

Specialized Topics in Areas of Radiologic Sciences
P.O. Box 2931 Toledo, Ohio 43606 419-471-1973
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Radiography Essentials

For

Limited Practice

By

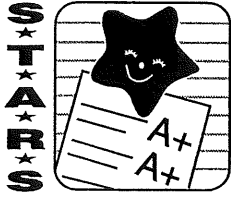
Long, Frank, Ehrlich, et.al.

4th Edition

Prepared by:

Carolyn J. Frigmanski, M.A.,B.S.R.T. ®

Founder, S.T.A.R.S.



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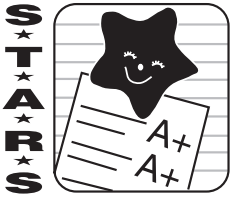
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This product consists of a text on a desired topic and multiple question, short answer post test(s) pages. The number of Ohio Department of Health approved continuing education (ce) credits is listed on our order form. This home study product was originally developed for radiographers across the country who were registered with the American Registry of Radiologic Technologists (ARRT) and approved by the American Society of Radiologic Technologists (ASRT). Please disregard any reference to the ASRT/ARRT within this product, if any.

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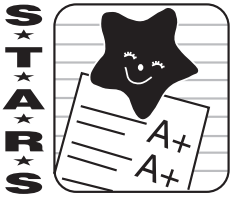
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Sincerely,

Carolyn J. Frigmanski, M.A.,B.S.R.T. ®, Founder



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Unit: Radiography Essentials for Limited Radiography by Long, Frank & Ehrlich

Please *complete the answer sheet at the conclusion of this post test* and *return* to S.T.A.R.S.

Chapter 1

- The world's oldest and largest radiologic science professional organization is the
 - American Society of Radiologic Technologists
 - American Registry of Radiologic Technologists
 - American College of Radiology
 - Joint Review Committee on Education in Radiologic Technology
- Real-time viewing of x-ray images in motion is called
 - angiography
 - fluoroscopy
 - sonography
 - nuclear medicine
- Another term for a basic x-ray machine operator is _____ radiographer.
 - general
 - clinical
 - specialized
 - limited
- Limited x-ray work is regulated within each state by the Department of
 - Human Resources
 - Public Safety
 - Health
 - Radiation Control
- Practicing without a valid license or permit may result in
 - a suspension
 - imprisonment
 - a lawsuit
 - probation

Chapter 2

- The radiation that passes through the image receptor to create a latent image is called
 - remnant
 - scatter
 - primary
 - secondary
- Scatter radiation generally has *less* energy than the primary beam.
 - true
 - false
- The device that receives the x-ray beam energy to create the image is called a(an)
 - cassette
 - magazine
 - image receptor
 - plate
- The tube motion along the long axis of the table is called
 - transverse
 - longitudinal
 - vertical
 - angular
- Trendelenburg position allows the head end to be lowered at least _____ degrees.
 - 15
 - 25
 - 35
 - 45

11. The control booth usually has a window made of
a. plexiglas b. glare proof c. double pane d. lead glass
12. Limited operators should *never* be used to hold patients or image receptors. a. true b. false

Chapter 3

13. The term _____ is the number divided into in a division problem.
a. divisor b. quotient c. dividend d. denominator
14. If you multiple the whole number 300 by the fraction $\frac{1}{5}$, your answer will be
a. 50 b. 60 c. 90 d. 120
15. To get 75% on this post test of 120 questions, you must get _____ questions correct.
a. 60 b. 70 c. 80 d. 90
16. The prefix *kilo* means
a. 1 b. 10 c. 100 d. 1000
17. One inch is equal to _____ centimeters.
a. 1.5 b. 2.54 c. 3.28 d. 4
18. 200 milliamperes at $\frac{1}{2}$ second equals _____ mAs (milliampere-seconds).
a. 100 b. 125 c. 150 d. 175
19. Below 85 kVp, an adjustment of _____ kVp/cm will compensate for small part changes.
a. 1.0 b. 1.5 c. 2 d. 3
20. The total quantity of medication that is administered is called the
a. dose b. strength c. activity d. volume

Chapter 4

21. Matter is composed of “building blocks” called
a. electrons b. atoms c. protons d. molecules
22. The term used to identify a neutral atom that has gained or lost an electron is a(an)
a. isotope b. photon c. ion d. positron
23. X-rays with greater energy have longer wavelengths. a. true b. false

36. The difference in radiographic density between adjacent portions of the image is called
- a. detail
 - b. contrast
 - c. fog
 - d. scatter
37. Recorded detail is always improved by using a
- a. small focal spot
 - b. fast screen
 - c. short distance
 - d. x-ray tube tilt
38. The “unsharp edges” of the body part are referred to as
- a. umbra
 - b. edge blur
 - c. misalignment
 - d. penumbra
39. Reducing the object-image receptor distance will create
- a. less detail
 - b. greater detail
 - c. more blur
 - d. less definition
40. Increasing the source-image receptor distance will create
- a. less detail
 - b. more blur
 - c. increased detail
 - d. less resolution
41. The principal means of controlling involuntary motion is to use
- a. restraints
 - b. sandbags
 - c. short exposure time
 - d. sedation
42. Effective communication with all patients will reduce motion. a. true b. false

Chapter 8

43. Computed radiography (CR) was introduced in the United States in 1983 by a company called
- a. Kodak
 - b. Konica
 - c. 3M
 - d. Fuji
44. Photostimulable plates can be reused at least _____ times before they need replacement.
- a. 6,000
 - b. 10,000
 - c. 20,000
 - d. 50,000
45. Amorphous selenium detectors are used in direct conversion. a. true b. false
46. The device that scans the CR imaging plate (IP) to release stored energy is called the
- a. photomultiplier
 - b. laser beam
 - c. white light
 - d. amplifier
47. The pixels are the computer monitor’s active area. a. true b. false
48. A larger matrix with smaller pixels improves spatial resolution. a. true b. false
49. Image manipulation using window levels will affect
- a. contrast
 - b. detail
 - c. blur
 - d. density

50. _____ allows large areas of anatomy to be viewed as one image.
- a. Annotation b. Consolidation c. Stitching d. Enhancement
51. Correct kVp selection is not all that important in digital techniques. a. true b. false
52. The postprocessing technique that can remove anatomy such as bones or organs is called
- a. subtraction b. reversal c. annotation d. edge enhancement
53. The communication standard for all of the hospital or clinic's information systems is known as
- a. DICOM b. Carestream c. Agfa system d. Health level-7
54. The artifact resulting from incomplete erasure of imaging plates is called
- a. light spots b. quantum mottle c. phantom or ghost d. Moire pattern
55. The image management system used in radiology departments is called
- a. radiology information c. hospital information
b. picture archival and communication d. information technology
56. The image must have a minimum of ____ sides of the collimated field.
- a. one b. two c. three d. four

Chapter 9

57. The interaction in which an incoming photon interacts with an outer shell electron is called
- a. Compton effect c. photoelectric effect
b. coherent scattering d. true absorption
58. Scatter radiation creates
- a. the final image b. fog c. contrast d. blur
59. The relationship between the height of the lead strips and the width of the space between them is
- a. grid radius b. grid frequency c. grid ratio d. focal range
60. Grid striping describes the appearance of the grid
- a. interspacing b. frequency c. cutoff d. lines
61. Air gap method involves using a
- a. short object-image receptor distance c. short source-to-image distance
b. large object-image receptor distance d. long source-to-image distance

Chapter 10

62. The highest kVp setting that will produce sufficient contrast for acceptable image quality is called
- a. preferred
 - b. specific
 - c. optimum
 - d. desired
63. Most x-ray generators are wired for small filaments and focal spots with mA setups of
- a. 100 or less
 - b. 150
 - c. 200
 - d. 300
64. A condition in bone tissue that requires a *decrease* in exposure is
- a. osteopetrosis
 - b. acromegaly
 - c. Paget disease
 - d. osteoporosis
65. A ___% change in kVp will produce the same effect as doubling or halving the mAs.
- a. 10
 - b. 15
 - c. 20
 - d. 30
66. Compensating filters should be used when imaging body parts with
- a. pathology
 - b. casts
 - c. varying thicknesses
 - d. air

Chapter 11

67. The conventional unit of radiation exposure in air is called the
- a. roentgen
 - b. absorbed dose
 - c. gray
 - d. rem
68. The SI radiation unit to measure occupational dose is called the
- a. rem
 - b. gray
 - c. coulombs per kilogram
 - d. sievert
69. The 23 pairs of microscopic bodies that contain genetic information are called
- a. genes
 - b. chromosomes
 - c. DNA proteins
 - d. sex cells
70. An observable short-term effect of radiation exposure to the skin is called
- a. dermatitis
 - b. dryness
 - c. erythema
 - d. ulceration
71. An acute whole body exposure of 250 mSv will produce
- a. nausea
 - b. erythema
 - c. diarrhea
 - d. blood changes
72. The greatest cause of unnecessary radiation to patients by limited radiographers is
- a. poor positioning
 - b. repeats
 - c. darkroom errors
 - d. wrong technique
73. Shields that attach to the collimator are called
- a. shadow
 - b. gonad
 - c. fixed
 - d. removable

74. The **most** common personnel safety principle used to protect **ALL** radiographers is
- a. distance b. time c. shielding d. immobilization
75. The personnel monitor using aluminum oxide as a radiation detector is known as
- a. thermoluminescent c. conventional film
b. optically stimulated luminescent d. ionization
76. Radiation in excess of ____ mGy to the uterus is a cause for concern during pregnancy.
- a. 50 b. 100 c. 150 d. 200

Chapter 12

77. A wide variety of shapes and structures describes the bone type classified as
- a. long b. short c. flat d. irregular
78. Projections that are produced by directing the CR to “skim” the profile of the subject are called
- a. axial b. tangential c. oblique d. lordotic
79. Some side markers incorporate a plastic bubble that contains _____ to indicate position.
- a. lead b. silver c. mercury d. barium
80. The immune system’s response to cellular injury manifests as a(an)
- a. inflammation b. edema c. atrophy d. degeneration

Chapter 13

81. The **funny bone** or **crazy bone** describes the anatomic structure identified as the
- a. styloid process b. olecranon process c. coronoid process d. head of ulna
82. In the PA projection of the hand, the CR (central ray) is directed perpendicularly to the
- a. second metacarpophalangeal joint c. first metacarpophalangeal joint
b. second interphalangeal joint d. third metacarpophalangeal joint
83. A “breathing technique” is used for a transthoracic lateral shoulder. a. true b. false
84. An inflammation of bone and its marrow caused by a pathogenic organism is diagnosed as
- a. tendinitis b. osteolysis c. osteomyelitis d. an abscess

Chapter 14

85. The calcaneus and the talus compose the portion of the foot referred to as the
- a. midfoot b. hindfoot c. longitudinal arch d. transverse arch

86. The rotation of the ankle for an AP oblique projection is _____ degrees.

- a. 15 b. 25 c. 30 d. 45

87. "Tunnel" views are performed to demonstrate the

- a. intercondylar fossa b. patella c. ankle mortise d. acetabulum

Chapter 15

88. An abnormal lateral curvature to the spine is called

- a. lordosis b. kyphosis c. scoliosis d. rotoscoliosis

89. A Scottie dog configuration is demonstrated on _____ lumbar spine radiographs.

- a. AP b. oblique c. lateral d. L₅S₁ conedown

90. The anode heel effect is advantageous when performing _____ spine projections.

- a. cervical b. lumbar c. all d. thoracic

Chapter 16

91. The first seven pairs of ribs are called

- a. true b. false c. floating d. fused

92. The organ that serves as a storage sac for bile is the

- a. liver b. pancreas c. gall bladder d. spleen

93. An ideal gonad shield for chest radiography is to use a

- a. shadow b. half-apron c. contact d. portable screen

Chapter 17

94. The PA axial (Caldwell method) requires a caudal tube tilt of _____ degrees.

- a. 0 b. 23 c. 37 d. 15

95. The parietoacanthial projection (Waters Method) utilizes the _____ baseline.

- a. infraorbitomeatal b. glabellomeatal c. orbitomeatal d. acanthiomeatal

96. A fracture of the orbital floor by a blow to the eye may cause a

- a. blowout b. contrecoup c. simple d. compound

Chapter 18

97. Research indicates that about ____% of communication received by adults is nonverbal.
- a. 30 b. 50 c. 70 d. 90
98. “Making friends” is a technique to use with pediatric patients in the age range of
- a. newborn – 1 year b. 1 – 2 years c. 3 – 5 years d. 6 – 12 years
99. Older patients may develop ulcerated areas over bony prominences from pressure called
- a. abrasions b. lacerations c. friction burns d. decubitus

Chapter 19

100. The factor that should be adjusted to alter radiographic density in digital systems is
- a. distance b. kVp c. exposure indicator number d. sensitivity number
101. Blurring or unsharpness is *most* likely caused by
- a. patient motion b. filmspeed c. screen speed d. grid ratio
102. Most experienced limited operators have a repeat rate that is less than
- a. 1% b. 4% c. 10% d. 15%

Chapter 20

103. Rules that apply to correct behavior and standards for our actions within a profession are called
- a. morals b. ethics c. values d. principles
104. The principle involving truth and an obligation to tell the truth is known as
- a. beneficence b. fidelity c. nonmaleficence d. veracity
105. One major aspect contained in The Health Insurance Portability and Accountability Act is
- a. finances b. reimbursement c. privacy d. ethics
106. Verbal communication using calm, firm expressions of feelings or opinions defines
- a. assertion b. aggression c. attitude d. empathy

Chapter 21

107. The study of the human body in relation to the working environment is called
- a. kinesiology b. ergonomics c. body mechanics d. occupational safety

108. The four factors involved in the spread of disease are sometimes called the
- a. infection control
 - b. hygiene
 - c. asepsis
 - d. cycle of infection
109. The combination of universal and body substance precautions is now called
- a. body substance isolation
 - b. infection control
 - c. standard precautions
 - d. isolation technique

Chapter 22

110. The measurement of temperature, pulse rate, respiratory rate and blood pressure is called
- a. vital signs
 - b. baseline
 - c. physical status
 - d. vital statistics
111. A moderate allergic reaction characterized with hives is known as
- a. asthma
 - b. urticaria
 - c. anaphylaxis
 - d. skin sensitivity

Chapter 23

112. Acetaminophen (Tylenol) is in the drug category called
- a. adrenergics
 - b. anticholinergics
 - c. analgesics
 - d. anticonvulsants
113. The height of the infusion bottle or bag should always be _____ inches above the vein.
- a. 10 to 15
 - b. 18 to 20
 - c. 20 to 24
 - d. 24 to 30

Chapter 24

114. The vein most commonly used for venipuncture is located in the
- a. finger
 - b. hand
 - c. elbow
 - d. foot
115. The appearance of urine normally ranges from
- a. clear to slightly hazy
 - b. light yellow to moderately hazy
 - c. bright yellow to moderately hazy
 - d. dark yellow to slightly hazy

Chapter 25

116. Distance vision assessment is usually done with the patient _____ feet from the eye chart.
- a. 6
 - b. 10
 - c. 15
 - d. 20
117. The normal cardiac cycle involves atrial and ventricular contraction and rest. a. true b. false

Chapter 26

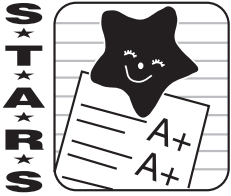
118. It is estimated that _____% of American women have osteoporosis.
- a. 50
 - b. 65
 - c. 80
 - d. 90

119. The sum of the data values divided by the number of values is called the

- a. T-score b. mean c. percent coefficient d. Z-score

120. Normal bone density has a T score of

- a. +1 to -1 b. +2 to -2 c. +3 to -3 d. +4 to -4



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Answer Sheet for: Unit: Radiography Essentials for Limited Practice
by Bruce W. Long, Eugene D. Frank and Ruth Ann Ehrlich

**Please place your lettered selection for each question in the respective box and return
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1.	11.	21.	31.	41.	51.	61.
2.	12.	22.	32.	42.	52.	62.
3.	13.	23.	33.	43.	53.	63.
4.	14.	24.	34.	44.	54.	64.
5.	15.	25.	35.	45.	55.	65.
6.	16.	26.	36.	46.	56.	66.
7.	17.	27.	37.	47.	57.	67.
8.	18.	28.	38.	48.	58.	68.
9.	19.	29.	39.	49.	59.	69.
10.	20.	30.	40.	50.	60.	70.

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71.	81.	91.	101.	111.
72.	82.	92.	102.	112.
73.	83.	93.	103.	113.
74.	84.	94.	104.	114.
75.	85.	95.	105.	115.
76.	86.	96.	106.	116.
77.	87.	97.	107.	117.
78.	88.	98.	108.	118.
79.	89.	99.	109.	119.
80.	90.	100.	110.	120.