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Q NO 1:

Ans:

Adverse Effect (side effect) of therapeutic radiology

are; Dry mouth, stiffness, Nausea, Dysphagia, Hair loss, Tooth Decay, stiffness, lock jaw, lymphedema etc.

some of them are stochastic effects which are; cognitive decline, Neoplasia, Epilation, Pituitary disorder and Reproduction diseases.

Drug therapy cause to stop secretion of saliva in mouth result dry mouth -

many of drug have common effect on GIT such as diarrhoea and vomiting.

like this Radiation



can also produce these effects.

During radiation therapy swelling of soft tissue occurs - lymphedema may manifest due to radiotherapy - because obstruction occurs during lymph flow.

Radiation can treat the disease but can also produce cancer.

Effect on reproductive system is common in first few weeks of fertilization. because rapid proliferative cells are more sensitive to radiation.

3.

QNOZ:

Ans: linear accelerator:

is device used to give radiation or external beam radiation therapy for the neoplasm. it delivered high energy electron to the side of body's tumor.

Photon beam radiation therapy is the second name used for linear

acceleration.

linear accelerator work on principle of attraction and repulsion.

linear accelerator work:

This machine use microwave technology to accelerate electrons in "wave guide" then allows these electrons to collide with a heavy metal target.



Q No 3:

Ans: Photoelectric Effect  
and Compton effects:

these two types effects take place in diagnostic Radiology:

Photoelectric effect occurs with the inner-most shell electrons.

But the x-ray is totally absorbed in atom. Those electron which ejects from atom called photoelectron.

For low atomic number atoms the binding energy should be low.

because that the photoelectron is released with K.E nearly equal to the energy of the incident x-ray.



# Compton effect:

Compton effect is  $\Delta \lambda$  in crease in wave-length of x-ray or  $\Delta \lambda$  in crease in wavelength that occurs when they are scattered.

In this process the incident x-ray are interacted with outermost shell electron and eject from it called Compton scattering - electron.

Energy are divided mostly b/w Compton electron and incident x-ray. Compton scattering occur b/w moder  $\Delta E$  energy x-rays and outershell electron.

Incident x-ray ionized the atom and  $\Delta \lambda$  is occurs in direction of x-ray.



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Q NO 4:

Ans: brachytherapy:

is the treatment of cancer especially prostate cancer by the insertion of radioactive implants directly into the tissue.

brachytherapy is done by placing radioactive seeds to treat cancer seeds are placed within prostate to treat prostate cancer.

some side effects appears with this method: are; Restricts urine, leakage of urine, Erection problem etc.

⑦

Q NOS:

Ans:

volumetric modulated arc therapy (VMAT) uses photons (x-rays) generated by a medical linear accelerator - very small beam with varying intensities are aimed at a tumor and then rotated 360 degrees around the patient. this result in dimensional manner.

It carry up the x-ray beam dose continuously as the treatment machine rotates. this technique accurately shapes the radiation dose to the tumor while minimizing the dose to the organs surrounding the tumour.

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VIMAT is a type of radiation treatment in which a three-dimensional dose of radiation is delivered with a single rotation of a linear accelerator.

VIMAT can be used to treat several types of solid tumors in curative settings.

- Prostate cancer.
- Liver cancer.
- Pancreatic cancer.

To ensure that the maximum dose of radiation is delivered to a tumor while minimizing exposure to the surrounding healthy tissue.

End