

Fluoroscopy

Multiple Choice

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

- ___ 1. Fluoroscopy was developed so that radiologists could view ___ images.
- static
 - dynamic
 - magnified
 - darkened
- ___ 2. What is the milliamperage used during fluoroscopy?
- ≤ 100 mA
 - ≤ 50 mA
 - ≤ 5 mA
 - ≤ 1 mA
- ___ 3. The image intensifier improved fluoroscopy by increasing image ____.
- brightness
 - resolution
 - magnification
 - contrast
- ___ 4. Image intensified fluoroscopy is performed at illumination levels similar to ____.
- star gazing
 - darkened theaters
 - night driving
 - radiograph viewing
- ___ 5. The ability of the eye to detect differences in brightness levels is termed ____.
- visual acuity
 - scotopic vision
 - photopic vision
 - contrast perception
- ___ 6. X-rays that exit the patient and enter the image intensifier first interact with the ____.
- output phosphor
 - input phosphor
 - photocathode
 - anode
- ___ 7. The input phosphor converts ___ to ____.
- x-rays, electrons
 - light, electrons
 - electrons, light
 - x-rays, light
- ___ 8. The ___ in the image intensifier emits electrons when it is stimulated by light photons.

- a. input phosphor
 - b. output phosphor
 - c. photocathode
 - d. electron gun
- ___ 9. The number of light photons emitted within the image intensifier is _____ to the amount of x-ray photons exiting the patient.
- a. equal
 - b. unrelated
 - c. inversely proportional
 - d. directly proportional
- ___ 10. Electrons hit the _____ after exiting the anode.
- a. output phosphor
 - b. tube housing
 - c. photocathode
 - d. focusing lenses
- ___ 11. The capability of an image intensifier to increase the illumination level of the image is called its _____.
- a. flux gain
 - b. conversion factor
 - c. brightness gain
 - d. veiling glare
- ___ 12. An image intensifier tube is identified by the diameter of its _____.
- a. input phosphor
 - b. glass housing
 - c. output phosphor
 - d. focusing lenses
- ___ 13. Brightness gain is typically in the range of _____.
- a. 50-75
 - b. 100-1,000
 - c. 3,000-4,000
 - d. 5,000-30,000
- ___ 14. Fluoroscopy for an air contrast barium enema is generally done at _____ kVp.
- a. 65-75
 - b. 70-80
 - c. 80-90
 - d. 100-110
- ___ 15. Automatic brightness control (ABC) maintains the brightness of the image by varying _____.
- a. monitor settings
 - b. kVp and mA
 - c. monitor bandwidth
 - d. all of the above

- ___ 16. The _____ absorbs electrons and emits light.
- input phosphor
 - output phosphor
 - photocathode
 - accelerating anode
- ___ 17. The _____ absorbs x-rays and emits light.
- input phosphor
 - output phosphor
 - photocathode
 - accelerating anode
- ___ 18. The electrostatic focusing lenses have a _____ charge.
- negative
 - positive
 - neutral
 - changing
- ___ 19. Photoemission occurs at the
- input phosphor
 - output phosphor
 - photocathode
 - accelerating anode
- ___ 20. An expression of the ability of an image intensifier tube to convert x-ray energy into light energy and increase the brightness of the image in the process is the
- brightness gain
 - flux gain
 - minification gain
 - conversion factor

Fluoroscopy Answer Section

MULTIPLE CHOICE

1. ANS: B
Fluoroscopy was developed so that radiologists could view dynamic images.

PTS: 1 DIF: Moderate REF: page 402
OBJ: Discuss the development of fluoroscopy.
2. ANS: C
During fluoroscopy, the x-ray tube is operated at less than 5 mA.

PTS: 1 DIF: Moderate REF: page 402
OBJ: Discuss the development of fluoroscopy.
3. ANS: A
The image intensifier improved fluoroscopy by increasing image brightness.

PTS: 1 DIF: Moderate REF: page 402
OBJ: Discuss the development of fluoroscopy.
4. ANS: D
Image intensified fluoroscopy is performed at illumination levels similar to radiograph viewing.

PTS: 1 DIF: Moderate REF: page 402
OBJ: Discuss the development of fluoroscopy.
5. ANS: D
The ability of the eye to detect differences in brightness levels vision is termed contrast perception.

PTS: 1 DIF: Moderate REF: page 404
OBJ: Explain visual physiology and its relationship to fluoroscopy.
6. ANS: B
X-rays that exit the patient during fluoroscopy first interact with the input phosphor.

PTS: 1 DIF: Moderate REF: page 405
OBJ: Describe the components of an image intensifier.
7. ANS: D
The input phosphor converts x-rays to light.

PTS: 1 DIF: Difficult REF: page 415
OBJ: Describe the components of an image intensifier.
8. ANS: C
The photocathode in the image intensifier emits electrons when it is stimulated by light photons.

PTS: 1 DIF: Moderate REF: page 405
OBJ: Describe the components of an image intensifier.
9. ANS: D
The number of light photons emitted within the image intensifier is directly proportional to the amount of x-ray photons exiting the patient.

PTS: 1 DIF: Moderate REF: page 405

OBJ: Describe the components of an image intensifier.

10. ANS: A

Electrons hit the output phosphor after exiting the anode.

PTS: 1 DIF: Moderate REF: page 406

OBJ: Describe the components of an image intensifier.

11. ANS: C

The ability of the image intensifier to increase the illumination level of the image is called its brightness gain.

PTS: 1 DIF: Moderate REF: page 406

OBJ: Calculate brightness gain and identify its units.

12. ANS: A

An image intensifier tube is identified by the diameter of its input phosphor.

PTS: 1 DIF: Moderate REF: page 407

OBJ: Describe the components of an image intensifier.

13. ANS: D

Brightness gain is typically in the range of 5,000-30,000.

PTS: 1 DIF: Moderate REF: page 407

OBJ: Calculate brightness gain and identify its units.

14. ANS: C

Fluoroscopy for an air contrast barium enema is generally done at 80-90 kVp.

PTS: 1 DIF: Moderate REF: page 405

OBJ: List the approximate kVp levels for common fluoroscopic examinations.

15. ANS: B

Automatic brightness control (ABC) maintains the brightness of the image by varying kVp and mA.

PTS: 1 DIF: Moderate REF: page 402

OBJ: Calculate brightness gain and identify its units.

16. ANS: B

The output phosphor absorbs electrons and emits light.

PTS: 1 REF: 206 OBJ: 1

17. ANS: A

The input phosphor absorbs x-rays and emits light.

PTS: 1 REF: 206 OBJ: 1

18. ANS: A

The electrostatic focusing lenses have a negative charge.

PTS: 1 REF: 206 OBJ: 1

19. ANS: C

Photoemission, when electrons are emitted in response to the presence of light, occurs at the photocathode.

PTS: 1 REF: 206 OBJ: 1

20. ANS: A

The brightness gain describes how well the image intensifier can produce a brighter fluoroscopic image.

PTS: 1 REF: 207 OBJ: 1