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Papar # radiation science and technology

3rd semester mid term

Paper# radiation science and technology

Q 1) what do you know about operating console and high

Voltage of the c-rays imaging system:explainAn **X-ray tube** is a **vacuum tube** that converts electrical input power into **X-rays**.^[1] The availability of this controllable source of X-rays created the field of **radiography**, the imaging of partly opaque objects with penetrating **radiation**. In contrast to other sources of ionizing radiation, X-rays are only produced as long as the X-ray tube is energized. X-ray tubes are also used in **CT scanners**, airport luggage scanners, X-ray crystallography, material and structure analysis, and for industrial inspection.

Ans:::

- the part of x-ray imaging system most familiar to the radiologic technologist because it allow us to control the x-ray tube current and voltage so that the useful x-ray beam is of proper QUANTITY (the number of x-rays or the intensity of the x-ray beam and expressed in milliroentgens [mR] or milliroentgens/milliampere-seconds [mR/mAs]) an QUALITY (refers to the penetrability of the x-ray beam and expressed in kilovolt peak [kVp] or more precisely called the half value layer.) Operating consoles has an on / off control and controls to select kVp, mA, and time or mAs. Furthermore, operating consoles usually provides for control of line compensation, kVp, mA exposure time. Meters are provided for monitoring kVp, mA and exposure time. In modern consoles that incorporate AEC have a separated controls for mAs. The AEC is also found in operating console.

Q2 write a note on the external components of the x-rays tube .

Ans#

● **external components of the x-rays tube.**

- The **x-ray tube** contains two principal elements: **cathode**: provides a source of electrons. anode (or anticathode): acts as the target for electrons and releases **x-rays**.
- expansion bellows (provide space for oil to expand)
- tube envelope (evacuated)
- tube housing
- cooling dielectric oil
- rotor
- induction stator
- tube window: usually made from beryllium, not glass

Q3 what are three function that anode server in an x-rays tube.

Ans#

An **X-ray tube** is a vacuum tube that converts electrical input power into X-rays. The availability of this controllable source of X-rays created the field of radiography, the imaging of partly opaque objects with penetrating radiation. In contrast to other sources of ionizing radiation, X-rays are only produced as long as the X-ray tube is energized. X-ray tubes are also used .