

CHAPTER ONE: THE HISTORY OF BREAST CANCER AND BREAST IMAGING

1. ---- refers to any body fluid or semifluid substance in the body such as blood or lymph.
A Lymphatic fluid B Humor C Metaplasia D HER2 protein
2. ---- disease of the nipple is a rare but inflammatory malignant cancer of the nipple and areola.
A Paget's B Parker's C Millinghouse D Tompkin's
3. ----, considered the father of Western medicine, supplied the earliest descriptive details of breast cancer.
A Osler B Pasteur C Hippocrates D Plato
4. Wilhelm Conrad Roentgen (1845 – 1923) discovered x-rays occurred in ----.
A 1895 B 1906 C 1865 D 1889
5. The introduction of grids in the late ---- introduced a new generation of dedicated mammography machines.
A 1980s B 1990s C 1960s D 1970s
6. On October 27, 1992, the US Congress passed the MQSA (Mammography Quality ---- Act).
A Screening B Service C Scan D Standards

CHAPTER TWO: PATIENT EDUCATION AND ASSESSMENT

7. Breast-Specific ---- Imaging (BSGI) is a functional imaging study of the breast.
A Gradient B Graph C Gamma D Galen
8. Breast cancer is the ---- leading cause of deaths among women in the United States, claiming the lives of thousands annually.
A first B second C third D fourth
9. Mammography Quality ---- Act (MQSA) regulations state that mammography patients must receive a copy of the mammogram result.
A Standards B Service C Screening D System
10. Breast cancer can be totally asymptomatic.
A True B False
11. Almost ----% of breast cancers are located in the upper quadrants of the breast.
A 25 B 40 C 60 D 75
12. The American Cancer Society holds that women who fall in high risk categories be screened with ---- in addition to mammograms.
A CT B MRI C US D nuclear medicine
13. The ACR recommends that the average glandular dose on the mammogram should be no greater than ---- rad with a grid.
A 0.03 B 0.1 C 0.3 D 0.2
14. Mammography screening is generally acknowledged to have a ----% miss rate.
A 5 - 8 B 10 - 15 C 20 – 25 D 1 - 3
15. CAD (computer-aided ----) works by first mapping normal healthy breast tissue that is then stored as a reference.
A diagramming B diffusion C DICOM D diagnosis
16. In ultrasound imaging, the transducer holds the ---- crystals.
A piezoelectric B scintillation C thermal D graphite mosaic
17. PEM (---- Emission Mammography) imaging is a valuable tool used for detecting the metastatic spread of breast cancer.
A Positron B Parity C Photostimulated D Phantom

CHAPTER THREE: ANATOMY, PHYSIOLOGY, AND PATHOLOGY . . .

18. ---- ligaments are also called suspensory ligaments.
A Harrison's B Cento's C Cooper's D Rossini's

19. The retromammary space is filled with a layer of ---- tissue.
 A connective B nervous C muscle D adipose or fatty
20. Most normal lymph nodes are less than ---- cm in size and have a kidney-shaped appearance.
 A 2 B 4 C 6 D 8
21. The hormone ---- directly effects the lobular development during pregnancy.
 A insulin B thyroid C prolactin D estrogen
22. The incidence of male breast cancer is about ----% of all breast cancers.
 A 3 B 1 C 4 D 2
23. Klinefelter's syndrome is a rare disorder characterized by an abnormal chromosome pattern:
 A XXY B XYX C XYY D YYX

CHAPTER FOUR: BENIGN AND MALIGNANT DISEASES OF THE BREAST

24. ---- refers to severe, generalized, and massive edema.
 A Eczema B Erythema C Abscess D Anasarca
25. The ---- sign is an indication of a benign process.
 A cross-linear B silhouette C shadow D mimic
26. In 2006, the United States lifted a ---- -year ban on implants containing silicone.
 A 12 B 14 C 24 D 31
27. Spiculated / stellate lesions have a solid central tumor with radiating structures and ---- borders.
 A circular B ovoid C ill-defined D sharp
28. Calcifications can be clustered/ grouped (---- calcifications in a small diameter area of less than 1cm).
 A 2 B 3 – 5 C 7 – 10 D 20 – 30
29. Ductal carcinoma in situ (DCIS) accounts for ---- of nonpalpable tumors detected mammographically.
 A 22% to 23% B 5% to 7% C 12% to 17% D 45%
30. Invasive lobular carcinoma (ILC) accounts for only about ---- % of all breast cancers in most studies.
 A 2 B 5 C 14 D 10

CHAPTER FIVE: MAMMOGRAPHY EQUIPMENT

31. DLT (digital ---- tape) is a storage option in digital imaging.
 A linear B latitude C luminance D longitudinal
32. X-ray production processes are very inefficient; only ---- % results in x-ray production while the rest is lost as heat.
 A 3 B 1 C 12 D 22
33. ---- production involves x-ray at energies greater than 1.02 MeV and is not a concern in diagnostic imaging.
 A Gradient energy B Laser C Pair D Q-shell
34. Photodisintegration involves high -energy x-ray in the region of ---- MeV.
 A 3 B 8 C 10 D 1
35. The x-ray range found most useful in maximizing contrast in breast tissue is in the ---- keV range.
 A 17 to 24 B 5 to 9 C 28 to 35 D 12 to 15

36. The reciprocity law fails for extremely short exposure times (less than ——— second).
- A 11/100 B 7/100 C 1/100 D 5/100
37. Regarding automatic exposure control (AEC), the backup timer for grid techniques is preset at 600 mAs and for nongrid at ——— mAs.
- A 400 B 500 C 200 D 300
38. On average, mammography grids have a ratio of:
- A 2:1 B 3:1 C 4:1 D 5:1
39. Magnification mammography never uses a grid.
- A True B False
40. ——— is basically the ability to image two separate objects and visibly detect them as separate entities.
- A Radiographic noise B Resolution C Sharpness D Visibility of detail
- CHAPTER SIX: MAMMOGRAPHIC PROCESSING AND QM**
41. ——— is the ability of a radiographic unit to produce a constant radiation output for multiple combinations of mA and exposure time.
- A Exposure linearity B Radiation linearity C Exposure factor D Radiation factor
42. ——— in mammography refers to the average glandular dose or radiation dose delivered to the center of the breast during an exposure.
- A Glandular core B Glandular radii C Glandular dose D Glandular vertex
43. Centers for Disease Control and ——— (CDC) is known as the main federal agency ensuring the protection, health, and safety of people.
- A Monitoring B Prevention C Processing D Patients
44. Phantom image tests are ——— checks taken to assure that image quality are maintained at optimum levels.
- A daily B quarterly C monthly D weekly
45. Regarding equipment standards, manual compression should not exceed:
- A 20 lbs B 30 lbs C 35 lbs D 45 lbs
46. A typical mammography film should be able to remain in safe lighting for at least ——— seconds without becoming fogged.
- A 40 B 25 C 30 D 60
47. ——— transfer function (MTF) is a measure of the ability of the detector to transfer its spatial resolution characteristic to the image.
- A Magnification B Multi-spatial C Modulation D Maximum
48. At a MQSA inspection, the medical physicist's report is always checked. Most failures allow a ——— period to provide corrections.
- A 2-month B 30-day C 15-day D 3-month
49. In digital systems, the image brightness (density) is directly controlled by exposure.
- A True B False
50. The kV on the mammography unit should be accurate within \pm ——— % of the indicated kV.
- A 5 B 7 C 9 D 13
51. Viewboxes used for analog mammograms should be capable of producing a luminance of at least ——— cd/m.
- A 2000 B 3000 C 4000 D 5000
52. Regarding analog viewboxes, the fluorescent bulbs should be changed every ——— months.
- A 6-12 B 14-16 C 18-24 D 24-36
53. Regarding room light levels for digital viewing conditions, the recommendation is ——— lux.
- A 3 B 5-10 C 12-15 D 17-20
54. Regarding a failed artifact evaluation of a printer, the problem should be identified and corrected within ——— days.
- A 30 B 40 C 45 D 60

CHAPTER SEVEN: BREAST IMAGING MAMMOGRAPHY

55. ——— means on the other side of the body.
A Contralateral B Ipsilateral C Collateral D Opsilateral
56. Patients with a history of breast cysts should be advised to schedule their mammogram ——— after the menstrual period ends.
A 10 days B 3 weeks C 2 weeks D 1 week
57. MQSA requires that all mammographic projections include a projection label (projection and laterality) placed near the axilla.
A True B False
58. Supplementary projections recognized by the US Mammography Quality Standards Act include the cleavage or "———" view (CV).
A tunnel B U C valley D trench
59. The LMO is an inferolateral to superomedial projection. The tube is rotated ——— degrees parallel to the pectoral muscle.
A 15 to 20 B 25 to 35 C 40 to 60 D 5 to 10
60. The ——— best demonstrates the upper inner quadrant and the lower outer quadrant of the breast, free of superimposition.
A RM B SIO C CV D AT
61. The skin dose for a single projection during mammography screening can be as high as ——— mrad (10 mG).
A 100 B 1000 C 10000 D 5000
62. Regarding male breast imaging on the MLO, male patients usually require ——— degree tube angulation.
A 35 to 45 B 55 to 60 C 25 to 30 D 65 to 70
63. Regarding imaging implants, the ——— technique (also called implant displaced or ID projections) is an eight projection series.
A Boehm B Fruehauf C Kuster D Eklund
64. Regarding postmastectomy imaging, most literature supports the possibility of another cancer developing at the mastectomy site.
A True B False
65. Mammograms are not recommended until ——— months after completion of radiation treatment.
A 1 to 3 B 4 C 6 to 12 D 16 to 20
66. The mammographer should maneuver the pacemaker so that it is ——— when imaging the CC projection.
A flat B vertical C rotated medially D rotated laterally
67. In breast imaging, there are three common location terminology: the quadrant method, the clock face and the:
A zone B region C locale D map
68. The ability of the mammographic system to capture fine details in the image is defined as:
A noise B resolution C delineation D sharpness

CHAPTER EIGHT: BREAST IMAGING – DIGITAL, ULTRASOUND, AND MRI

69. Bytes are a group of ——— bits, where a bit represents the smallest unit of measure of computer storage.
A two B four C eight D sixteen
70. ——— resolution is the ability to distinguish and separate between two adjacent structures in the image.
A Object B Spatial C XY D Frequency
71. Regarding digital mammography, ——— is the common photoconductor used in direct flat-panel detector systems.
A selenium B strontium C scandium D silicon
72. OLEDs (——— light-emitting diode displays) have a higher contrast and better viewing angles than the LCDs.
A optical B organic C orbital D object
73. A mammography monitor must be a minimum of ——— megapixels and above.
A 5 B 7 C 10 D 3

74. The US FDA approved CAD technology in ——— for aiding interpretation of the mammogram.
 A 1998 B 1999 C 2000 D 2001
75. If imaging with 15 MHz probes, ducts as small as 150 μm (150 micrometer = ——— mm) can be visualized.
 A 0.15 B 1.5 C 15 D 15000
76. Ultrasound is almost ——— accurate in the diagnosis of cysts.
 A 70% to 75% B 82% to 87% C 89% to 93% D 96% to 100%
77. Color Doppler ultrasound assigns a different color to the ——— cells in a vessel.
 A thrombocyte B red blood C white blood D platelet
78. Carcinoma in situ is noninvasive and easy to detect on the ultrasound.
 A True B False
79. ——— are seen as irregular-walled cavities with echogenic fluid.
 A Galactocele B Lymph nodes C Hematomas D Phyllodes
80. ——— tumors are lesions similar in appearance to a large fibroadenoma with well-defined margins and distal enhancement.
 A Galactocele B Lymph nodes C Hematomas D Phyllodes
81. ——— artifacts occur when the sound is repeatedly reflected within the tissue and produces repeated parallel bands in the image.
 A Reverberation B Linear C Shadow D Pound
82. MRI signals depend on the presence or absence of ——— nuclei.
 A carbon B oxygen C hydrogen D phosphorus
83. The ——— technique is used to enhance one tissue type while suppressing the background tissue.
 A gradient spoiling B gradient echo C postprocessing D inversion recovery
84. The MRI chemical shift artifact is a result of slight differences between the resonating frequencies (——— frequencies) of similar protons.
 A Leblanc B Larmor C Lebleu D Leclercq
85. Breast MRI is not recommended for general screening of patient with a risk factor less than ——— %.
 A 20 B 30 C 35 D 25
86. MRI is unable to image microcalcifications - particularly lesions less than ——— mm.
 A 20 B 15 C 10 D 5

CHAPTER NINE: BREAST IMAGING EMERGING TECHNOLOGIES

87. ——— is a condition that involves an abnormal increase in sensitivity to stimuli of the senses such as sounds, tastes, textures and touch.
 A Dysesthesia B Hyperpigmentation C Hypesthesia D Psoriasis
88. The Hologic unit holds the breast stationary and takes ——— while the tube rotates 7.5 degrees to either side in a 15 degree arc.
 A 25 exposures B 5 exposures C 10 exposures D 15 exposures
89. A typical digital mammogram uses ——— MB per study.
 A 80 to 100 B 50 C 35 D 60 to 75
90. Studies estimate that ——— % of breast biopsies under MRI are proved to be benign.
 A about 50 B 80 C 65 D 95
91. The main clinical drawback to MBI (——— breast imaging) is that it uses 8 – 10 times the radiation of a standard mammogram.
 A monoclonal B motion C molecular D modified

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1	25	49	73	97
2	26	50	74	98
3	27	51	75	99
4	28	52	76	100
5	29	53	77	101
6	30	54	78	102
7	31	55	79	103
8	32	56	80	104
9	33	57	81	105
10	34	58	82	106
11	35	59	83	107
12	36	60	84	108
13	37	61	85	109
14	38	62	86	110
15	39	63	87	111
16	40	64	88	112
17	41	65	89	113
18	42	66	90	114
19	43	67	91	115
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