醫學影像資訊管理士測驗
Medical Imaging Information Administrator

2017年8月27日 星期日

1. 除題意不清楚或是圖片有問題，禁止詢問與試題有關的問題。
2. 應答時禁止使用任何文件。
3. 請在電腦答案卡上圈選作答
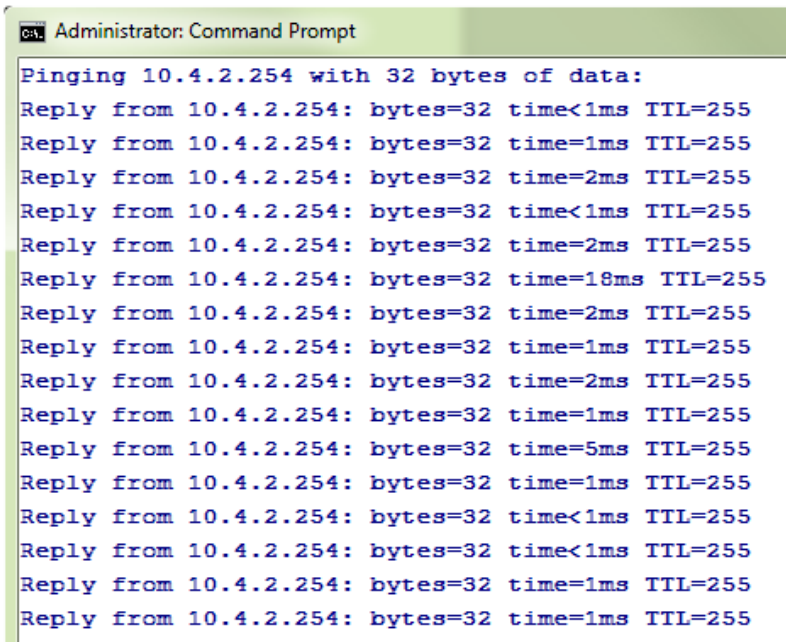
項　目	填寫內容：
姓名	您的中文與英文姓名
試題名稱	MIIA Test
項目	不用填寫
科目	不用填寫
受試者識別代碼	您的准考證號碼 **17XXX** 將您選定之數字的圓圈塗滿。
科目代碼	不用填寫
地點代碼	不用填寫
作答方式	本測驗共有90題問題。請使用1到90作答欄位。 請將測驗卷Q1的答案於Answer Choices1填入答案卷。 　　Q2 = Answer Choices2，Q3 = Answer Choices3…….Q90 = Answer Choices90。

MIIA2017

1. Which of the following is NOT a type of motherboard expansion slot?
   A. ISA
   B. PCI
   C. AGP
   D. ATX

2. Which is NOT the operating system?
   A. UNIX
   B. Windows
   C. Apache
   D. iOS

3. What is BIOS an acronym for?
   A. basic input output system
   B. boot initial operating startup
   C. basic input output startup
   D. bootstrap initial operating system

4. What does FDISK do?
   A. recovers lost clusters on the hard drive
   B. performs low-level formatting of the hard drive
   C. fixes bad sectors on the hard drive
   D. creates partitions on the hard drive

5. Which of the following is NOT a type of computer hard drive?
   A. IDE
   B. EIDE
   C. SCSI
   D. FDD

6. What type of connector is used to plug a telephone line into a modem?
   A. RJ-11
   B. RJ-45
   C. RJ-10
   D. COM1

7. How many bits are required to represent a 1024 stage contrast resolution?
   A. 8 bits
   B. 9 bits
   C. 10 bits
   D. 11 bits

8. You suspect a virus has entered your computer. What will be likely affected by the virus?
    A. Files
    B. Network Interface Card
    C. VGA Display
    D. ROM

9. Which of the following retains the information it's storing when the power to the system is turned off?
    A. CPU
    B. ROM
    C. RAM
    D. DIMM

10. Which provides the fastest data access time?
    A. Hard disk
    B. DVD
    C. Blue-ray Disk
    D. RAM

11. Which of the following conditions most increases the likelihood that electrostatic discharge (ESD) will occur?
    A. cool, damp conditions
    B. cool, dry conditions
    C. hot, damp conditions
    D. hot, dry conditions

12. Which of the following are sensitive to electrostatic discharge (ESD) damage?
    a. memory

    b. CPU

    c. hard drive

    d. PC add-on cards

    e. CD ROM drive

    f. motherboard
    A. a, b, and f
    B. c and d
    C. none of the above
    D. all of the above

13. What are the four key functions of a computer system?
    A. input, processing, output, and storage
    B. keyboard, display, memory, and disk drive
    C. read, write, calculate, and display
    D. bits, bytes, words, and OSI

14. Parity is:
    A. a byte stored in the FAT to indicated remaining slots
    B. the last setting for controlling hard drive configuration of IDE drives in the CMOS
    C. an extra bit stored with data in RAM that is used to check for errors when the data is read back
    D. the optimal transmission speed of data over a CAT 5 cable

15. Which is a fixed number that can be use with IP address to indenfity network address?
    A. Gateway
    B. TCP/IP
    C. MAC Address
    D. Subnet mask

16. What technique is used by Ethernet networks to determine which device can have access to the media?
    A. Collision Domain (CD)
    B. Token Ring Passing
    C. Collision Domain Management (CDM)
    D. None of above

17. From the image, what is the most likely command execution?

```
Administrator: Command Prompt

Pinging 10.4.2.254 with 32 bytes of data:
Reply from 10.4.2.254: bytes=32 time<1ms TTL=255
Reply from 10.4.2.254: bytes=32 time=1ms TTL=255
Reply from 10.4.2.254: bytes=32 time=2ms TTL=255
Reply from 10.4.2.254: bytes=32 time<1ms TTL=255
Reply from 10.4.2.254: bytes=32 time=2ms TTL=255
Reply from 10.4.2.254: bytes=32 time=18ms TTL=255
Reply from 10.4.2.254: bytes=32 time=2ms TTL=255
Reply from 10.4.2.254: bytes=32 time=1ms TTL=255
Reply from 10.4.2.254: bytes=32 time=2ms TTL=255
Reply from 10.4.2.254: bytes=32 time=1ms TTL=255
Reply from 10.4.2.254: bytes=32 time=5ms TTL=255
Reply from 10.4.2.254: bytes=32 time=1ms TTL=255
Reply from 10.4.2.254: bytes=32 time<1ms TTL=255
Reply from 10.4.2.254: bytes=32 time<1ms TTL=255
Reply from 10.4.2.254: bytes=32 time=1ms TTL=255
Reply from 10.4.2.254: bytes=32 time=1ms TTL=255
```

    A. ping gateway
    B. ping 10.4.2.254
   C. ping -l 10.4.2.254
    D. ping -t 10.4.2.254

18. Which of the following DICOM tags is most likely used to store patient name?

    A. (0008,0008)

    B. (0010,0010)

    C. (0010,0030)

    D. (0010,1000)

19. Platters of a magnetic hard drive spin at a rate measured in?

    A. Revolutions per second

    B. Iterations per minute

    C. Revolutions per minute

    D. Iterations per second

20. Which of the acronyms listed below refers to a dedicated storage appliance that can be added to a local network and PACS?

    A. SPS

    B. NAS

    C. SMB

    D. NFS

21. Which of the following units is used for measuring the speed of modern CPUs?

    A. GHz

    B. rpm

    C. Gbps

    D. MHz

22. Which of the following data types is NOT an image type?

    A. Functional MRI

    B. Fiber Tractography

    C. Diffusion Weighted MRI

    D. Magnetic Resonance Spectroscopy

23. What is the tool frequently using for DICOM monitor testing?

    A. AAPM Task Group 18 Test Patterns

    B. MoPH Task Group 99 Test Patterns

    C. SEMTE18 Test Patterns

    D. DICOM MHGS 18 Test Patterns

24. What is the purpose of this following connector?

   A. Connect the computer to the LAN

   B. Connecting a WIFI card to USB3.0

   C. Connecting a HDMI display monitor

   D. Connection to external harddrive

25. What is the most likely the provide image is relating to in IHE?
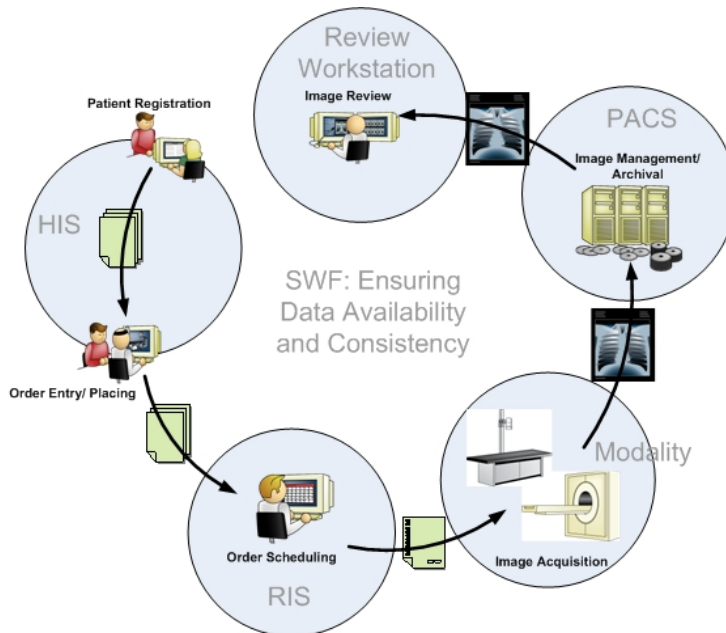
   A. Scheduled Workflow integration profile
   B. The Early Hearing Care profile
   C. Patient Information Reconciliation coordinates reconciliation profile
   D. Simple Image and Numeric Report specifies Diagnostic Radiology Reports

26. IHE is an international best practices for managing compatibility of systems in hospital world-wide. What is the IHE stand for?

   A. Integration of Health Economics®

   B. Integrity of Healthcare Enterprise®

   C. Integrating the Healthcare Enterprise®

D. Interoperability of Healthcare Equipment®

27. In one morning you receive a message from PACS daily QA as "Echo: Verification to AET Failed". What is most likely the problem?

A. Verification Test is not performed.

B. Verification Test is performed with unsuccessful result.

C. Storage Commitment command is wrong.

D. PACS storage is full.

28. What is the "Modality Performed Procedure Step" (MPPS) perform in DICOM communication?

A. The modality equipment sent this MPPS at the beginning and at the end of an acquisition step.

B. The DICOM server sent this MPPS at the beginning of an acquisition.

C. The Storage device sent the message to the modality.

D. The modality equipment sent this MPPS only at the end of an acquisition step.

29. What RAID level use the technique called "Stripping"?

A. RAID 0

B. RAID 1

C. RAID 3

D. RAID 5

30. What is requirement network setting for DICOM communication?

A. AE Title, IP address

B. AE Title, IP address, port

C. AE Title, windows hostname

D. AE Title, Firewall port

31. According to HIPPA, what procedure should be performed to protect patient information in DICOM file export?

A. Rename DICOM files

B. Compressed and rename DICOM files

C. Keep DICOM files compressed in secure storage devices

D. Anonymized DICOM file when export to public use

32. Which of the following appears to be a valid Transfer Syntax UID?

A. 1.2.840.10008.1.2.0Z.50

B. 1.2.840.10008.0B1.1.2

C. 1.2.840.10008.1.2.4.50
D. 1.2.840.10008.1.2.0A0.20

33. Select the correct statement about a SCU (Service Class User) and a SCP (Service Class Provider).

    A. SCP is a device which requests DICOM service.
    B. SCU is a device which provides DICOM service.
    C. SCU and SCP are not always existent in DICOM transmission.
    D. One device can support both SCU and SCP of the same service class.

34. Which of the following DICOM tags is most likely to be private tag?
    A. (0008,0008)
    B. (0010,0010)
    C. (0029,0000)
    D. (0010,100x)

35. Which logical address type is set into every WIFI USB from the factory?
    A. A unique MAC address
    B. A common Ethernet network address
    C. A TCP/IP address
    D. A gateway address

36. Which of the following solutions provides an alternative to manual assignment of IP addresses?
    A. DNS
    B. SNMP
    C. NAT
    D. DHCP

37. Which of the following answers refers to a system containing mappings of domain names to various types of data, such as for example numerical IP addresses?
    A. TCP/IP
    B. DNS
    C. SQL
    D. DHCP

38. In computer networking, a system or an application processing requests on behalf of another system is commonly referred to as:
   A. Proxy
    B. Web server
    C. Man-in-the-middle (MITM)
    D. First responder

39. What is the compression technique suitable for application of telemedicine and proposed to solve the cosine transform limitations?
    A. JPEG 2000
    B. Wavelet compression
    C. Run-Length compression
    D. MPEG-4 Part 2

40. When the pixel size is 200μm, what is the spatial resolution?
    A. lp/mm
    B. 1.5 lp/mm
    C. lp/mm
    D. 2.5 lp/mm
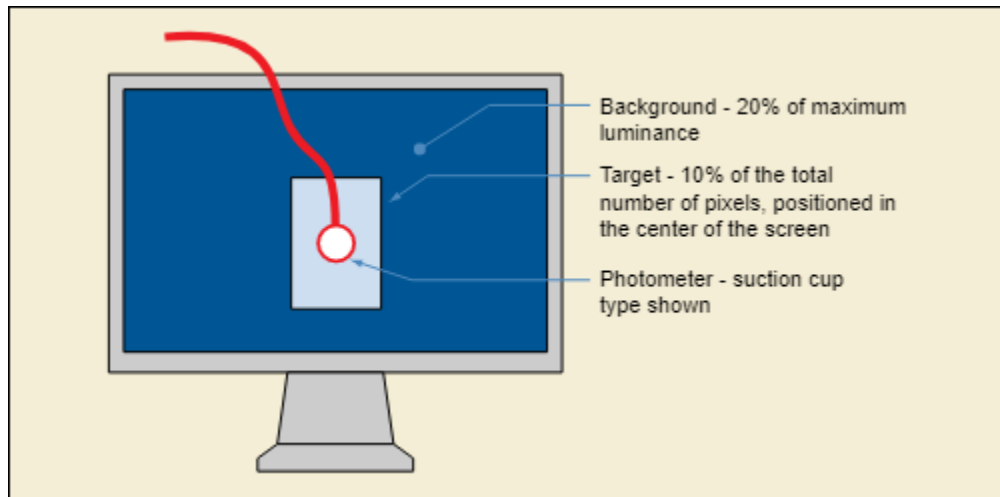

41. What is the name of the test pattern shown below?
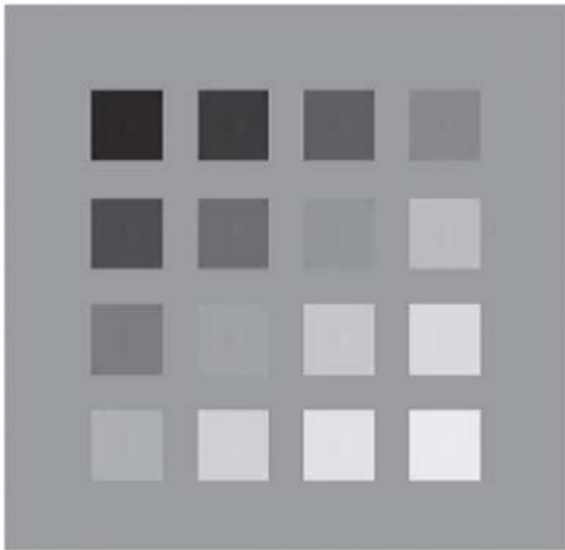
    A. TG18-LN
    B. TG18-CT
    C. TG18-BN
    D. TG18-CX

42. A storage device of a PACS uses five 500GB SCSI disks. Which of the following give highest storage capability with data-loss prevention?
    A. RAID 0
    B. RAID 1
    C. RAID 5
    D. RAID 6

43. What is the minimum number of hard disks to build a RAID 6 storage?
    A. 2
    B. 3
    C. 4
    D. 5

44. Which of the following functions allows you to replace a faulty disk while the RAID disk is running?
    A. Hot swap
    B. Hot spare
    C. Mirroring
    D. Striping

45. What is sampling interval in a Nyquist theory?
    A. f_{max}
    B. $\dfrac{1}{2 \times f_{max}}$
    C. $\dfrac{1}{3 \times f_{max}}$
    D. $\dfrac{1}{4 \times f_{max}}$

46. According to this test pattern, which item is not an appropriate test using this test pattern?
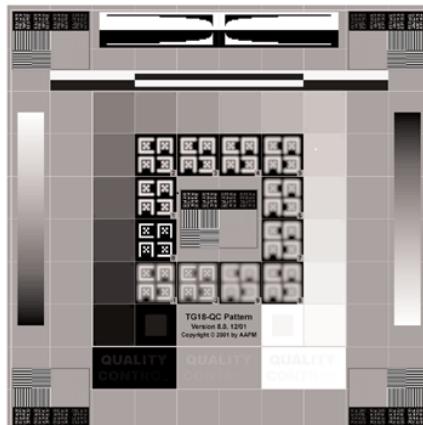
    A. Screen distortion
    B. Gray scale contrast
    C. Spatial resolution
    D. Luminance response

47. Which of the following item bset explain the image below?

Background - 20% of maximum luminance

Target - 10% of the total number of pixels, positioned in the center of the screen

Photometer - suction cup type shown

  A. Accumulated time testing
  B. Luminance response testing
  C. Screen distortion testing
  D. Bit resolution changes testing

48. What does 10 lp/mm mean?
  A. Black 10 lines in 1mm
  B. 10 pixels in 1mm
  C. 20 pixels in 1mm
  D. 20 level gray scale in 1mm

49. What is the appropriate PACS data storage per year for a hospital with 50GB of Radiographic imaging per day? (giving 1 month = 20 days)

  A. 120 GB
  B. 1.2 TB
  C. 12 TB
  D. 120TB

50. Which of the following item best explain the diagram below?
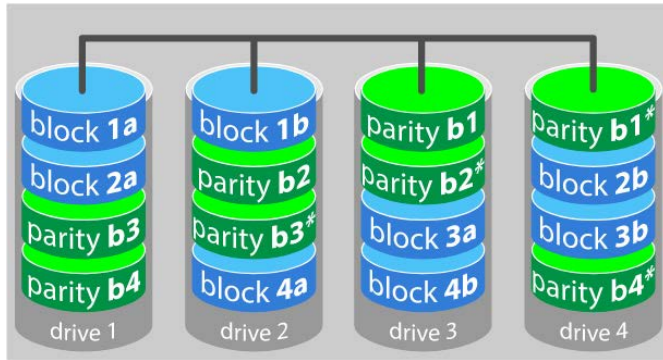
A. RAID 0
B. RAID 1
C. RAID 5
D. RAID 6

51. Which of the following item is the correct ascending order in the SI unit?
    A. k → M → T → G
    B. k → G → T → M
    C. k → M → G → T
    D. T → G → M → k

52. Which is the correct netmask of the IP address 202.13.180.0/16?
    A. 00000000.00000000.11111111.11111111
    B. 11111111.11111111.00000000.00000000
    C. 00000000.11111111.00000000.11111111
    D. 11110000.11110000.00001111.11110000

53. What is a unit of brightness for monitor?
    A. lx/m²
    B. cd/m²
    C. ldc/m²
    D. lux/m²

54. What standard guideline is used for the medical image performance evaluation in AAPM (American Association of Physicists in Medicine)?
    A. AAPM Task Group 16
    B. AAPM Task Group 17
    C. AAPM Task Group 18
    D. AAPM Task Group 19

55. What item is an explanation of the process shown in the image below?

    A. Distortion calibration
    B. Gray scale checking
    C. Monitor contrast checking
    D. Luminance calibration

56. What is the image processing technique used in the image below?

    A. VRT (Volume rendering technique)
    B. SSD (Shaded surface display)
    C. MPR (Multiplanar reformation)
    D. Virtual endoscopy
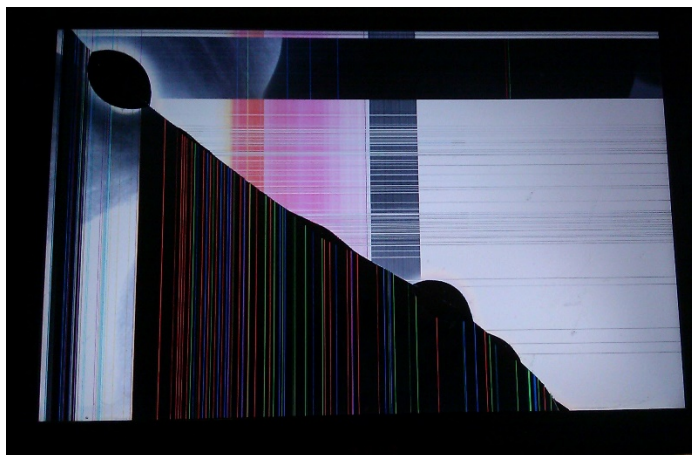
57. What following item is best described the image below?
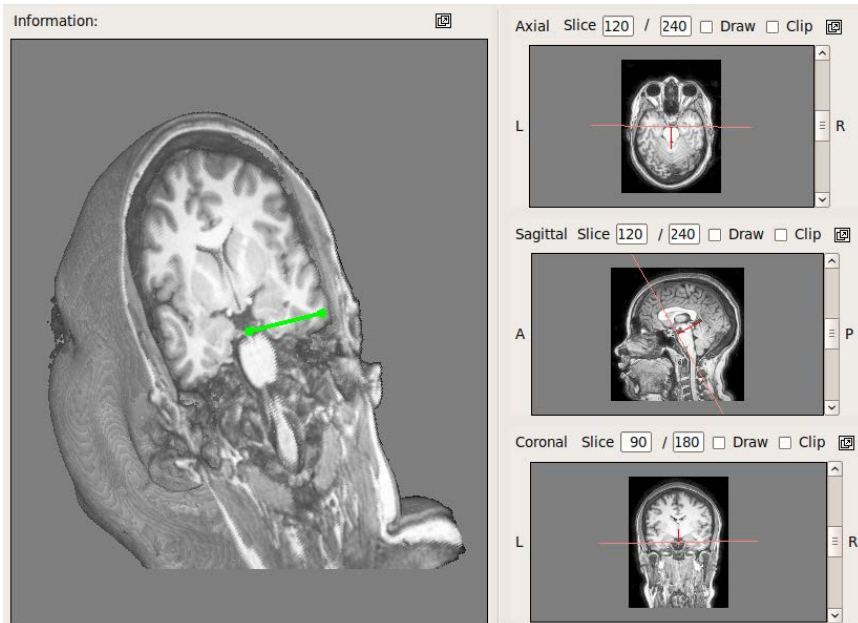
    A. Volume rendering
    B. Feature Extraction Technique
    C. Multiplanar reformation
    D. Virtual Reality

58. What is the legislation relating to the patiant information provacy and management in the USA?
    A. IHE
    B. HIPPA
    C. NEMA
    D. Treaty

59. What is likely the cause of this LCD display malfunction?

    A. CR error

B. IP error
C. Compression error
D. Cracked Screen

60. Which is the part of the security profile of DICOM?
    A. Part 1
    B. Part 3
    C. Part 13
    D. Part 15

61. What is best described the used of "Lookup Table" in DICOM image?
    A. Mapping the stored pixel values to display image correctly
    B. Converting the stored pixel values into voxel in order to perform MPR
    C. Display DICOM image on multiple medical display units
    D. Mapping DICOM public to private tags

62. Which of the following item is best described the process listed in the image below?
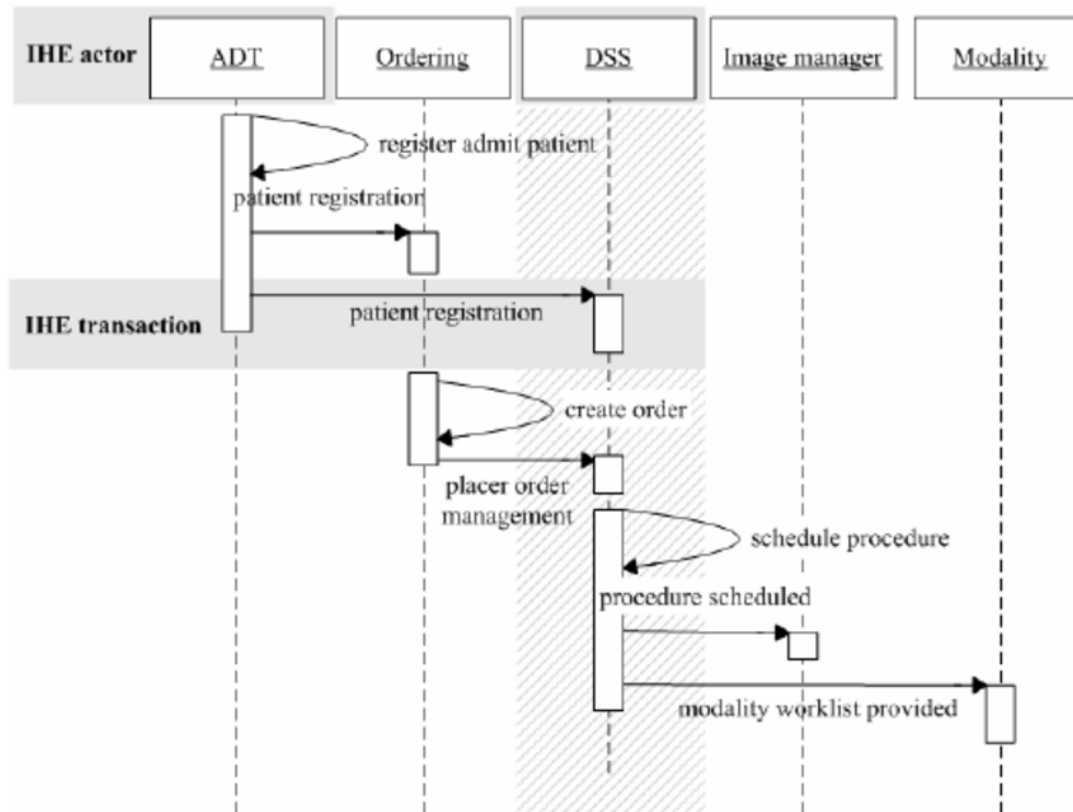
    A. DICOM verification process
    B. RIS patient registration process
    C. IHE patient appointment process
    D. Modality worklist process

63. What is best explanation of the Modality Performed Procedure Step (MPPS) in DICOM?
    A. It allows a Modality to tell PACS/RIS what it has done.
    B. It tells Modality what it has done.
    C. PACS/RIS tells Modality what should be done.
    D. PACS/RIS tells HIS what has done.

64. What is not the advantage of using Modality worklist (MWL)?
    A. Reduces operator time
    B. Reduces data entry errors
    C. Improves image quality
    D. Improves data consistency

65. Which of the following item is highly related standard when accessing the DICOM image from the Internet?
    A. HL7 messaging
    B. DICOM DIR
    C. Web service part 18
    D. Modality SCU

66. What information in the DICOM header is suitable for checking the compression method of the image?
    A. Media storage SOP class UID
    B. IOD(Information Object Definition)
    C. SOP instance UID
    D. Transfer syntax UID

67. Which is the following is NOT able to make 3D image in modality?
    A. Ultrasound
    B. Computed radiography(CR)
    C. Computed tomography(CT)
    D. Magnetic resonance imaging(MRI)

68. For medical image interpretation by radiologists, what item is best explanation of the work flow from the image below?
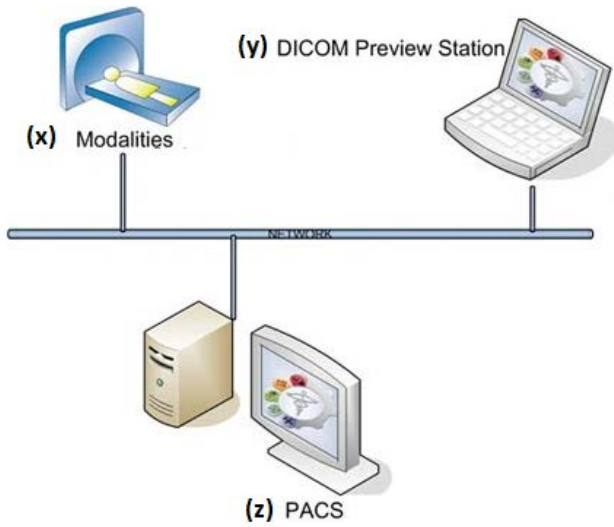
A. (y) Query/Retrieve SCU from (z) SCP
B. (x) Query/Retrieve SCU from (z) SCP
C. (z) Query/Retrieve SCU from (x) SCP
D. (z) Query/Retrieve SCU from (y) SCP

69. What best explain the cause of the artifact (arrow) in the image below?

A. IP cracked
B. Dirt or other foreign matter

C. Incomplete erasure

D. IP Reading error

70. Which of the following describes the distance between two dots in display monitor?

   A. Contrast ratio
   B. Brightness
   C. Dot pitch
   D. Pixel size

71. Which of the following item is required for the server when receiving an image from a modality?
   A. Storage SCU
   B. Storage SCP
   C. Query/Retrieve SCU
   D. Query/Retrieve SCP

72. What is the best technique should be applied for the PACS server to provide 24/7 service in the Radiology Department?
   A. Load balance clustering
   B. HA clustering
   C. Storage Area Network
   D. Network Attached Storage

73. Which item provides faster data read/write with an advantage of data loss prevention?
   A. RAID 0
   B. RAID 1
   C. RAID 3
   D. RAID 5

74. Which of the following DICOM tags is most likely used to store patient name?
   A. (0008,0008)
   B. (0010,0010)
   C. (0010,0030)
   D. (0010,1000)

75. what is the resolution of 3MP diagnostic monitor?
   A. 768 x 4096
   B. 1600 x 1966
   C. 1200 x 2621
   D. 2048 x 1536
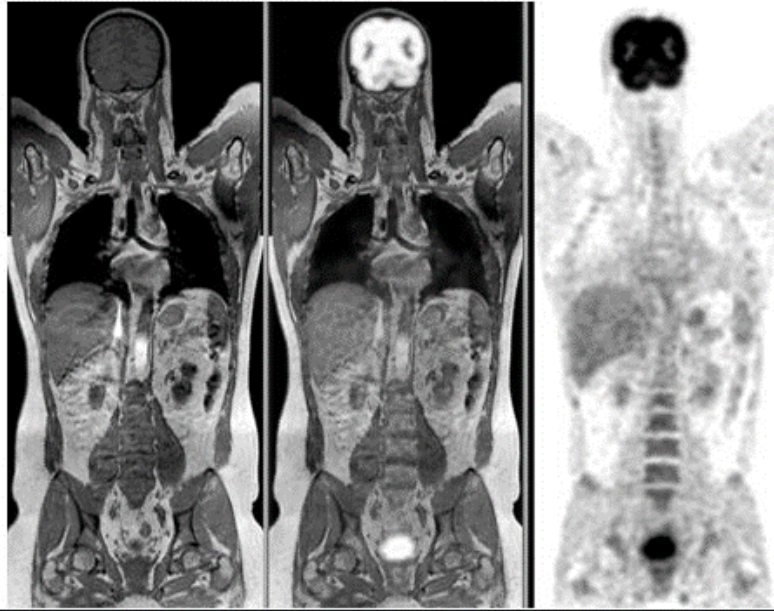
76. Which of the following item is correct?
    A. 1 XOR 1 = 1
    B. 1 XOR 0 = 0
    C. 0 XOR 0 = 1
    D. 1 XOR 0 = 1

77. Which of the following item is available in the HL7 PID but not available in the DICOM Header?
    A. Patient name
    B. Hospital Number
    C. Patient Address
    D. Institution name

78. Which of the following is NOT the photostimulable phosphor of IP?
    A. $BaFCl : Eu^{2+}$
    B. $BaFBr : Eu^{2+}$
    C. $BaFI : Eu^{2+}$
    D. $BaFAg : Eu^{2+}$

79. What is the element type used to directly convert X-ray to electric signal ?
    A. CsI(Cesium Iodide)
    B. Gallium Arsenide
    C. a-Si
    D. a-Se

80. Which of the following RAID level has slowest write performance?
    A. RAID 0
    B. RAID 1
    C. RAID 5
    D. RAID 6

81. Which item is most likely relating to the image below?

```
- <author>
  - <assignedEntity>
      <id root="2.16.840.1.113883.9876.210.3"
        extension="5332443" />
      <telecom value="tel:+1(317)630-7960" />
    - <assigneePerson>
      - <name>
          <given>Keiko</given>
          <family>Jones</family>
          <suffix>MD</suffix>
        </name>
    </assigneePerson>
  </assignedEntity>
</author>
<!-- Removed consumable -->
- <patientSubject>
  - <patient>
      <id root="2.16.840.1.113883.9876.211"
        extension="344253425" />
    + <addr>
      <telecom value="tel:213-555-4344" />
    - <patientPerson>
        <id root="2.16.840.1.113883.4.1"
          extension="333224444" />
      - <name>
          <given>George</given>
          <given>Simon</given>
          <family>Wigny</family>
        </name>
        <administrativeGenderCode code="M"
          codeSystem="2.16.840.1.113883.5.1" />
        <birthTime value="19740423" />
    </patientPerson>
  </patient>
```

        A. IHE
        B. HL7
        C. DICOM
        D. HTTP

82. From the image below, what is likely the technique used in the imaging process?

    A. MRI image conversion
    B. CT reconstruction
    C. PET-MRI image fusion
    D. PET-CT image fusion

83. Which of the following item is NOT a feature of a computer virus?
    A. Self-spreading ability
    B. Self-healing ability
    C. Hiding ability
    D. Self-encrypting ability

84. What item is mostly likely describe the image below?

| Name	UID
Implicit VR – Little Endian	1.2.840.10008.1.2
Explicit VR – Little Endian	1.2.840.10008.1.2.1
Deflated Explicit VR – Little Endian	1.2.840.10008.1.2.1.99
Explicit VR – Big Endian	1.2.840.10008.1.2.2
MPEG2 Image Compression	1.2.840.10008.1.2.4.100
JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50
JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51
JPEG Extended (Process 3 & 5)	1.2.840.10008.1.2.4.52

A. DICOM Information Object Definition (IOD)
B. DICOM transfer syntax
C. DICOM DIR
D. DCM4CHEE

85. Which is the following is proper management of Image Plate?
  A. Image should be process in less than 24 hours.
  B. When leave alone long time, erasing work should be operated before exposure.
  C. Keeping temperate is good to be higher than indoor temperate.
  D. It takes custody of examination room for convenience of using.

86. Which of the following is NOT correct about PACS data?

  A. PACS data is divided into image and database information.
  B. Database information contains organized index value, patient information, examine information of DICOM image.
  C. Most of image information is stored as file.
  D. DICOM image is smaller than Database Information.

87. Which of the following is not acquired from the histogram in digital image?

  A. The number of pixel at specific intensity
  B. Intensity value of pixel
  C. Intensity distribution
  D. Location information at specific pixel

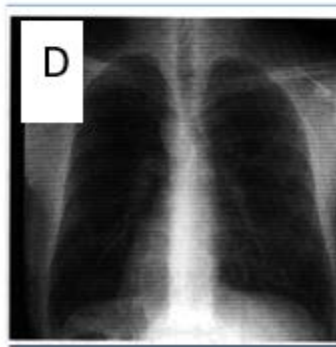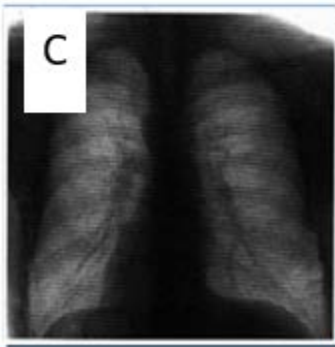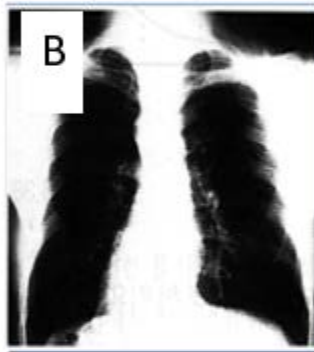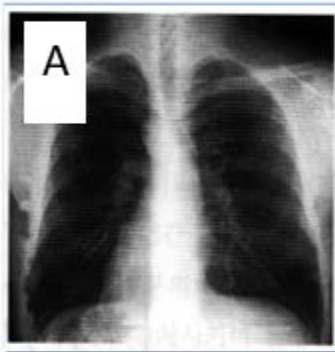88. Following image is a merge image of PET and CT. What is image processing technique?
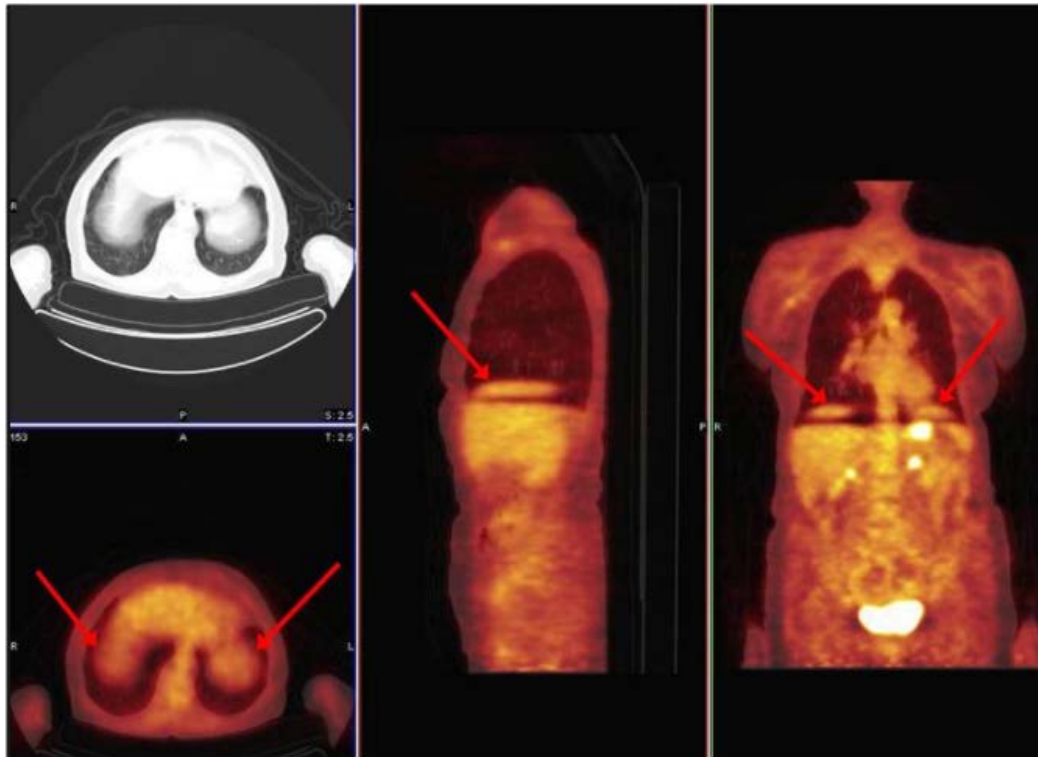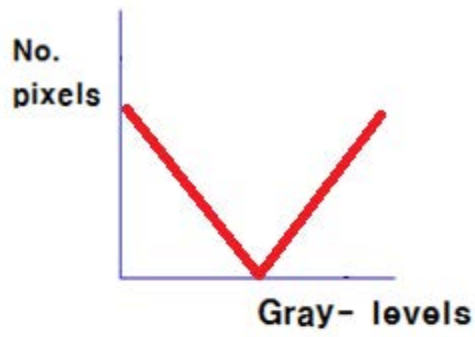

    A. Subtraction
    B. Registration
    C. Rendering
    D. Pseudocoloring

89. Which of the following is most likely TRUE?
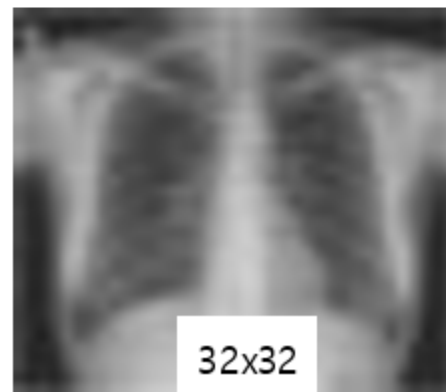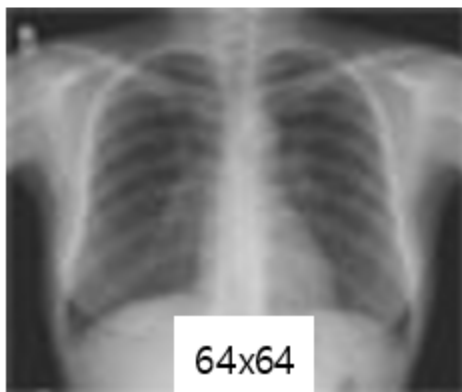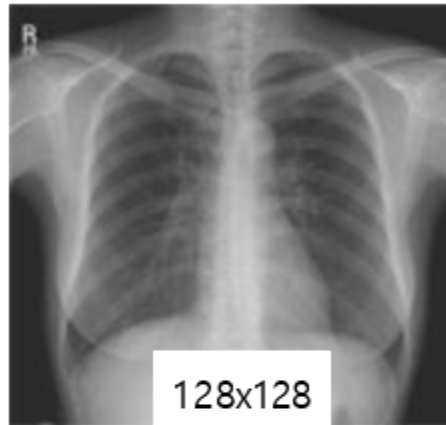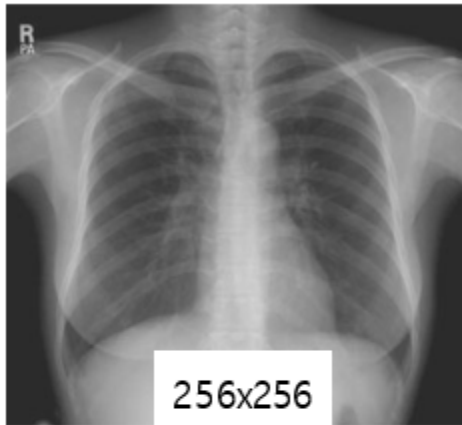
A. The change of intensity
B. The change of sampling
C. The change of quantization
D. The change of coding

90. Which image is predictable when set by following Look Up Graph?

A. a.
B. b.
C. c.
D. d.