Date: _____

1

Name	Axiz ullah
ID NO	14705
paper	Radiation protection
Instructor Name	Mam atoofah Azmat
program	BS Radiology
Exam	Final Term
Date	22-6-2020

Date:

Q NO 1

Ans

Deterministic Effect	Stochastic Effect.
(1) it produce high radiation does	(1) it produce low radiation does.
(2) it is also called non-stochstic effect	(2) it is also called probalistic effect.
(3) above threshold level of radiation does	(3) it is no threshold level of radiation does.
(4) the does increas severity of increase effect	(4) the probability increas with does.
(5) the Deterministic effect in nature	(5) the probability effect in nature.
(6) it is also completly avoided	(6) it is not Compltly avoided.
(7) it depends upon on time of exposure does and radiation	(7) Causal relationship cannot be estiblished at low does.

Notes

Date:

(8) Severity proportional to the does

Severity proportional to the does

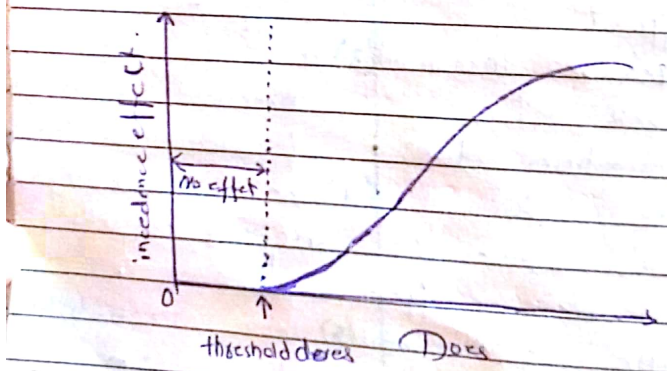
(9) Example

Hair loss, Cataractas, Skin injury etc

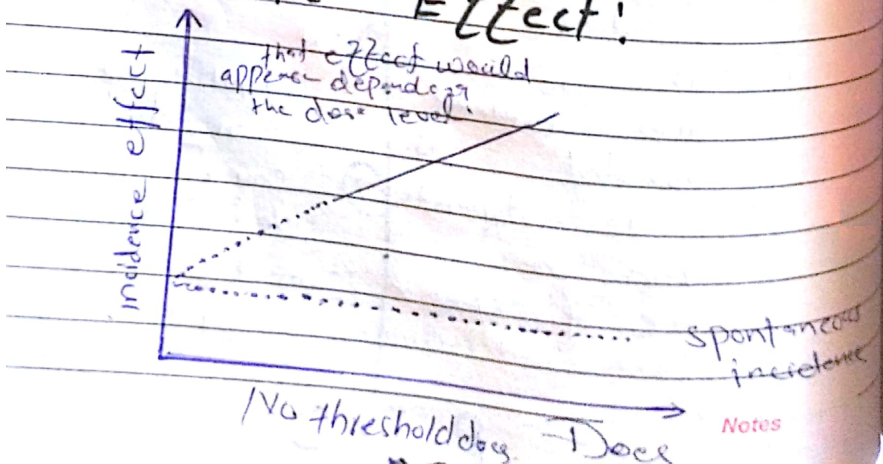
(9) Example

Cancer, leucemia, hereditary effect etc.

(10) Deterministic Effect:



(10) Stochastic Effect:



Date:

Q NO 2.

Ans

Radiation:

The emission of energy from source as called as Radiation.

=> the energy travel through space.

=> and also may be define as the energy released in the form of particals.

=> such as ligh, and heat ener,

=> the light bulb release heat, in other words the bulb convert light energy int heat energy.

=> x-rays are radiant energy.

Radioactivity:

=> it is spontenous process.

=> the emission of radiation in the form of particals.

Date:

or high energy photon by nucleus reaction

=> The Nucleus become unstable. at that time the Spontenous emission occure.

=> Radioactive decay is the stochastic process that occure at the level of individual atom. Such as alpha, Beta, and Gamma radiation.

=> the radioactivity caused by the instability of Nucleus. because they unequal number of Neutron or portons therefor the instability occure.

Non-ionizing radiation:

=> the Non-ionizing radiation is low energy radiation.

=> It's ions charge.

D.T.U

=> these rays are not Directly impact in life.
=> these rays are not some what dangerous.
=> these rays are originates from man-made source and also electromagntic Radiation.
=> they does not carry enough energy pe Quantum of atom it is completly removed from atom.
->etample UV-rays microwaves and Radio frequency waves etc.

Ionizing Radiation:

=> the Ionizing radiation has high energy radiation.
=> it has dangerous and bad impact of radiation on human being.
=> Radiation with enough energy.
=> During interaction of atom

it can remove tightly bounded from electron orbit.
=> Causing the atom may be charged or ionized.
-> It damage the cell, and DNA
=> Example
X-rays are very dangerous rays.
=> it is more sensitive to some other organs.

Harmful Radiation:

Harmful radiation are those radiation which are badly impact on human body.
=> It is very toxic radiation.
=> the damages the human cell, DNA.
=> Such like these radiation sometime occure in our body mutation. Such as Nitrogenous bases change sequences.

Notes

Date:

=> low level of radiation are not dangrous
=> medium level leads to sickness, headaches.
=> High level cause internal organ damages.

Q No 3 (a)

Ans. the radiation protection are two basic principles as-

(i) Minimize time

the duration time of radiation is directly proportional to the does.
=> therefore the exposed to radiation is double the exposure will be double.
=> When we high exposed the body and that time the radiation

will be reduce.

=> The time of exposure to radiation as short as possible

=> When exposure time short the motion blur will be reduce..

=> and also patient does will be reduce.

Maximage Distance:..

The Distance between the exposure source to the person increase because exposur radiation decrease.

=> the patient does decrease.

=> When Distance between the source and person, short, they absorb unnessary rays may be absorbed to the body.. it increas patient does.

Date:

the distance between the Soure and person musb be five time the Source of diameter.

(b)

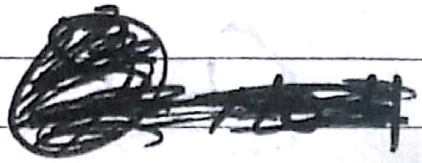
Ans

Names:

1. Radiation protection Aprons
2. Radiation protection Aprons Accessories
3. Radiation protection gloves
4. Radiation protection glassess
5. Radiation protection Thyroid Shields
6. Radiation protection Apron Racks
7. Radiation protection Barriers and Table Shields.
8. Radiation Protection Drape Sheilds.

(9) patient radiation protection

(10) Vetesinary Radiation protection.



(a) protective x-rays tube housing.

(b) Controle panel.

(c) Souic to image receptor

(d) Distance indication

(e) Collimation

(f) positive beam limitation

(g) Beam alignment

(h) Filteration

(i) Reproducibility.

(j) linearty

(K) operator sheild

(L) Mobile x-rays imaging system

Q NO 4

Ans: Radiation protection features.

(1) protective x-rays tube housing.

X-ray tube must be protect because the x-rays passes to the tube. inside the tube protective housing present because that reduce the leakage of x-rays.

=> leakage radiation must be 1 mGy/hr.

(2) Control panel.

the control panel is protecting of radiation.

=> When x-ray tube is energized the control panel must be indicated positively.

=> because the x-rays beam positively.

(3) Source to image receptor Distance (SID)

=> The Distance must be long between Source end to image receptor.
because the radiation does is decreased.
=> the SID indicator must be accurate. to within 2% of the indicated SID.

(4) Collimation:-

the Collimation must be provided because the Collimators divice the parallel x-rays must be Converge with each other, and to the one point.
=> no leakage occure
=> and no patient does.
=> The x-ray beam and ligh beam Coincide to within 2% of the SID.

Notes

D.T.O

Date:

(5) positive beam Limitation:

The positive beam limiting Device no longe provided.

-> It is new part of Radiographic Imagic system.

=> they adjust to the image receptor and also SID.

-> The PBL must be accurat to within 2% of SID.

(6) Filteration

Filteration device must be provided All diagnostic x-rays Filtered

=> the Filter device work is that the low x-ray absorbed the filter. the filter reduce patient does.

=> x-ray tube must be. for mamography. 30 Um to 60 Um.

(7) Reproducibility:

The radiation intensity constant from one source of exposure to another.

=> the x-ray intensity should not exeed 5%.

Q NO5.

Ans

GM Counter:

Geiger and Muller developed a particle detector.

-> it is measure ionizing radiation. in 1928.

=> they named it as Geiger Muller Counter.

=> Geiger counter is also called Geiger tube.

=> The Geiger tube used for measuring and detecting of ionizing radiation. Such like alpha, Beta, and gamma rays.

=> it rats up 10,000 per second.

=> it has metal cylinder and low pressure gas and also one window are present.

=> the ionizing partical passing through the tube the gas. and electron move toward anod:
the velocity is high the electron collied w.the each other. and also gas would be the secondy electron produce more electron.

=> it is fourth region of voltage responce curve the ideal gas filled.

Notes

it can be effected in all molecule, these allo molecule are ionized and large number of electrons produce.

=> the minimum time between ionization that can detected is known as resoloing time.

=> Geiger Counter are sensitive device for the detection of single ionization.

=> the Geiger Counter does not have a very wide range.

=> Most device must have limited to less than 1 mGy/hr.

=> the gas filled chamber voltage is increase but the single ionizing event completely discharge as in operation G-M. Counter

=> beams high voltage the electron stripped from atom to the filling gas

Notes

and also produce Continous current.

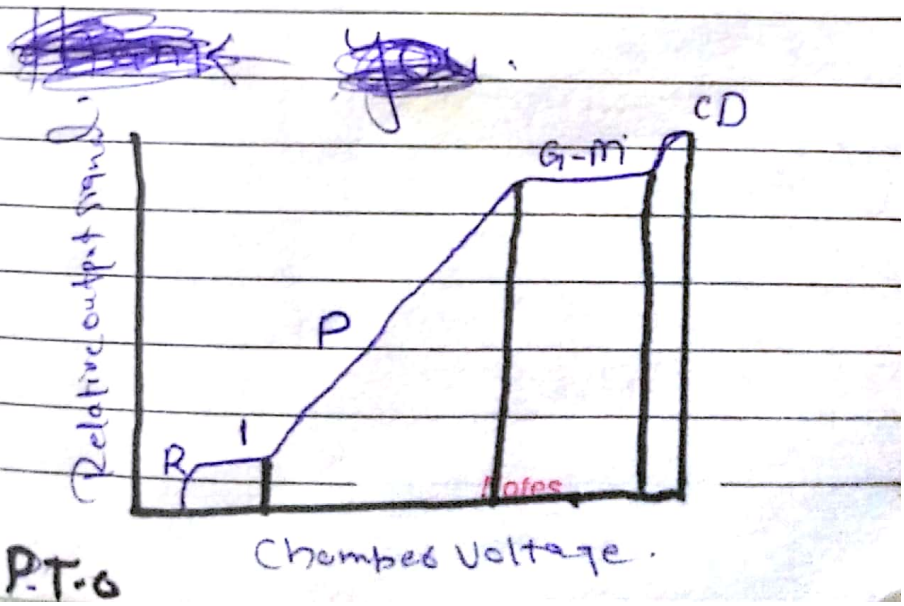
=> the Continous discharge Condition occurs.

=> this device detection of radiation in this region is damage.

=> This device is must be used for protection.

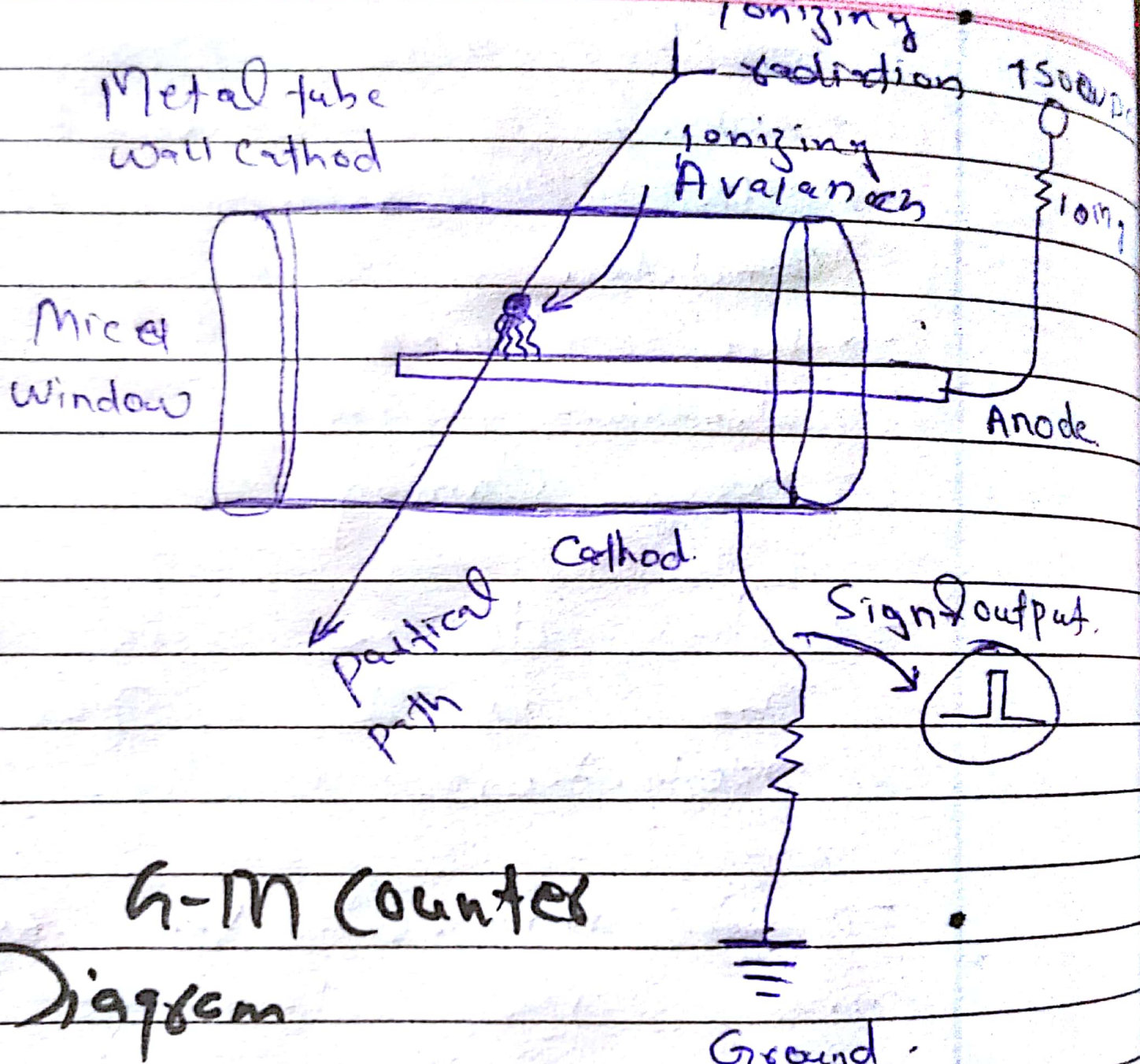
=> It measure the radiation and no leakage present overhead.

=> The Geiger ~~four~~ Muller Counter main role in radiation protection is in gass filled Chamber.



P.T.O

Date:



G-M Counter Diagram