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Paper # CR and DR

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Q No 2 #

→ Spatial Resolution:-

Ans:- The ability of an Imaging System to resolve and render on the Image a small high-contrast objects. In Imaging Spatial resolution is discribed by the quantity spatial frequency.

→ Contrast Resolution :-

Contrast resolution is the ability to distinguish many shany shades of gray from black to wite. All digital Imaging System beve better contrast resolution then screen film Imaging.

Q No: 4 #

Ans:- Features of active Matrix crystal display:

An active-Matrix liquid crystal display is a typei of flat-panel display the only viable technology for high-resolution Tvs, computer, monitors. notebook-computer, teblet computers and smartphones with a LCD screen due to low weight very good Image quality wide color gamut and response time.

Q No: 5 #:

Ans:- Picture archiving and communication System:

A picture archiving and communication system (PACS) when fully Implemented allow not only the aqcuistion but also the Interpretation and storage of each medical Image In digital

from without resorting to film (hard copy). The projected efficiencies of time and cost are enorous.

- PACS Improves Image Interpretation, processing, viewing, storage and recall.
- The four principle components of a PACS are the Image acquisition System, the display system the network and the Storage System.

Q No: 7 #

Ans:- Data compression:-
Data compression is a reduction in the number of bits needed to represent data. compressing data can save storage capicity, speed up file transfer and decrease costs for storage hardware and network bandwidth.

Difference b/w Lossless and lossy compression:

Lossy compression:

Lossy compression restores the large file to its original form with loss of some data which can be considered at not-noticable while.

Lossless compression:-

Lossless compression restores the large file to its original form without any loss of data.

Q No: 6 #

Ans:- Imaging Artifacts:

There are three types of artifacts.

- Image receptor artifacts.
- Software artifacts.
- object artifacts.

Image receptor artifacts:

If a CR has not been

used for 24 hour it should be erased again befor use. when a completely eareased

- IP processed the result Image should be uniform and artifacts free.
- Rough handling or faultiy construction of a digital IP can result in artifacts.

- **Software Artifacts :-**

Digital radigraphic Image or obtained as raw data sets.

- Suc as these Image are ready for processing.
- For processing Image are manipulated into for Presentation Image that the radiologic technologist can use for QC and for Interpretation by the radiologist.

- **Object artifacts :-**

object artifacts can arise from the technologist errors in patient positioning x-ray beam collimation and

histrogram selection.

- Backscatter radiation also can be troublesome because of the sensitivity of the digital radiographic Image receptor.
- If a lot of scattering metarial is present behind the Image receptor backscatter radiation can cause a phantom Image. is this type artifacts discovered the back side of the Image receptor should be sheilded to reduced backscatter x-ray.

~~Avoid Artifacts for the~~

Imaging artifacts how to avoid them.

- object artifacts:
  we take a proper position and proper collimation.
- Image receptor:
  ~~clean~~ proper handling remove dust.
- software artifacts:
  Range proper, good scaling

Q No 3 #

Ans :+ Dose Reduction with Digital Radiography.

- Exposures should not be reapeted in digital radiography because of ~~digital~~ brightness or contrast errre.
- DR System cannot component for repeated noise caused by ~~qa~~ quantum mottle.
- overexposed Image do not have to be reapeted and should not become a habit.

with accelaration to all-digital Imaging we have the opportunity to reduce patient does by 20% to 50% depending on the examination. However quite the opposite often has occured Something that many call Idose creep Because digital Imaging can done yield a good Image.

Q NO: 1) #

Ans:- Processing of digital Radiograpich Imag:

A principle advantage of digital radiographic Imaging over screen film is the ability to a manipulate the Image before and after display processing and processing respectively Priemage processing and post Image processing alter Image appearance wavidly for the purpose of Improving Image contrast. preprocessing of digital Image is largely automatic preprocessing as diagnosed in produce artifacts free digital Image In this regard preprocessing Provide electronic calibration to reduce pixel to pixel row to row and column to Column respone difference.

→ Offset image and gain image are automatic Calibration response of the image receptor uniform, Gain image are generated over few month and offset image each days. the preprocessing Calibration technique are identified as flat fielding and are shown overimaging technique also are reduce row and improve Contrast

* Digital imaging Processing:-

Problem	solution
Detection pixel	interpolate adjecent Pixel Signal
image Log	offset Contrast
Line noise	Correct from dark reference

* Postprocessing radiographic The digital image:-

postprocessing

is where digital imaging stone. In contrast to Dree preprocessing which are largely automatic postprocessing require interveation by the radiologic technologist. Postprocessing refer to anything that can be done to a digital radiographic to image after it is acquired by the imaging system.

⇒ Postprocessing of digital image require operator manipulation post proprocessing of the digital radiographic image is performed to rephmisse the imaging system. for the purpose of better decting pathology.

∴ Annotation is the process of adding text to an image In addition to pelrent identification annotation.

is often helpfull in informing clinicum about anatomy and diagnosis the larges matrix size digital display devices have better spatial resolution. because they have smaller pixel the allow among other properties magnification of region of an image to render the smallest detail visible.

Q No: 9 #

Ans:+ Digital Radiographic Image artifacts:

- Detector Image lag or ghosting:
  Latent Image from previous exposure present on current exposure.
- Incorrect detector orientation upside - down cassate
- Spole like radiographic lines (comb)
- Backscatter:
  electonics are visible on

on the exposed Image.
- Increased radiation exposure required for portable Digital radiography. examinations
- Stitching artifact:
  - occure when two seperate DR or CR Imaged or marged into a single Image.
  - over Exposure:
  - dead pixel artifacts
  - Signal drop out.
    Large areas of signal loss due to detector drop.
  - Specked radiopaque spots. due to dector drop.
  - detector calibration limitation
  - faint radioopaque stripping
- Failer of detector artifact;
- Electronic shutter failure.
- values of Interest misered.
- Mid gray clapping.
- Grid-line supression failure.

Improper collimation and Alignment:

→ collimation:-

- collimation of the projected area x-ray beam is Important for patient radiation dose reduction and for Improved Image

contrast in screen - film radiography.

- In DR proper collimation has the added value of defining the Image histogram. If Improperly collimated the histogram can be Improperly analyzed resulting in an artifact.
- Proper collimation and centring prevent histogram errors that can lead to artifacts.

→ Aignment:

Alignment of the exposure field on the IP is important in the same way and for the same reason as collimation. When an Image field such that shown 21 - 20. Improperly collimated multiple fields not aligned with the Imaging plate edge result in overexposure and the artifact.

Day: M T W T F S

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Q No:8 #

Processing:

Before an Image is prepared for processing several manipulation of the output of an Image receptor may be necessary to correct for potential artifacts Such artifacts can occure pixels or dead rows or colums of pixel.

Image presentation:

If you a work in medical field you have lilely had present a patient care report. but often Importing the ~~CR~~, CT, Scan, MRI ultrasounds and other meterial.

The End