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Test Questions

Chapter 7

1. A _____ is a programmable electronic device that can retrieve, store and process data.
A. computer
B. television
C. Stereo
D. none of the above
2. Which of the following is/are basic forms of a computer?
A. input
B. output
C. processing devices
D. all of the above
3. The computer processes data using a machine language of 1s and 0s, known as _____.
A. input code
B. binary code
C. pixel code
D. matrix code
4. In computers, each 1 and each 0 represents a single unit of data called _____.
A. byte
B. bit
C. pixel
D. matrix
5. A byte is made up of _____ bits and is the amount of memory needed to store one alphanumeric character.
A. five
B. six
C. eight
D. ten
6. Which of the following are motherboard's components in computer?
A. CPU, bus, memory and ports
B. basic input/output system (BIOS)
C. complementary metal oxide semiconductor (CMOS)
D. all of the above
7. Which of the following memory in the computer is used to store information currently being processed within the CPU?
A. random access memory (RAM)
B. blank memory
C. permanent memory
D. erasable memory
8. A _____ connection is the **most** common wired connection used between devices today.
A. CD-ROM
B. USB
C. floppy disk
D. none of the above

9. The _____ contains all of the circuitry for recording and reproducing sound on the PC.
- A. CD-ROM
 - B. USB
 - C. floppy disk
 - D. sound card
10. The _____ is the **main** repository for programs and documents on a computer.
- A. CD/DVD Drive
 - B. USB
 - C. hard drive
 - D. sound card
11. Which of the following are **main** types of CD/DVD drives available in today's market?
- A. ROM (read-only memory)
 - B. R (write once-read many)
 - C. RW (read and write many times)
 - D. all of the above
12. Which of the following are peripherals of computers?
- A. Keyboard and Mouse
 - B. Scanners and Speakers
 - C. Microphones
 - D. all of the above
13. The number of pixels on a display monitor of a computer is known as its _____.
- A. resolution
 - B. MTF
 - C. WW
 - D. WL
14. One disadvantage of LCD monitors is that they are best viewed straight from the monitor surface because the image fades as the viewing angle moves away.
- A. TRUE
 - B. FALSE
15. Which of the following software controls the computer hardware and acts as a bridge between applications and the hardware?
- A. ROM (read-only memory)
 - B. R (write once-read many)
 - C. RW (read and write many times)
 - D. Operating system (OS)
16. **Most** PACS in healthcare system use _____ operating system.
- A. UNIX
 - B. USB
 - C. Windows-based platform
 - D. sound card

Chapter 8

17. When two or more objects sharing resources and information like computers, terminals, and servers that are interconnected by communication channels sharing data and program resources is called _____.
- A. network
 - B. Operating system (OS)
 - C. Microphones
 - D. USB
18. Which of the following is a small area network?
- A. CD-ROM

- B. local area network (LAN)
- C. controller area network (CAN)
- D. wide area network (WAN)

19. A LAN is close by, whereas a WAN expands over a distance.

- A. TRUE
- B. FALSE

20. A wide area network (WAN) can expand over which of the following?

- A. city and state
- B. nation and continent
- C. the world
- D. all of the above

21. In which of the following network, each computer is considered equal?

- A. local area network (LAN)
- B. peer-to-peer
- C. controller area network (CAN)
- D. wide area network (WAN)

22. Which of the following is a dedicated server that controls the network in radiology department and distribute images throughout the hospital?

- A. PACS
- B. controller area network (CAN)
- C. HIS
- D. USB

23. Which of the following types of computers are **typically** found on a network?

- A. server
- B. thin client
- C. thick client
- D. all of the above

24. A _____ is a computer that manages resources for other computers, servers, and networked devices.

- A. CD-ROM
- B. server
- C. floppy disk
- D. USB

25. A _____ is a computer that can work independently of the network and process and manage its own files.

- A. server
- B. thin client
- C. thick client
- D. floppy disk

26. Which of the following is the **sturdiest** wire used and is often found in the network infrastructure throughout a building?

- A. coaxial cable
- B. telephone wire
- C. twisted-pair wire
- D. electromagnetic waves

27. _____ uses glass threads to transmit data on the network.

- A. coaxial cable
- B. fiber optic cable
- C. twisted-pair wire
- D. electromagnetic waves

28. Which of the following connection is made by using either infrared or radio frequencies as its means of communication?
- A. coaxial cable
 - B. fiber optic cable
 - C. twisted-pair wire
 - D. wirelessconnections
29. _____ is the simplest device that can be used to connect several pieces of equipment together for network communication purposes.
- A. coaxial cable
 - B. network interface card
 - C. network hub
 - D. twisted-pair wire
30. Which of the following reduces the network traffic, speeds up the overall network connection, and makes the network more efficient?
- A. network switch
 - B. network interface card
 - C. network hub
 - D. twisted-pair wire
31. The larger networks can be broken up into smaller networks and can be connected with a _____ to reduce traffic within that network.
- A. coaxial cable
 - B. network bridge
 - C. network hub
 - D. twisted-pair wire
32. Which of the following read portions of messages and direct them to their intended target, even if the device is on a separate network?
- A. coaxial cable
 - B. network bridge
 - C. twisted-pair wire
 - D. networkrouter
33. The data travel along the network using an agreed-on set of rules known as what?
- A. network protocol
 - B. network bridge
 - C. twisted-pair wire
 - D. networkrouter
34. Which of the following is the physical or geometric layout of the connected devices on a network?
- A. network protocol
 - B. network bridge
 - C.networkrouter
 - D. topology
35. A _____ topology is a network in which the devices are connected in a circle.
- A. ring
 - B. square
 - C. triangle
 - D. rectangle
36. Which of the following topology is a network that has the devices connected to a central hub or switch?
- A. ring
 - B. square
 - C. star
 - D. rectangle

37. Which of the following has become an almost universally accepted standard for exchanging medical images among networked medical devices?

- A. local area network (LAN)
- B. digital imaging and communications in medicine (DICOM)
- C. controller area network (CAN)
- D. wide area network (WAN)

38. Which of the following systems holds all radiology-specific patient data, from the patient scheduling information to the radiologist's dictated and transcribed report?

- A. radiology information system (RIS)
- B. digital imaging and communications in medicine (DICOM)
- C. controller area network (CAN)
- D. wide area network (WAN)

39. PACS consists of which of the following that are interconnected through an intricate network?

- A. digital acquisition
- B. display workstations
- C. storage devices
- D. all of the above

Chapter 9

40. The **first** PACSs were used in the early _____.

- A. 1950s
- B. 1960s
- C. 1980s
- D. 2000s

41. Currently, in healthcare each modality and PACS communicates via _____.

- A. ROM (read-only memory)
- B. digital imaging and communications in medicine (DICOM)
- C. controller area network (CAN)
- D. RW (read and write many times)

42. The image acquisition in PACS is acquired in a _____ format.

- A. digital
- B. analog
- C. film
- D. none of the above

43. During image acquisition in PACS, CT and MRI image sets become larger because of the increased number of _____ per patient.

- A. kVp
- B. mAs
- C. cross-sectional images
- D. radiologists

44. A _____ is any computer that a health care worker uses to view a digital image.

- A. digital acquisition
- B. file storage
- C. storage devices
- D. display workstation

45. Which of the following is the file room of the PACS?

- A. darkroom
- B. an archive server
- C. controller area network (CAN)
- D. transformer

46. In radiology, the term _____ is used to describe how an examination is completed, from order entry to transcribed report.
- A. workflow
 - B. patient transport
 - C. radiologist's schedule
 - D. number of patients per day
47. What is the **first step** in any radiology department workflow?
- A. radiologist's schedule
 - B. patient transport
 - C. entry of the order
 - D. patient discharge
48. An order requisition in the radiology information system (RIS), generally contains which of the following?
- A. Patient's name, hospital ID number & DOB
 - B. Ordering Dr's name & exam ordered
 - C. Reason for examination & chief complaint
 - D. all of the above
49. With PACS it is possible that the time it takes from performing the exams to completing the final radiologist's report is only a couple of hours, compared with a couple of days for the film-based workflow.
- A. TRUE
 - B. FALSE
50. A computer system's hardware and software infrastructure is also called ____.
- A. system architecture
 - B. display workstation
 - C. a compact disk (CD)
 - D. digital versatile disk (DVD)
51. Which of the following are common PACS architectures?
- A. client/server-based system
 - B. distributed or stand-alone system
 - C. web-based systems
 - D. all of the above
52. _____ is the most interactive part of a PACS, consisting of a computer and a monitor including a mouse and a keyboard.
- A. IP reader
 - B. display workstation
 - C. an archive server
 - D. digital versatile disk (DVD)
53. Why the LCD monitors are popular in PACS system?
- A. because of their size
 - B. it's resolution
 - C. lack of heat production
 - D. all of the above
54. The more pixels in an image, lower the resolution of the image on display monitor.
- A. TRUE
 - B. FALSE
55. Mammography requires a _____ resolution to provide the viewing capacity needed.
- A. 5K or 5- megapixel
 - B. 0K or 1- megapixel
 - C. 1K or 1.5- megapixel
 - D. 2K or 2.5- megapixel
56. The radiologist uses which of the following when making a primary diagnosis?

- A. display station
- B. workflow
- C. reading station
- D. darkroom

57. An integration of _____ with PACS allows a physician to view current and previous reports along with the images.

- A. radiology information system (RIS)
- B. digital versatile disk (DVD)
- C. controller area network (CAN)
- D. IP reader

58. One of the greatest advantages of a PACS is the ability to view the same set of images in multiple locations at one time.

- A. TRUE
- B. FALSE

59. Which of the following station is used to review images by the technologist after acquisition but before sending them to the radiologist for reading?

- A. quality control (QC)
- B. workflow
- C. reading station
- D. darkroom

60. The QC workstation can also be used by the technologist for which of the following purposes before beginning of an examination?

- A. to query and retrieve historic images
- B. check previous pathology
- C. check body characteristics
- D. all of the above

61. Which of the following are some of the **common** functions found on a PACS workstation?

- A. Navigation and image management
- B. Hanging protocol and study navigation
- C. Image manipulation and enhancement
- D. all of the above

62. In PACS, a _____ is how a set of images will be displayed on the monitor.

- A. hanging protocol
- B. image manipulation
- C. darkroom
- D. enhancement data

63. Which of the following can be used to change image appearance through image manipulation and enhancement functions in PACS?

- A. Window width/window level
- B. Annotations, flip and rotate
- C. Pan, zoom, magnify and measurements
- D. all of the above

64. What is ROI stands for?

- A. receipt of interpretation
- B. region of interest
- C. reject of imaging plates
- D. none of the above

65. The patient information **must** be removed from the image before it is used in presentations for conferences complying with _____.

- A. ARRT

- B. EPA
- C. HIPAA
- D. CDC

66. Which of the following are **advanced** workstation functions on PACS?

- A. Multiplanar reconstruction (MPR)
- B. Maximum intensity projection and minimum intensity projection
- C. Volume rendering technique (VRT) and shaded surface display (SSD)
- D. all of the above

67. Which of the following offers edge enhancement, smoothing, and contrast enhancements on PACS?

- A. Image postprocessing
- B. Workflow
- C. Darkroom processing
- D. IP reader

Chapter 10

68. In PACS, the _____ serves as the new file room and warehouse for all digital imaging and communications in medicine (DICOM) imaging modalities.

- A. darkroom storage
- B. IP storage
- C. electronic archive
- D. record room

69. Which of the following contains the master database of everything that is in the archive in PACS?

- A. the image manager
- B. IP storage
- C. darkroom storage
- D. record room

70. The image manager in PACS interfaces with which of the following?

- A. FDA
- B. HIS and RIS
- C. EPA
- D. CDC

71. Which of the following is a short-term storage tier composed of several magnetic disks or hard drives that are linked together in an array?

- A. MTF
- B. HIS
- C. RIS
- D. RAID

72. Which of the following products are still widely used as long-term storage in many hospitals?

- A. optical disk
- B. tape
- C. magnetic disk
- D. all of the above

73. A magneto-optical disk (MOD) is housed within a plastic cartridge and readable optically with a _____.

- A. light
- B. x-ray
- C. laser
- D. magnetic wave

74. An Ultra density optical (UDO) disk is the new-generation magneto-optical disk (MOD).

- A. TRUE
- B. FALSE

75. Which of the following is one of the **biggest** disadvantages of tape?

- A. its low-cost
- B. its unreliability over multiple uses
- C. comes in various sizes
- D. can be stored within a jukebox or library

76. The linear tape open (LTO) technology was developed jointly by which of the following to make available an open-format tape storage option?

- A. Hewlett Packard
- B. IBM
- C. Quantum
- D. all of the above

77. Current LTO-3 technology holds _____ GB of uncompressed data on a single tape.

- A. 400
- B. 700
- C. 900
- D. 1,000

78. Which of the following is a high-speed and high-capacity tape made by Sony to compete with the digital linear tape (DLT)?

- A. linear tape open (LTO)
- B. advanced intelligent tape (AIT)
- C. ultra density optical (UDO)
- D. none of the above

79. One of the RAID arrays configurations, which of the following storage is connected **directly** via cable connections and shows up on the computer as different partitions for use?

- A. direct attached storage (DAS)
- B. network attached storage (NAS)
- C. storage area network (SAN)
- D. HIS and RIS

80. The storage area network (SANs) are becoming more popular in health care because of plummeting costs of magnetic disk storage.

- A. TRUE
- B. FALSE

81. _____ is a company that provides outsourcing of archiving and management functions for a pay-per-use or pay-per-month charge for hospitals that could not implement or operate the complex archive that is needed for a PACS.

- A. HIS and RIS
- B. application service provider (ASP)
- C. ultra density optical (UDO)
- D. network attached storage (NAS)

82. Which of the following involves making copies of each tape or disk and sending them to another building or off-site location?

- A. linear tape open (LTO)
- B. disaster recovery
- C. ultra density optical (UDO)
- D. network attached storage (NAS)

83. The _____ scans the analog film and produces numeric signals for each part of the scanned film.

- A. film processor
- B. IP processor
- C. film digitizer
- D. magnetic wave

84. A laser film digitizer uses a _____ laser beam to convert the analog film image into a digital image.
- A. carbon dioxide
 - B. nitrogen
 - C. carbon monoxide
 - D. helium neon
85. Which of the following are **disadvantages** of laser digitizers?
- A. expense and service needs
 - B. maintenance and calibration
 - C. quality control (QC) tests
 - D. all of the above
86. A CCD digitizer can take up to _____ to scan one film through the digitizer, and it can also have problems with extreme light and dark areas on the film.
- A. 80 seconds
 - B. 10 minutes
 - C. 30 minutes
 - D. 1 hour
87. Which of the following term is used to describe the process of transferring digitized images for delivery at a distance to radiologists or physicians?
- A. Telemarketing
 - B. Teleradiology
 - C. Digital transport
 - D. Network attached transport
88. Which of the following analyzes the densities seen on the image and alert the radiologist of questionable densities?
- A. look up table (LUT)
 - B. computed aided diagnosis (CAD)
 - C. ultra density optical (UDO)
 - D. quality control (QC) tests
89. A _____ use chemicals to process the film that has been exposed to the laser.
- A. CAD
 - B. IP processors
 - C. wet imagers
 - D. film digitizers
90. Dry imagers use _____ to process the latent image that is carved into the silver emulsion by the laser.
- A. sound waves
 - B. nitrogen
 - C. water
 - D. heat
91. Which of the following are some of the common uses of imagers in healthcare?
- A. for backup and difficult PACS locations
 - B. for outside physicians and legal cases
 - C. for teaching purposes
 - D. all of the above
92. PACS offer which of the following option to print hard copies of patients' images?
- A. CD/DVD burners
 - B. IP processors
 - C. wet imagers
 - D. film digitizers

Chapter 11

93. **Most** health care institutions are accredited by The Joint Commission (TJC), formerly known as the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO).

- A. TRUE
- B. FALSE

94. _____ activities are focused around people and service.

- A. Quality control (QC)
- B. CAD
- C. Quality assurance (QA)
- D. LUT

95. _____ can be defined as a comprehensive set of activities designed to monitor and maintain systems that produce a product.

- A. Quality control (QC)
- B. CAD
- C. Quality assurance (QA)
- D. FDA

96. Which of the following are **major** categories of QC test that are used at various times?

- A. acceptance testing
- B. routine maintenance
- C. error maintenance
- D. all of the above

97. _____ focuses on improving the process within which the people function as team members instead of focusing on an individual's work.

- A. State inspection
- B. Continuous quality improvement (CQI)
- C. FDA
- D. CDC

98. Documentation is very important in any QC activity and all paperwork **must** be kept up to date to make a valid performance measure.

- A. TRUE
- B. FALSE

99. The American College of Radiology (ACR) suggests that QC tasks be performed at least _____, whereas the AAPM has a much more strict schedule.

- A. monthly
- B. every 6 months
- C. annually
- D. every 2 years

100. The _____ suggests that the testing needs to be performed on acceptance and annually by a trained physicist and the daily and monthly/quarterly tests can be performed by a trained QC technologist or a physicist.

- A. FDA
- B. CDC
- C. American Association of Physicists in Medicine (AAPM)
- D. ARRT

101. Which of the following is often the **weakest** link in the digital imaging chain?

- A. state inspection
- B. monitor quality
- C. buying new equipment
- D. insurance

102. _____ measures the luminescence of areas on the monitor.

- A. densitometer
- B. photometer

- C. sensitivity meter
- D. magnetometer

103. Which of the following can be measured by evaluating the cross patterns at the center and corners of the pattern and verifying that all letters and numbers appear on monitor?

- A. distortion
- B. darkness
- C. resolution
- D. deleted files

104. Which of the following test pattern is used for geometric distortions?

- A. TG18-QC
- B. ACR350
- C. FDA50-R
- D. EPA-5

105. _____ test pattern is used for luminance response of a monitor.

- A. TG18-QC
- B. ACR350
- C. FDA50-R
- D. TG18-LN

106. The bit-depth resolution of the display monitor should be assessed by using the _____ pattern.

- A. TG18-QC
- B. TG18-MP
- C. FDA50-R
- D. TG18-CDC

107. With the TG18-UNL10 and TG18UNL80 test patterns, luminance is measured at five positions over the monitor using a calibrated photometer.

- A. TRUE
- B. FALSE

108. Which of the following needs to be observed for printer image quality in wet laser printer on a test pattern?

- A. artifacts
- B. changes in density and contrast
- C. changes in resolution
- D. all of the above

109. _____ is a constant measure to be monitored for whether all images completed at the modality make it to the PACS.

- A. Data integrity
- B. Distortion
- C. Insurance information
- D. Chemical balance

110. _____ is used to reduce the size of the image files to increase the speed of the network transfer of the images.

- A. Large files
- B. Compression
- C. Code-less files
- D. Distortion

111. Which of the following is/are considered as **nondiagnostic** images?

- A. poor-quality images due to equipment malfunction
- B. poor-quality images due to operator error
- C. images from other modalities
- D. A and B only

112. People who are trained on all aspects of the PACS system and are prepared to train others are called _____.

- A. super users
- B. managers
- C. vendors
- D. staff

113. _____ need to set up an ongoing training program for PACS in radiology department.

- A. Dosimetrist
- B. PACS administrator
- C. Radiologist
- D. none of the above

Chapter 12

114. Maintenance of equipment, image acquisition, and processing standards are quality control issues that fit into the concept of total quality management (TQM).

- A. TRUE
- B. FALSE

115. _____ requires compliance with standards of practice to assure quality in **any** imaging system.

- A. ARRT
- B. ASRT
- C. American College of Radiology (ACR)
- D. CDC

116. Who is the **first** line of defense in recognizing, preventing and reporting quality control (QC) issues in radiology department?

- A. Radiologists
- B. Nurses
- C. Radiologic technologist
- D. Patients

117. Which of the following is R.T.'s weekly QC duties?

- A. clean and inspect receptors
- B. clean air intakes of imaging plate reader
- C. clean computer, display screen, keyboard and mouse
- D. all of the above

118. The reject analysis and reasons are done in QC on _____ basis by Radiologic Technologist.

- A. monthly
- B. annually
- C. bi-annually
- D. never

119. Many vendors have software program to automatically keep repeats in a folder for the QC technologists to review in the system.

- A. TRUE
- B. FALSE

120. The preventative maintenance (PM) of imaging equipment is performed by a service engineer _____.

- A. daily
- B. weekly
- C. monthly
- D. semiannually