

Name : Aqsa Nasir

Id : 15097

Paper : CR AND DR

Question no : 1

Describe ten advantages of digital radiography over screen film radiography ?

Answer :

Computed radiography

- Patient radiation dose low
- Do not follow the rule of kVp and mAs
Image quality cannot suffer
by changing kVp and mAs
- No steps remove performed
- No repeat examination
- Reusable image plate
- Improved contrast resolution
- Availability of post processing
Capability .
- Remote consultation
- No chemical processing
- No dark room concept

screen film

- patient dose high
- change in kVp and mAs results in poor image quality
- Step remove performed
- May repeat examination
- No reusable image plate
- Poor spatial resolution
- No availability of post processing function .
- No remote use
- Chemical process required
- Dark room concept

Question no : 3

Why is fill factor important ?

ANSWER :

Fill factor :

The percentage of the pixel that are sensitive to the x-ray is called fill factor.

USE OF FILL FACTOR :

- The fill factor convert x-ray beam into light .
- The fill factor is nearly 80 percent therefore about 20 percent of x-ray is not taking part where in the image where the fill factor is not present .
- With small pixel fill factor also reduced .

- Material science research says that with increase fill factor at lower patient radiation dose .
- In digital radiography , smaller pixel size the x- ray intensity much increase but the fill factor is lower
- Lower fill factor requires increase patient dose because of increase x-ray intensity required .

QUESTION NO : 2

Differentiate between direct digital radiography and indirect digital radiography ?

ANSWER :

DIRECT DIGITAL RADIOGRAPHY

- In direct radiography x-rays are converted to electrical signals .
- Amorphous selenium include in Direct digital radiography .
- The coupling element are amorphous Selenium .
- No modilities
- No spatial resolution
- The capture element is amorphous selenium

INDIRECT DIGITAL RADIOGRAPHY

x-rays in indirect digital radiography convert into light and then electrical signals
cesium iodide is a charge couple device
Include in indirect digital radiography .
The coupling element is fiber optic .
Two types of modilities are present .
Ccd collecting device
Tft charge sensitive device
spatial resolution
The capture element is cesium iodide.

QUESTION NO : 4

What are the consequences of producing flat panel digital image receptors with smaller pixels ?

ANSWER :

The consequence of producing flat panel digital image receptor with small pixel are noisy image

NOISY IMAGE :

Noisy image form because of the fluctuation in the optical density of the radiograph and the fluctuation may be cause due to low radiation dose .

PRODUCING NOISY IMAGE :

Producing the flat pannel digital image receptor with small pixel result in noisy image .

QUESTION NO : 5

Discuss the relevant features of a storage phosphor imaging plate ?

ANSWER :

RELEVANT FEATURES OF STORAGE PHOSPHOR :

Features of storage image plate is following :

- Computed radiography use storage phosphor imaging plates for digital imaging because of absorb x-ray energy store in the crystal defect .
- The energy is set free as blue photons upon the optical stimulation .
- About 33years history computed radiography several storage phosphor families were investigated and developed .
- Storage phosphor are : BaFBr , Eu²⁺ CsBr.Eu²⁺
- The morphology of the phosphor crystal in the computed radiography in the imaging plate having a significant impact on its performance .