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**MID EXAMS:**

**COMPUTED RADIOGRAPHY AND DIGITAL RADIOGRAPHY:**

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**Q 1: Describe the ten advantages of Digital radiography over screen film radiography?**

**Advantages of Digital radiography:**

**Ans: Digital Radiography Screen film Radiography**

**1**: Image receptor x ray sensitive **1**: IR x ray sensitive.

**2:** latent image formation **2**: latent image formation

**3**: in digital radiography no darkroom process **3**:it cassette take to darkroom

Directly in computer.

**4**: CR reader system it read all data and erase **4**: un exposed films used

**5**: IR is reusable

Hhkhhhhhhhhhhhhhhkkx

**6**: Exposed films is used. **6**: cassette loading process

7:in here not cassette loading and un loading **7**: films processing wet film

Process.

**8**: Due to CR reader visible image **8**: films processing wet films

**9**: its reduced PT exposure **9**: not reusable imaging plate

**10**: reduced cost and space **10**: high patient dose , increase KVP and MAS.

**11**: No chemical processing

**12**: increase dynamic range

**13**: separation of image capture

**14**: easy to archive since image are in digital

Format.

**Q 2 : different between direct digital and Indirect digital radiography?**

**Ans: DIRECT DIGITAL RADIOGRAPHY: INDIRECT DIGITAL RADIOGRAPHY:**

**1:** Amorphous selenium is direct DR process. **1:** its uses reusable phosphor coated plates.

**2:** In direct DR the x rays are converted to The capturing element is cesium iodide.

Electric signals. **2:** its runs through scanner to obtain digital

 Images then send to computer.

**3:** its called direct because no scintillation The are good spatial resolution.

Phosphor is involved. **3**: in here x rays photons comes cross the PT

**4:**The capture element of direct DR is amorphous and hit to photodiode then light is converted

Selenium. to electric signals, and then it pass to electric

**5**: The coupling elements of direct DR is also circuit and make image.

Amorphous selenium. **4:** in here x rays are converted into first light

**6**:Direct digital refers to sensors that send then electric signals.

Images directly to computer. **5**: The capturing ,coupling, collecting element

**7:** x rays photon comes CDTE and x rays are used.

converted electric signals and pass electric **6:** it most superficial layer is cesium

circuit and image. Scintillators phosphors, that used to convert

 incident x rays to visible light.

 **7:** its final layer made up of thin film transistor

 TFT arrays. The function of TFT is amplify the

 Electric signal producing by photodiode.

 8: two type modalities are used first is CCD

 (collecting device) and 2nd is TFT.

**Q 3: Why is fill factors is important?**

**Ans: definition**  The percentage of pixel which are sensitive face to x ray is called fill factor.

**Importance:** The fill factor allows the conversion of incident x ray beam into light ,the fill factor is nearly 80% therefore about 20% of x ray is not taking parts in image where fill factor is not present with having small pixel . The fill factor is also reduced and the ray intensity must be increased to maintain the adequate signal strength. Material science research promise increased fill factor at even lower patient radiation dose. Fill factor and improve spatial resolution and even lower radiation patient dose. It represent one of the dilemmas for DR.

**Q 4: what are the consequences of producing flat panel digital image receptors with smaller pixels?**

**Ans :**  The consequences of producing flat panel digital images receptors with small pixels are noisy images.

**Explanation:** Noisy image is the fluctuation in the optical density of the radiograph and this fluctuation cause due to low radiation dose now that from here we knows as consequences of producing flat panel digital image receptor with smalls pixels will result in noisy images.

**Q 5**: **Discuss the relevant features of a storage phosphor imaging plate?**

**Ans: Relevant features of storage phosphor imaging plate:**

The relevant features of storage phosphor imaging plate is following:

Computed radiography uses storage phosphor imaging plate for digital imagining. Absorbed the x ray energy is stored in the crystal defects. In read out energy is set free as blue photon upon the optical stimulation. In about 33 year story of CR several storage phosphor families were investigated and developed. The photostimulable luminescence mechanisms pf current commercial storage phosphor BafBr2,EU 2+ and CSBR,EU2 is discussed .

It is demonstrate that morphology of the phosphor crystals in the CR imaging plate has a very significant on its performance.