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Question: 1

What type of reconstruction filter minimizes the grainy appearance of the image?

A.Sharp
B.Smooth
C.Scattering
D.Scanning

Answer: B

Explanation:
Smooth filters minimize the grainy image appearance. This is also known as noise. Sharp filters improve edge definition. With enough projections and the proper reconstruction filters applied, the back-projection technique can accurately depict the original object in the final CT image.

Question: 2

What type of data is obtained from the detector array and contains all the thousands of bits of data acquired with each scan?

A.Image data
B.Reconstructed data
C.Helical data
D.Raw data

Answer: D

Explanation:
Raw Data is all the information from the detector array prior to image reconstruction. Also called scan data, it refers to the computer data from the detectors that are waiting to be processed into a CT image. Raw Data has not assigned Hounsfield units or pixels. The process of using raw data to form an image is called image reconstruction. Once the raw data is processed so that each pixel is assigned a Hounsfield value, an image is created. This data is called image data.

Question: 3

What type of data is required for retrospective reconstruction?

A.Reconstructed data
B.Raw data

C.Image data
D.Retrospective data

Answer: B

Explanation:
Retrospective Reconstruction is the process of using raw data to later generate a new image. Raw data is required to generate new images in retrospective reconstruction. Image data cannot be used. Raw Data is lost once that portion of the raw data storage device is overwritten. Depending on how busy the particular scanner is, the raw data may only be available for a day or two or a few weeks. Retrospective Reconstruction is a valuable process enabling the technologist to change the algorithms, slice thickness, FOV, and other scan parameters.

Question: 4

The thickness of the slice that is actually represented on the CT image as opposed to the size selected by the collimator opening is called what?

A.Volumetric slice thickness
B.Serial slice thickness
C.Effective slice thickness
D.Selected slice thickness

Answer: C

Explanation:
Effective slice thickness is the thickness of the slice that is actually represented on the CT image. It is not the slice thickness selected by the collimator opening. In axial scanning, the selected slice thickness is equal to the effective slice thickness. In helical scanning, the effective slice thickness is usually wider than the selected slice thickness due to interpolation.

Question: 5

What commonly adjusted imaging parameter determines where the helical slices will be reconstructed and if they will overlap or not?

A.Reconstruction interval
B.Scan FOV
C.Reconstruction FOV
D.Reconstruction filter

Answer: A

Explanation:

This imaging parameter is determined by the technologist. It determines where the helical slices will be reconstructed and if they will overlap. If the interval is equal to the thickness, the slices will be contiguous. If the interval is less than the thickness, the slices will overlap. There is no change to patient dose.

Question: 6

What post-processing technique reformats image data images acquired in one orientation or plane to images in other orientations or planes?

A.Maximum intensity projection (MIP)
B.Multi-planar reconstruction
C.Retrospective reconstruction
D.Volume rendering

Answer: B

Explanation:
Post-processing allows the technologist to gain additional information from the patient's study without keeping the patient or using more radiation. Multiplanar reconstruction uses image data to change the orientation or plane of the original scan orientation. Images must be helically acquired for successful multiplanar reconstruction. The technologist can reconstruct the images to axial, coronal, sagittal, or oblique orientations.

Question: 7

What post-processing technique utilizes thin slices and overlapping helically acquired image data to reformat cross sectional anatomy to anatomical surface renderings?

A.Retrospective surface rendering
B.Slice misregistration
C.Temporal resolution
D.3D surface rendering

Answer: D

Explanation:
Post-processing allows the technologist to gain additional information from the patient's study without keeping the patient or using more radiation. 3D reformatting utilizes thin slices and overlapping helically acquired image data to outline the outside of a structure. It includes only information from the surface of an object. There are many applications for 3D rendering depending on the equipment.

Question: 8

What 3D technique selects voxels with the highest value to display as an image?

A.Minimum intensity projection (MinlP)
B.Multi-planar reformation (MPR)
C.Modulation transfer function (MTF)
D.Maximum intensity projection (MIP)

Answer: D

Explanation:
3D reformatting utilizes thin slices and overlapping helically acquired image data to outline the outside of a structure. There are many applications for 3D rendering depending on the equipment. MIP is a 3D technique that selects voxels with the highest value and displays them as the image reformat.

Question: 9

The term defined as a two-dimensional square of data that when arranged in rows and columns makes up the image matrix is called what?

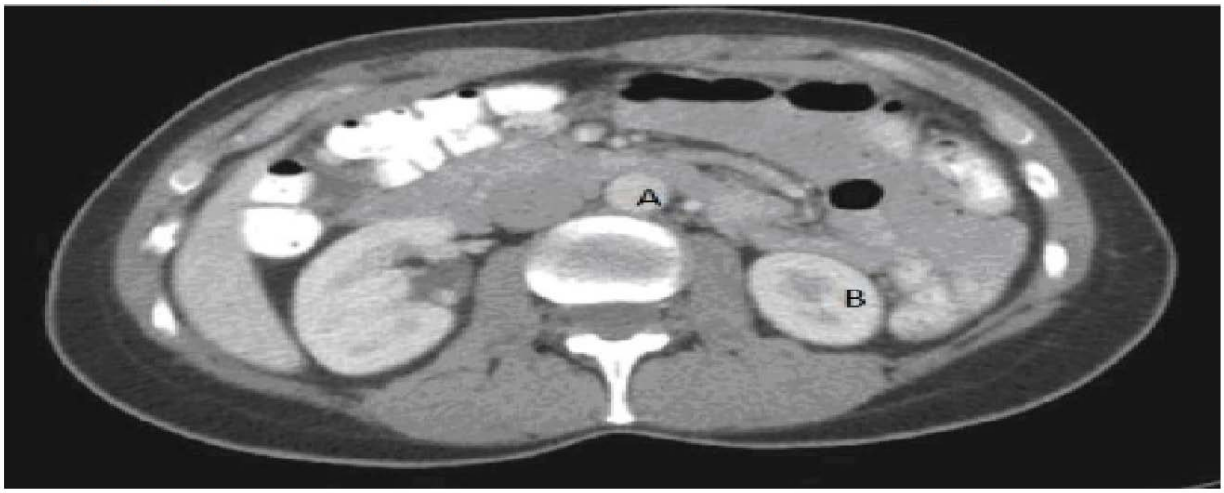
A.Voxel
B.Pixel
C.CT number
D.Hounsfield scale

Answer: B

Explanation:
A pixel is a single picture element formed by the intersection of a row and column in the image grid to make the image matrix. The image matrix is the grid of rows and columns of pixels that form the digital image. These grids and columns allow us to associate the location of a specific structure within the anatomical slice being imaged with a specific pixel.

Question: 10

What anatomy is displayed below on letter A?



A.Kidney
B.Adrenal gland
C.Pancreas
D.Aorta

Answer: D

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