

Geometric Sharpness 2

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- ___ 1. The ability of an image receptor to distinguish between objects with similar subject contrast is:
- temporal resolution.
 - spatial resolution.
 - contrast resolution.
 - none of the above.
- ___ 2. The quality of a radiographic image depends on:
- brightness—visibility of anatomic structures.
 - accuracy of the recorded anatomic structural lines.
 - contrast—visibility of anatomic structures.
 - A and B.
 - A, B, and C.
- ___ 3. The smallest object that can be detected in an image is the:
- temporal resolution.
 - spatial resolution.
 - contrast resolution.
 - none of the above.
- ___ 4. The accuracy of the anatomic structural lines recorded in the radiographic image is determined by the:
- temporal resolution.
 - spatial resolution.
 - contrast resolution.
 - none of the above.
- ___ 5. An increase in the amount of unsharpness recorded on the image has what effect on the visibility of anatomic structures?
- Increased contrast of anatomic structures
 - Decreased contrast of anatomic structures
 - Increased overall visibility
 - Decreased overall visibility
 - A and C
 - B and D
- ___ 6. Radiographic misrepresentation of the size or shape of the anatomic structure being imaged is:
- magnification.
 - elongation.
 - foreshortening.
 - all of the above.

- ___ 7. Shape distortion includes:
 - a. magnification.
 - b. elongation.
 - c. size distortion.
 - d. all of the above.

- ___ 8. Size distortion is affected by:
 - 1. SID.
 - 2. OID.
 - 3. tube angulation.
 - a. 1 and 2 only
 - b. 1 and 3 only
 - c. 2 and 3 only
 - d. 1, 2, and 3

- ___ 9. Spatial resolution is improved with:
 - a. increased pixel size.
 - b. increased pixel pitch.
 - c. increased pixel density.
 - d. increased pixel bit depth.

True/False

Indicate whether the statement is true or false.

- ___ 1. The highest quality radiographic image has no unsharpness.

- ___ 2. *Recorded detail* is the term commonly used in digital imaging to describe the accuracy of the structural lines that make up the image.

- ___ 3. Magnification always results in reduced recorded detail.

- ___ 4. Radiographic images of structures are always magnified when compared to the actual structure.

- ___ 5. When an image is distorted, spatial resolution is increased.

- ___ 6. Shape distortion can be useful in radiographic imaging.

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Answer Section

MULTIPLE CHOICE

1. ANS: C
Contrast resolution is used to describe the IR's ability to distinguish between objects having similar image contrast.

PTS: 1 REF: p.55
2. ANS: E
The quality of radiographic image depends on both the visibility of anatomic structures (brightness and contrast) and the accuracy of recorded anatomic structural lines (sharpness).

PTS: 1 REF: p.58
3. ANS: B
Spatial resolution refers to the smallest object that can be detected on an image.

PTS: 1 REF: p.57
4. ANS: B
The accuracy of the anatomic structural lines recorded in the radiographic image is determined by its spatial resolution.

PTS: 1 REF: p.57
5. ANS: F
An increase in the amount of unsharpness recorded on the image decreases the contrast of small anatomic structures, reducing the overall visibility of the structural lines.

PTS: 1 REF: p.58
6. ANS: D
Size or shape distortion includes magnification, elongation, and foreshortening.

PTS: 1 REF: p.59
7. ANS: B
Shape distortion includes elongation and foreshortening.

PTS: 1 REF: p.59
8. ANS: A
Size distortion, or magnification, is affected by both SID and OID. Tube angulation affects shape distortion.

PTS: 1 REF: p.59
9. ANS: C
Spatial resolution is improved with an increased number of pixels per unit area, or pixel density. Larger pixel size and pitch reduce spatial resolution, and bit depth doesn't have any effect.

PTS: 1 REF: p.57

TRUE/FALSE

1. ANS: F

It is impossible to create an image without any unsharpness. The highest quality radiographic image will have minimal unsharpness.

PTS: 1 REF: p.57

2. ANS: F

Spatial resolution is the term commonly used in digital imaging to describe the accuracy of the structural lines that make up the image. *Recorded detail* is used to identify that quality for film-screen imaging.

PTS: 1 REF: p.57

3. ANS: T

Magnification, or size distortion, always results in reduced recorded detail.

PTS: 1 REF: p.58

4. ANS: T

In that there is always some OID of the structure, the image is always larger than the actual structure.

PTS: 1 REF: p.59

5. ANS: F

When an image is distorted, spatial resolution is also reduced.

PTS: 1 REF: p.59

6. ANS: T

While it is generally not a positive quality, there are times that shape distortion is used in radiographic imaging to allow structures to be seen.

PTS: 1 REF: p.60