

MaxRay Handheld X-ray Systems Operator Training Exam

Employee: _____ Date: _____

Instructor: _____ Score: _____

Instructions

Read each question carefully and choose the best answer.

- _____ 1) ALARA is
- a. a safety principle meant to keep radiation dose to a minimum
 - b. a suggested improvement to always do what is responsible
 - c. the alarming point on X-ray devices
 - d. the target material in X-ray devices
- _____ 2) Which are the two primary mechanisms of X-ray interaction in patients?
- a. coherent scatter and photoelectric absorption
 - b. Compton scatter and coherent scatter
 - c. Compton scatter and photoelectric absorption
 - d. photoelectric scatter and coherent absorption
- _____ 3) Absorbed dose is defined as
- a. energy dissipated through Compton scatter
 - b. energy absorbed per unit mass
 - c. energy in the X-ray beam after attenuation of X-rays in the patient
 - d. energy collected on the image receptor
- _____ 4) What safety consideration(s) should be remembered when trying to minimize radiation exposure?
- a. Time
 - b. Distance
 - c. Shielding
 - d. all of the above

- _____ 5) If the operator has no options except to violate the backscatter zone, the operator should
- a. wear a lead apron
 - b. not take the image
 - c. get supervisory approval
 - d. proceed without concern
- _____ 6) When taking an image, the operator should stand
- a. anywhere that is convenient to get the best image
 - b. to the left or right of the backscatter shield
 - c. directly behind the backscatter shield
 - d. none of the above
- _____ 7) When not in use for an extended period of time, the MaxRay should be stored
- a. on the counter with the battery installed
 - b. in a cabinet with the battery installed
 - c. in a drawer next to the battery
 - d. in a locked cabinet with the battery removed and stored separately
- _____ 8) To maximize the backscatter safety zone, the device should be held so that the
- a. backscatter shield is parallel to the operator and close to the patient
 - b. X-ray emission cone is parallel to the operator
 - c. backscatter shield is perpendicular to the operator
 - d. none of the above
- _____ 9) Prior to taking an exposure, the operator should ensure that
- a. they are behind the backscatter zone
 - b. the patient is properly shielded
 - c. all unnecessary persons are out of the room
 - d. all of the above
- _____ 10) When trying to capture a difficult image, the operator should
- a. do whatever is necessary to get the image needed
 - b. move the patient before moving the device
 - c. move the device before moving the patient
 - d. contact the manufacturer for advice

- _____ 11) When taking an image, the operator wants a higher mAs exposure factor. The operator can
- a. adjust the mA setting
 - b. adjust the exposure time setting
 - c. adjust the kVp setting
 - d. adjust the emission cone
- _____ 12) If the operator removes their finger from the exposure button prior to the passage of the exposure time, X-ray emissions will
- a. continue until the exposure time has elapsed
 - b. slowly decrease until the exposure time has elapsed
 - c. stop immediately
 - d. none of the above
- _____ 13) Generally, film will require an exposure time
- a. equal to that of digital
 - b. less than that of digital
 - c. greater than that of digital
 - d. greater than 1 second
- _____ 14) The purpose of the backscatter shield is to protect the operator from
- a. the primary beam radiation
 - b. radiation scattered from the patient
 - c. both a and b
 - d. neither a nor b
- _____ 15) If the operator doubles the exposure time
- a. the number of scattered X-rays will double
 - b. the patient dose will double
 - c. the operator's exposure will double
 - d. all of the above
- _____ 16) X-rays are best shielded by
- a. low density material
 - b. high density material
 - c. human tissue
 - d. scatter material

- _____ 17) The majority of X-rays in a 60 kVp primary X-ray beam are produced by which mechanism?
- a. Compton scatter
 - b. characteristic X-rays
 - c. Bremsstrahlung
 - d. none of the above
- _____ 18) The glass X-ray tube provides “inherent filtration” for the primary X-ray beam. How does this filtration impact the energy profile of the emitted X-rays?
- a. lower energy X-rays are removed
 - b. higher energy X-rays are removed
 - c. only characteristic X-rays are removed
 - d. no X-rays are removed
- _____ 19) X-rays penetrating the housing are classified as what type of radiation?
- a. primary
 - b. scattered
 - c. Compton
 - d. leakage
- _____ 20) In order to prevent unwanted exposure, what practice is best?
- a. remove the battery when not in use
 - b. never point the emission port at anyone not intended to receive X-rays
 - c. remain in the backscatter zone during a radiographic procedure
 - d. all of the above
- _____ 21) A stochastic biological effect occurs
- a. if a threshold is exceeded
 - b. with all exposures of X-ray radiation
 - c. randomly
 - d. only in children

- _____ 22) Generally, children require less exposure time than adults because
- a. adults generally have more dental problems
 - b. children have thinner tissues and smaller teeth
 - c. tissue density is lower in children
 - d. the child is more prone to movement
- _____ 23) Which exposure factor can be changed by the operator on the MaxRay?
- a. filament current
 - b. tube current
 - c. exposure time
 - d. tube potential
- _____ 24) Except for their energy level, X-rays are essentially the same as
- a. microwaves
 - b. visible light
 - c. radio waves
 - d. all of the above
- _____ 25) What is meant if an atom is "ionized"?
- a. it loses an electron
 - b. its mass is doubled
 - c. its nucleus shrinks
 - d. all of the above