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## Ans ① Operating Console :-

- The operating console is the part of the machine that the operator controls the operation of the x-ray machine.
- All machine console are a little different but there are always similarities. The console is where we control x-ray tube current and voltage.

### The Console Controls

The console will have controls for :

- mA and time or mAs.
- kVp
- focal spot.
- Line voltage Compensation.
- Automatic Exposure Control

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## Kvp Adjustment :-

Most console will have one or two knobs that change the taps on the autotransformer for major and minor Kvp. Modern units have a LED readout of Kvp.

## mA Control:-

The tube current is the number of electrons crossing from the cathode and to Anode per second. It is ~~measur~~ measured in milliamperes (mA).

Operating consoles are based on the computer technology. Controls in meters are digital and technique selection is often replaced by icon a indicating the body parts size

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and shape many of  
the features are automatic  
but the radiologic  
technologist must know  
this purpose and ~~prop~~  
proper uses.

### High - voltage Generator :-

unit required a high  
voltage generator to  
achieve the necessary power  
required and x-ray  
tube AC power will  
supply x-ray unit with  
sinusoidal current resultin  
g and peaks and  
through limiting and x-ray  
tube to produce x-ray  
only half of the  $1/60^{th}$   
of a second cycle.

(4)

A Single-Phase high voltage generator convert this AC power into a half or full wave rectified with a measure in the thousands of volt.

The Advancement of high voltage generator to single phase to three phase to constant potential generator have over come this voltage ~~is~~ ripple creating a continuous uninterrupted voltage modern x-ray units which largely utilized constant potential generator do not have voltage ripple and consequently employ the term Kv rather than kVp.

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Ans:-

External Component of x-ray  
Tube :-

### External Parts

- Tube Support
- Glass / metal / envelop
- Protective housing

\* Tube Support :-

- x-ray tube and housing  
~~Assembly~~ Assembly or quite  
heavy and these are  
required a support mechanism  
so that the radiologic  
technologist can position it

\* These are three methods  
of x-ray tube support.

- (b)
- (a) ceiling support system.
- (b) Floor to ceiling support system.
- (c) C-arm support system.

### \* (Glass / Metal) Envelope :

- The glass ~~encl~~ enclosure is made of pyrex glass.
- The envelope maintain a vacuume inside the tube to allow more efficient x-ray production and longer tube life. usually all ~~current~~ high capacity x-ray tube use metal enclosure.
- The primary function of the envelope is to provide support and electrical ~~ins~~ insulation for the anode and cathode Assembly.

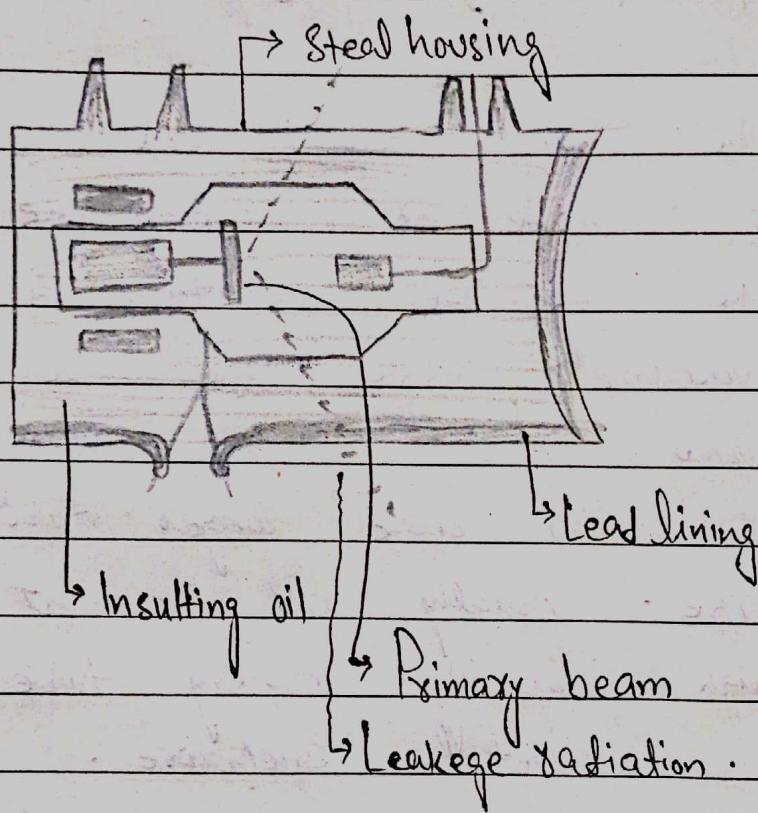
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# ★ Protective housing +





②

Answer 03

Function of Anode an x-ray tube ::

- ① Accelerating the electrons
- ② Houses the target material
- ③ cool the tube.

The anode is the component in which x-ray radiation is produced it is a relatively large piece of metal that connect positive side of the electrical circuit. The anode have three primary function through convert electronic energy ~~energy~~ into x-ray radiation and to dissipate the heat

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created in the process.

The END.

