

Computed Radiography

Multiple Choice

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

- ___ 1. Computed radiography screens respond to radiation with _____.
a. fluorescence
b. electron emission
c. photostimulable luminescence
d. biological phosphorescence
- ___ 2. Europium is the _____ of the photostimulable phosphor.
a. image buffer
b. scintillator
c. phosphor
d. activator
- ___ 3. The computed radiography cassette is called a(n) _____ plate.
a. optical
b. imaging
c. laser
d. thermoluminescent
- ___ 4. The photostimulable phosphor screen is handled in a _____.
a. reader
b. darkroom
c. film processor
d. film changer
- ___ 5. The computed radiography image has _____.
a. narrow exposure latitude
b. wide exposure latitude
c. improved contrast resolution
d. both B and C
- ___ 6. The laser beam must be less than 100 nm in diameter in order to maintain _____.
a. consistent beam shape
b. smooth image edges
c. high spatial resolution
d. high speed
- ___ 7. _____ is prevented by flooding the erased imaging plate with bright light.
a. Image fog
b. Noise
c. Overexposure
d. Ghosting
- ___ 8. The PSP cassette is backed by aluminum that:

- a. reflects x-rays.
 - b. absorbs backscatter x-rays.
 - c. captures the image.
 - d. transmits x-rays.
- ___ 9. The layer of the imaging plate that traps electrons during exposure is the _____ layer.
- a. protective
 - b. reflective
 - c. active
 - d. support
- ___ 10. The purpose of the barcode label is to match the image information with the:
- a. imaging plate.
 - b. patient identifier.
 - c. technologist.
 - d. radiographic room.
- ___ 11. The phosphor layer is made of phosphors from the _____ family.
- a. barium sulfate
 - b. halide calcium
 - c. barium fluorohalide
 - d. calcium fluorohalide
- ___ 12. The optical mirror in the reader:
- a. directs the laser beam to the imaging plate surface.
 - b. forms the laser beam into a circle.
 - c. causes the laser beam to diverge.
 - d. creates the laser beam.
- ___ 13. The laser scans the imaging plate in a _____ pattern.
- a. raster
 - b. horizontal
 - c. circular
 - d. random
- ___ 14. The process of scanning the moving imaging plate is known as:
- a. transition.
 - b. raster scanning.
 - c. digitization.
 - d. translation.
- ___ 15. Which of the following does not determine PSP resolution?
- a. Phosphor layer thickness
 - b. Pixel size
 - c. The number of pixels
 - d. Laser scan speed
- ___ 16. PSP imaging plates are erased by flooding the plate with:
- a. light.

- b. radiation.
- c. electrons.
- d. phosphors.

- ___ 17. The amount of detail present in any image is known as _____ resolution.
- a. contrast
 - b. density
 - c. spatial
 - d. optical
- ___ 18. Kilovoltage peak (kVp) should be chosen:
- a. to provide the least contrast possible.
 - b. to provide penetration.
 - c. for the type and amount of contrast desired.
 - d. for the type of imaging plate phosphor.
- ___ 19. When insufficient light is produced by the imaging plate phosphor, the image will:
- a. not be formed.
 - b. be grainy.
 - c. be dark.
 - d. be detailed.
- ___ 20. Using an FOV that is much larger than the part being examined will:
- a. increase resolution.
 - b. decrease the size of the matrix.
 - c. decrease the sampling rate.
 - d. decrease resolution.
- ___ 21. The higher the number of pixels in a matrix, the:
- a. higher the image resolution.
 - b. lower the image resolution.
 - c. lack of effect on image resolution.
 - d. smaller the image.
- ___ 22. The exposure indicator number is:
- a. an accurate measure of the patient dose.
 - b. an indication of radiation absorbed by the imaging plate.
 - c. both a and b.
 - d. neither a nor b.

True/False

Indicate whether the statement is true or false.

- ___ 23. The PSP imaging plate does not require periodic erasure because of its ability to record background radiation.
- ___ 24. It is acceptable to replace collimation with shuttering.

___ 25. Images should be marked only with computerized markers.

- OBJ: Describe the basic construction of a PSP cassette and imaging plate.
12. ANS: A PTS: 1 REF: 65
OBJ: Explain the process of reading and erasing the imaging plate.
13. ANS: A PTS: 1 REF: 65
OBJ: Explain the process of reading and erasing the imaging plate.
14. ANS: D PTS: 1 REF: 66
OBJ: Explain the process of reading and erasing the imaging plate.
15. ANS: D PTS: 1 REF: 67
OBJ: Compare conventional radiographic screen and film speed to PSP systems.
16. ANS: A PTS: 1 REF: 69
OBJ: Explain the process of reading and erasing the imaging plate.
17. ANS: C PTS: 1 REF: 67
OBJ: Explain the process of reading and erasing the imaging plate.
18. ANS: B PTS: 1 REF: 71
OBJ: Discuss the selection of technical factors for density, contrast, and penetration.
19. ANS: B PTS: 1 REF: 72
OBJ: Discuss the selection of technical factors for density, contrast, and penetration.
20. ANS: D PTS: 1 REF: 73
OBJ: Describe the imaging plate and grid selection process.
21. ANS: A PTS: 1 REF: 73
OBJ: Describe the imaging plate and grid selection process.
22. ANS: B PTS: 1 REF: 80
OBJ: Compare exposure indicators for the major computed radiography (CR) manufacturers and vendors.

TRUE/FALSE

23. ANS: F PTS: 1 REF: 61
OBJ: Explain the process of reading and erasing the imaging plate.
24. ANS: F PTS: 1 REF: 74
OBJ: Discuss the importance of preprocessing collimation and image marking.
25. ANS: F PTS: 1 REF: 74
OBJ: Discuss the importance of preprocessing collimation and image marking.