testing beam centering

Correct answer: B. Evaluating film response

Sensitometry evaluates film response to exposure and development processes.

21. **Which of the following is tested using a step wedge?**

A. Spatial resolution

B. Contrast

C. HVL

D. Penumbra

Correct answer: B. Contrast

Step wedge helps assess film contrast through a range of exposures.

22. **The test for mA linearity checks that:**

A. Output is consistent with varying time

B. Output is proportional to mA

C. Exposure time is constant

D. SID is accurate

Correct answer: B. Output is proportional to mA

Linearity testing ensures the tube output changes linearly with mA settings.

23. **An automatic exposure control (AEC) QC test involves:**

A. Varying focal spots

B. Changing patient thickness

C. Using step wedges

D. Measuring dose rate

Correct answer: B. Changing patient thickness

AEC response to different phantom thicknesses is evaluated during QC checks.

24. **In a digital system, the photodiode used in detectors is typically made of:**

A. Tungsten

B. Selenium

C. Silicon

D. Cesium

Correct answer: C. Silicon

Amorphous silicon is widely used in flat-panel detectors for digital radiography QC.

25. **Which test is used to evaluate viewbox luminance?**

A. Densitometer

B. Photometer

C. Ion chamber

D. Dosimeter

Correct answer: B. Photometer

A photometer measures the brightness of the viewbox to ensure proper film evaluation.

26. **In digital imaging, "ghosting artifacts" may occur due to:**

A. Inadequate erasure of the imaging plate

B. Dirty grid

C. Miscalibrated collimator

D. Poor darkroom ventilation

Correct answer: A. Inadequate erasure of the imaging plate

In CR systems, residual images can result from incomplete erasure of imaging plates.

27. **A “flat-field” test in digital imaging checks:**

A. Patient positioning

B. Uniform detector response

C. Beam collimation

D. Exposure index accuracy

Correct answer: B. Uniform detector response

Flat-field test detects pixel dropouts and nonuniformity across the detector surface.

28. **Poor screen-film contact will lead to:**

A. Quantum mottle

B. Geometric distortion

C. Loss of sharpness

D. Grid artifacts

Correct answer: C. Loss of sharpness

Poor contact allows blurring, decreasing spatial resolution.

29. **The acceptable level of leakage radiation from the x-ray tube housing is:**

A. <0.1 mGy/h at 1 m

B. <1 mGy/h at 1 m

C. <0.5 mGy/h at 1 m

D. <0.25 mGy/h at 1 m

Correct answer: B. <1 mGy/h at 1 m

Regulatory standards limit tube leakage to under 1 mGy/hour at 1 meter.

30. **Quality assurance includes:**

A. Quality control only

B. Staff training, audits, QC

C. Only equipment testing

D. Exposure measurements

Correct answer: B. Staff training, audits, QC

QA is broader, encompassing QC, personnel education, policy, audits, and documentation.