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Paper. CR and DR
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Q.NO 2

Ans: Contrast Resolution:-

Contrast resolution is the ability to distinguish many shades of gray from black to white. All digital imaging System have better Contrast resolution than Screen-film imaging

* Spatial Resolution:-

The ability of an imaging System to resolve and render on the image a small high-Contrast object. In medical imaging, Spatial

In medical imaging resolution is described by the quantity "Spatial frequency".

Q.NO.4:-

Ans: *) Features of active matrix Crystal display :-

An active-matrix liquid-crystal display (AMLCD) is a type of flat-panel display, the only viable technology for high-resolution TVs, Computer monitors, notebook Computers, tablet Computers and Smatphones with an 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 (PACS) :-

⇒ A picture archiving and Communication System

(PAS), when fully implemented allows not only the acquisition but also the interpreration and storage of each medical image in digital form without resorting to film (hard copy) The projected efficienailes of time and cost are enormous.

→ PACS improves image interpretation processing, viewing storage, and recall.

→ The four principal Component of a PACS are the image acquistion System the display System, the network, and the storage System.

Q.NO.1:-

Ans:- * Processing of digital Radiographic images:-

A principal adventage of digital radiographic

imaging over Sceen Film
~~red~~ is the ~~red~~ ability
To a ~~[illegible]~~ manipulate.
the image before and
after display preprocessing
and percesing respedruley
preimage procesing and
post image procesing alter
image apperence usually for
the purpose of improving
image Contrast.
preprocessing of digital image
is largely autometic.
pre processing as designed
in produce artifect free
digital image. In this
regard preprocessing provide
electronic Calibration to redue
~~pixel~~ pixel to pixel row to
row and Column to
Column respone differenes.

Offset image and garm image
are autorraetic Calibration
response of the image
receptor uniform. Gum image
are generated over few month

and offset image each
days. the preprocessing
Calibratror technique are
identified as flatfredding
and are shown overimaging
technique also are reduce
now and improve Contrast.

* Digital imaging Processing :-

Problem	Solution
Detection pixel	interpolate adjecent pixel signal.
image Lag	offset Contrast
line noise	Correct from dark refrance Zone.

* Postprocessing the Digital Radiographic image :-

Postprocessing is where digital imaging stone. In Contrast te free preprocessing which are largely automatic postprocessing require intervation by the radiologic technologist. postprocessing refer te

anything that can be done to a digital radiographic image after it is acquired by the imaging System.

→ post processing of digital image requires operator manipulation post preprocessing of the digital radiographic image is performed to optimize the imaging System. for the purpose of better decting pathology.

→ Annotation is the process of adding text to an image. In addition to prevent identification annotation is often helpfull in informing clinicen about anotomy and diagnosis the larger 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.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 considard at not noticable while.

* **Lossless Compression:-**

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

Q.NO.3:-

Ans:- *) Dose Reduction with Digital Radiography :-

- Exposures should not be repeated in digital radiography (DR) because of brightness or contrast concerns.

- DR Systems cannot compensate for repeated noise caused by quantum mottle.

- Overexposed images do not have to be repeated and should not become a habit.

With acceleration 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 occurred. Something that many call "dose creep". Because digital imaging can always yield a good image.

Q.NO.6:-

Ans:* Imaging Artifact:-

There are three types of artifact.

- Image receptor artifacts.
- Software artifacts.
- Objects artifacts.

* Image receptor artifacts:-

→ If a CR has not been used for 24 hour it should be erased again before use when a completely eareasid.

- IP Processed the result image should be uniform and artifacts free.
- Rough handing or a faculty construction of a digital IP can result in artifacts.

* Software Artifacts:-

Digital radiographic image or obtained as raw data sets.

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- Sus as these image are manipulated into for presentation image that the radiologic technologist can use for QC and for interpretation by the radiologist.

* Object artifacts :-

Objects artifacts can arise from the technologist error in patient positioning x-ray beam collimation and histrogram selection.

- Backscatter radiation also can be troublesome because 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 phonton image is this types artifacts discovered the back side of

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the image receptor should be shielded to reduced backscatter x-ray.

Q. NO. 9 :+

Ans:

* Digital Radiographic image are artifacts :+

- Detector image lag or ghosting.

→ latent image from previous exposure present or current exposure.

- Incorred detector orientation i-e upside-down Cassette.

⇒ Spoke like radiopaque Line,

- Backscatter

⇒ Electronics are visible on the exposed image.

⇒ Increased radiation exposure required for portable DR (digital radiography) examinations.

- Stitching Artifacts.

⇒ Occur when two Separate DR or CR (computed radiography) image are merged into a Single image

- Over exposure.
- Dead pixel artifacts.
- Signal dropout 4

⇒ Large areas of signal loss, due to detector drop

- Speckled radiopaque Spot 4

⇒ Due to detector drop.

→ Detector Calibration limitation.

- Faint radiopaque striping (often vertical) in the background of an image yet not evident on the anatomy.

→ This artifact should be carefully examined. if it does not interfere with the anatomy - it is not a detector failure grid cut detector Calibration.

→ Failure of detector offset Correction.

→ Electronic shutter failure.

→ Value of interest misread.

→ Mid gray clipping.

→ Grid-line Suppression failure with no grid cut off.

⇒ If multiple are projected onto a single IP, each must have clear, collimated edges and margins b/w each field. This process, called partitioning. allows two or more image to be projected on a single IP.

⇒ **Alignment:-**

- Alignment of the expose field on the IP the same reason as collimation.

- When an image field. such as that not oriented with the size and dimension of the IP, image artifacts can appear.