

2016MIIA

1. What is the minimal unit for single character in digital?

- a) 1bit
- b) 4bit
- c) 1byte
- d) 4byte

2. Which is arranged in order of SI unit size?

- a) Kilo → Mega → Giga → Tera
- b) Kilo → Mega → Tera → Giga
- c) Kilo → Giga → Tera → Mega
- d) Tera → Giga → Mega → Kilo

3. Which of the following properly arrange the conception of information from subordinate to superordinate concept?

- a) Character (word) -> Record -> File -> Field
- b) File -> Record -> Field -> Character (word)
- c) Record -> Field -> File -> Character (word)
- d) Character (word) -> Item -> Record -> File

4. Which of the following is NOT a correct explanation of digital images?

- a) Pixel is the minimum unit of digital images.
- b) It expresses a location and brightness of pixels.
- c) The value of $G(X, Y)$ is 0 or 1 in binary images.
- d) Digital images arrange pixels one-dimensionally.

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

- a) Intensity distribution
- b) The number of pixel at specific intensity
- c) Location information at specific pixel
- d) Intensity value of pixel

6. What is the process which make continuous signal to discontinuous signal?

- a) Pre-processing
- b) Post-processing
- c) Quantization
- d) Sampling

7. After intensity dispersion of original data is distributed over whole part of the system, what makes frequency of visible density uniform?

- a) Interpolation
- b) Threshold technique
- c) Histogram Equalization
- d) Unsharp mask subtraction

8. Which of the following is NOT correct about HL7?

- a) It is a transmission standard in medical information field which is used in the world most widely.
- b) It is a only international standard for exchanging information among medical information systems.
- c) It is a open standard which is developed by information developer, etc together.
- d) Firstly in RSNA(Radiological Society of North America) conference, a regulation of message transmission that network should be connected among devices having different types of image information was made

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

- a) Most of image information is stored as file type.
- b) PACS data is divided into DICOM image and database information.
- c) Database Information is larger than DICOM image.
- d) Database information contains organized index value, patient information, examine information of DICOM image.

10. Which of the following is the most related when storing the DICOM image in CD?

- a) HL7 layer
- b) DICOM DIR
- c) Modality SCU
- d) Modality SCP

11. What is DICOM basic unit?

- a) DIMSE(DIcom Message Service Element)
- b) SCU(Service Class User)
- c) SOP(Service Object Pair)
- d) IOD(Information Object Definition)

12. What is TAG for checking whether files are compressed or not and knowing the method?

- a) File meta information version (0002, 0001)
- b) Media storage SOP class UID (0002, 0002)
- c) Transfer syntax UID (0002, 0010)
- d) SOP instance UID (0008, 0018)

13. Which of the following is NOT DICOM Message Service Element(DIMSE)?

- a) C-store
- b) C-get
- c) N-store
- d) N-get

14. Which of the following is NOT acquired from DICOM Header?

- a) Patient name
- b) Date of birth
- c) IP Address
- d) Modality

15. Which is not relevant with interface between PACS and OCS database?

- a) Web Interface
- b) DLL Interface
- c) ODBC Interface
- d) Text Interface

16. Which of the following is acquired from American law about personal information management and security?

- a) DICOM
- b) HIPPA
- c) IHE
- d) HL7

17. What is the most suitable compressing method for medical image in what DICOM committee recognize?

- a) JPEG
- b) G3/G4 compression
- c) Huffman coding
- d) Run-Length compression

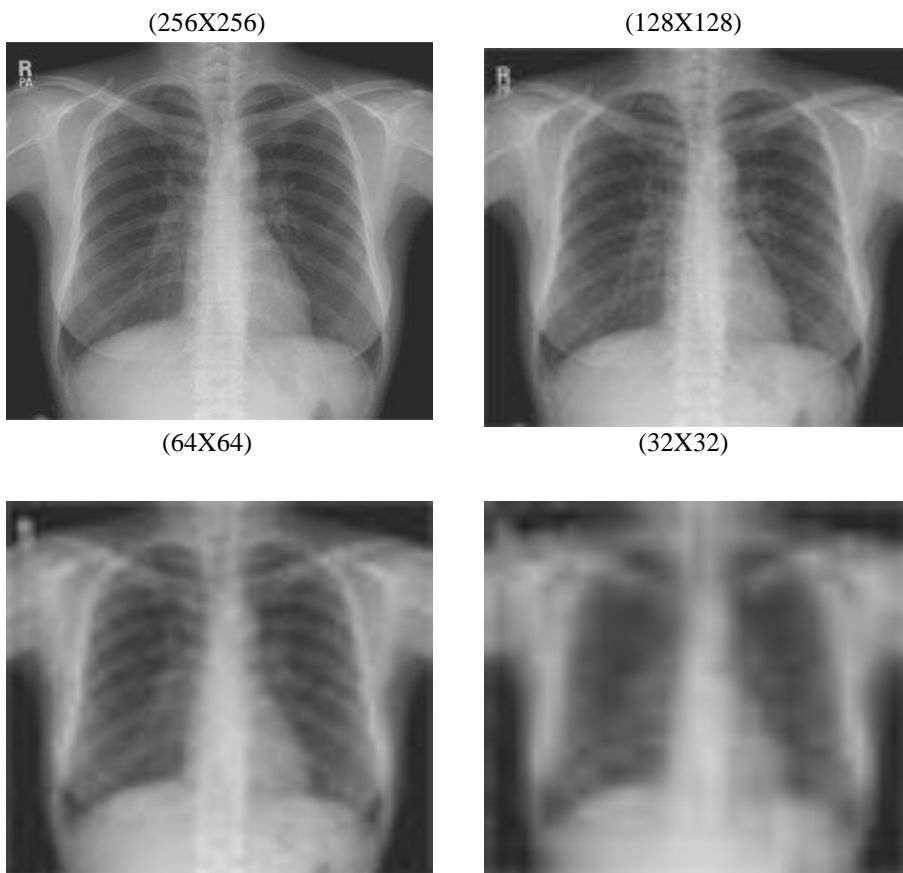
18. Where is the best body part for applying High-pass filter?

- a) Bone and lung
- b) Cartilage and muscle
- c) White and gray matter
- d) Muscle and fat

19. What is the compression method which has original data most rarely destroyed?

- a) Run-Length compression
- b) Cosine transform coding
- c) Wavelet transform coding
- d) Truncation coding

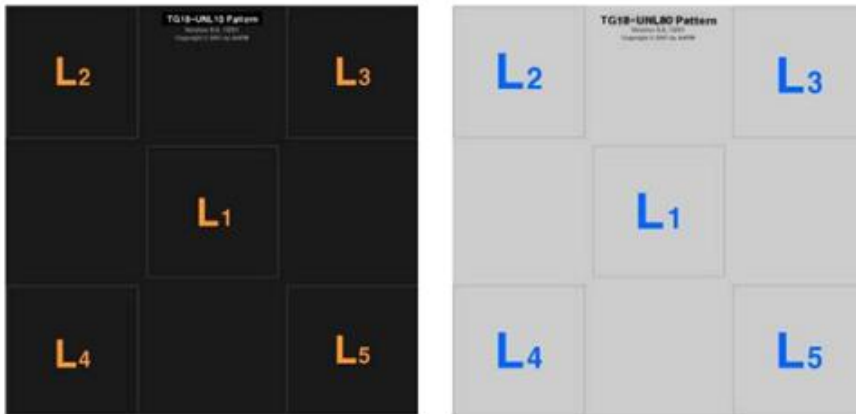
20. Which of the following is most likely TRUE?



a) The change of scanning

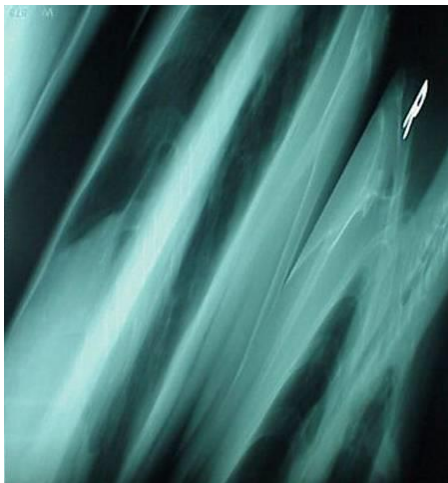
- b) The change of sampling
- c) The change of quantization
- d) The change of coding

21. Which of the following is acquired from this image measuring L1 to L5?



- a) Uniformity of luminescence
- b) Cumulative time of use
- c) Geometrical distortion
- d) Bit resolution changes

22. What is the cause of the error in this image?

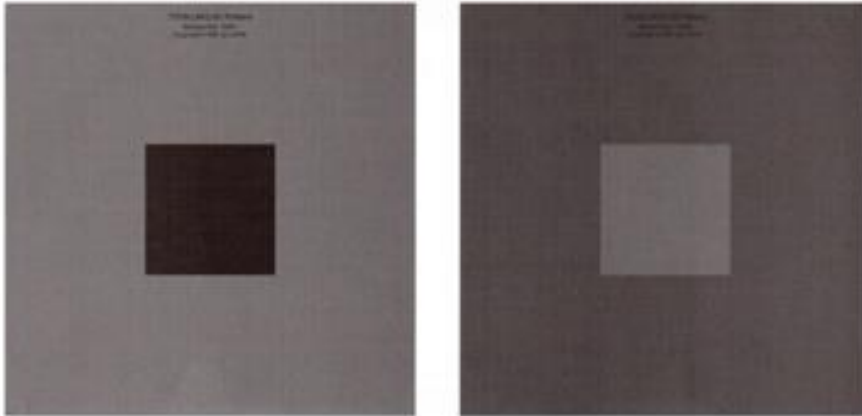


- a) CR Error
- b) IP Scratch Error
- c) Compression Error
- d) DB Connect Error

23. What is the unit for luminance meter?

- a) lx/m²
- b) cd/m²
- c) pm/m²
- d) Gx/m

24. What is the evaluation list from following image patterns?



- a) Luminance response
- b) Contrast
- c) Spatial resolution
- d) Geometrical distortion

25. What does spatial resolution of 5 lp/mm mean?

- a) Black 5 lines in 1mm
- b) 5 pixels in 1mm
- c) 10 level gray scale in 1mm
- d) 10 pixels in 1mm

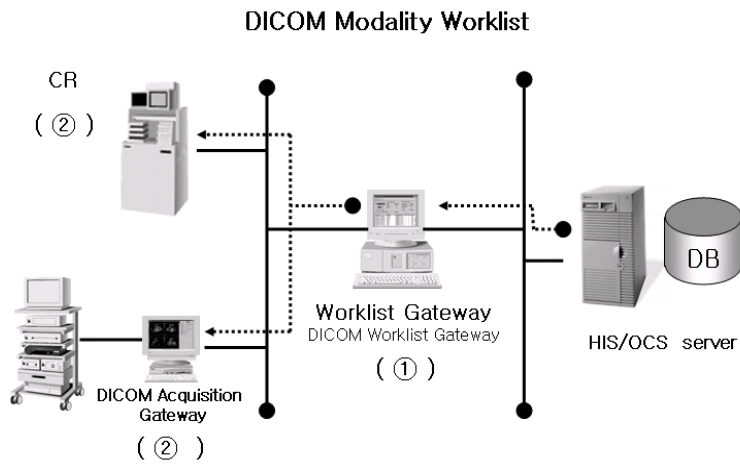
26. What is the principle of image compression?

- a) Liberty
- b) Duplication
- c) Unpredictability
- d) Asymmetry

27. Which is not relevant with Short-Term storage?

- a) Image has to be displayed rapidly.
- b) Use inexpensive media device such as MOD, DLT, DVD.
- c) Doctor frequently check this Short Term to treat patients
- d) Data volume is large because of lossless compression.

28. This is DICOM Modality Worklist diagram. What is the most suitable for ① and ②?



- a) ① DICOM Worklist SCP ② DICOM Worklist SCP
- b) ① DICOM Worklist SCU ② DICOM Worklist SCU
- c) ① DICOM Worklist SCP ② DICOM Worklist SCU
- d) ① DICOM Worklist SCU ② DICOM Worklist SCP

29. Which of the following is needed for the modality when transferring image from modality to server?

- a) Storage SCU
- b) Storage SCP
- c) Query/Retrieve SCU
- d) Query/Retrieve SCP

30. In case of the trouble with Worklist query, what is NOT necessary for check in PACS server?

- a) Database
- b) Broker Service
- c) Acquisition Service
- d) Worklist Service

31. When a server have a problem in the middle of conduct of a work in a 2 servers and over, other server cover the problem. What is this technique?

- a) SAN
- b) DAS
- c) NAS
- d) Clustering

32. What makes a number of Hard Disk like a single Disk to overcome physical limit of Disk?

- a) SCSI
- b) RAID
- c) IDE
- d) SAN

33. If a storage device have five 750GB disks, which of the following represents the highest capability?

- a) RAID 0
- b) RAID 1
- c) RAID 3
- d) RAID 5

34. Which of the following RAID systems have two parities?

- a) RAID 0
- b) RAID 1
- c) RAID 5
- d) RAID 6

35. Which of the followings is a proper term of a computer or software which receives service from other devices in distributed processing?

- a) Client
- b) Server
- c) Gateway
- d) DTE (Data Terminal Equipment)

36. Which of the following do mutual synchronization with another dual network route in case of network error in a single server?

- a) Teaming
- b) Clustering
- c) SAN
- d) NAS

37. What is optimization work to adjust image data to operating software?

- a) Merge
- b) Tuning
- c) Migration
- d) Restore

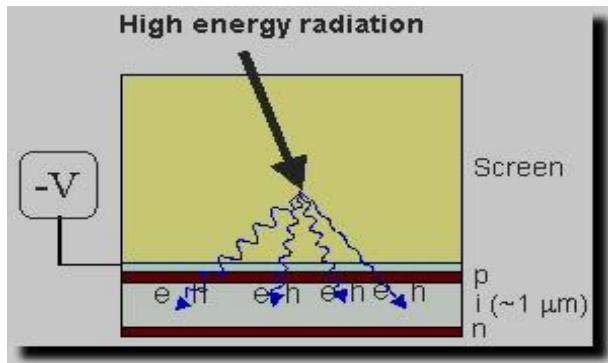
38. What is the element to convert X-ray to electric signal directly?

- a) a-Si
- b) a-Se
- c) CsI(Cesium Iodide)
- d) Gallium Arsenide

39. Which of the following is NOT the photostimulable phosphor of Image Plate?

- a) BaFCl : Eu²⁺
- b) BaFBr : Eu²⁺
- c) BaFI : Eu²⁺
- d) BaFAg : Eu²⁺

40. Which of the following is NOT acquired from character of the equipment?



a) Image signal of square wave can be acquired)

b) a-Se mostly is used for phosphor.

c) Firstly X-ray is converted to visible line using a scintillator or phosphor.

d) An Image quality is lesser than direct method because X-ray signal converted to electronic signal after X-ray signal is changed to visible signal.

41. Which instruction is for checking a track of Network?

a) ipconfig

b) ping

c) tracert

d) root

42. What is NOT explanation for function of transport class?

a) control of data flow

b) set-up for logical channel

c) open and close of network session

d) detection for error of data overlap, loss and order

43. As located between internet and Company LAN, Which system protects a network in a company from unjust accesses?

a) Intranet

b) Firewall

c) Backbone

d) Modem

44. What is NOT strength of VPN?

- a) Communication cost-cutting
- b) High security with data encryption
- c) Part usage without authentication
- d) Security and efficient processing speed in a remote place

45. What is the standard of network cable with maximum frequency 250MHz, ATM-LAN 1.2Gbps?

- a) Category-3
- b) Category-4
- c) Category-5e
- d) Category-6

46. What is the characteristic physical code of LAN card connected to Network?

- a) IP Address
- b) Subnet Mask
- c) Default gateway
- d) MAC Address

47. This Hub simply connects and distributes only network among computers. It is also divide bandwidth into the number of whole node. What is this Hub?

- a) Dummy Hub
- b) Switching Hub
- c) Intelligent Hub
- d) Bridge

48. Which 3D reconstruction technique is proper to display various curved vessels such as hepatic artery, splenic artery, renal artery, Willis circle artery?

- a) SSD(Shaded Surface Display)
- b) VRT(Volume Rendering Technique)
- c) MPR(Multi Planner Reformat)
- d) Virtual endoscopy

49. Which technique is used in this 3D image?



- a) Shaded Surface Display
- b) Volume Rendering Technique
- c) Multi Planer Reformat
- d) Virtual endoscopy

50. What is the most proper compression method when compressing the dual structure document like laboratory report or patient health record?

- a) JPEG
- b) G3/G4
- c) JPEG2000
- d) MPEG