



# **SNS COLLEGE OF ALLIED HEALTH SCIENCES- COIMBATORE 35**



**DEPARTMENT : RADIOGRAPHY AND IMAGNG TECHNOLOGY**

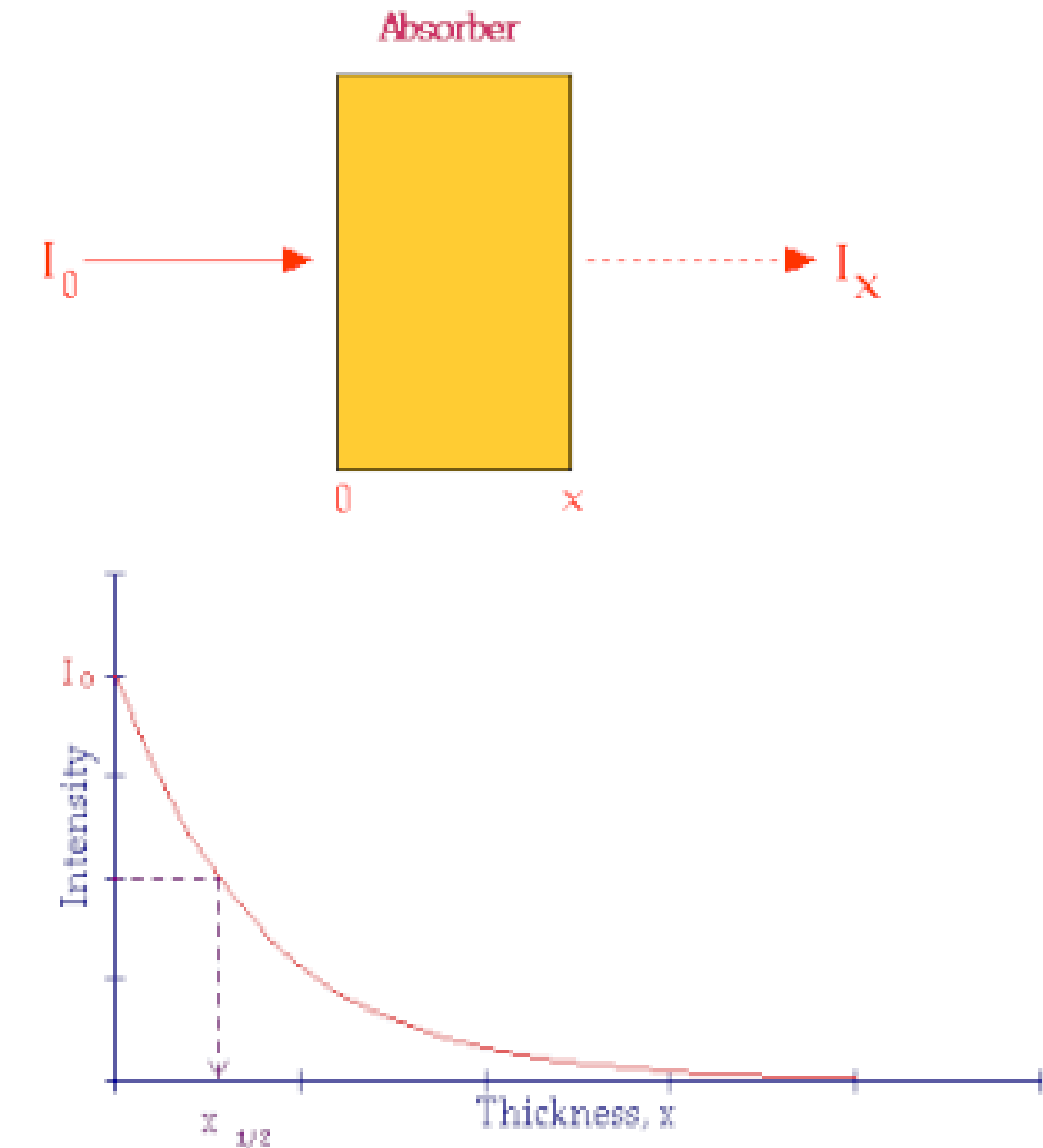
**SUBJECT : GENERAL PHYSICS, RADIATION PHYSICS AND PHYSICS OF  
DIAGNOSTIC RADIOLOGY**

**PAPER : PAPER II ( UNIT 4 – INTERACTIONS OF RADIATION WITH MATTER )**

**TOPIC : 1. ATTENUATION, ABSORPTION AND SCATTERING**

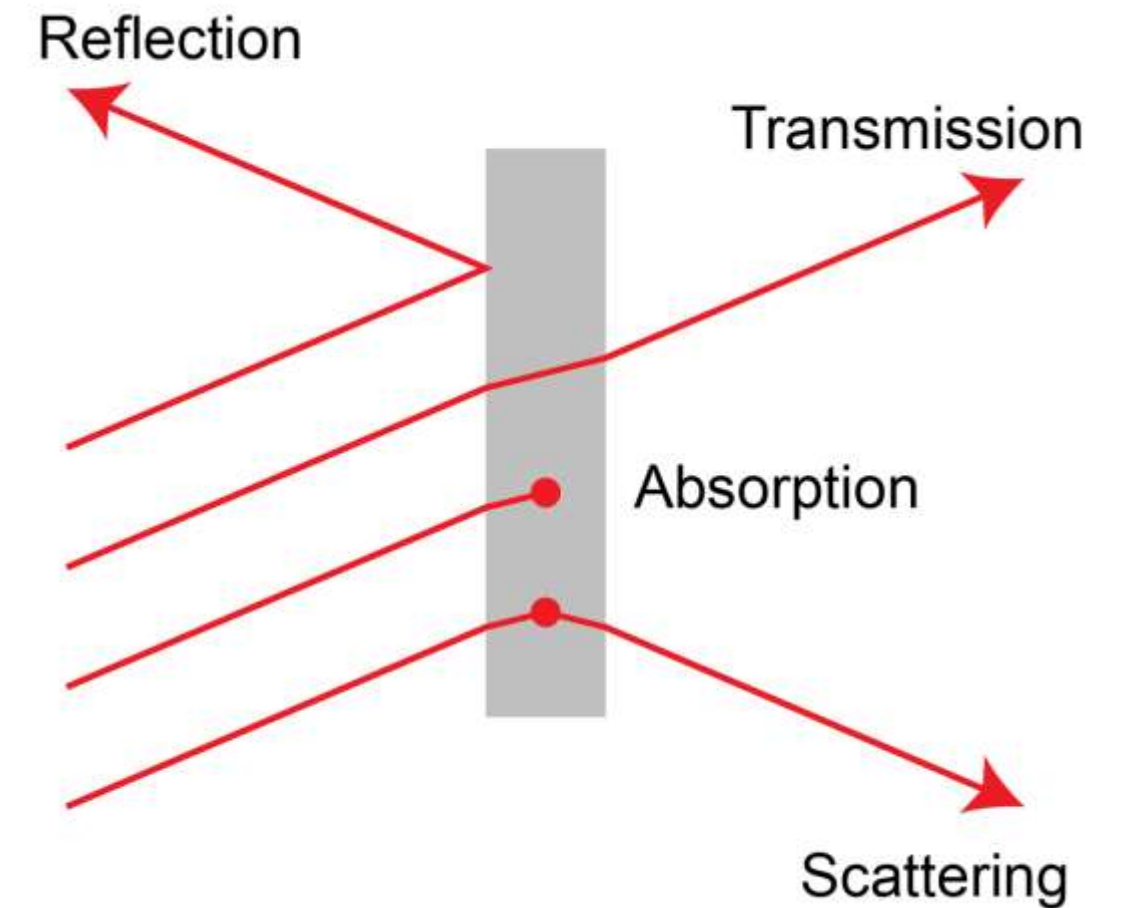
# ATTENUATION

- Attenuation is the product of absorption and scattering. It is the removal of photons from the beam due to absorption and scattering.
- If a beam passes through an absorber of thickness  $x$ , both absorption and scattering takes place.
- As a result, the transmitted beam will have less number of photons and it is given by the relation,
- $I = I_0 e^{-\mu x}$
- where  $I$  is the number of transmitted photons,
- $I_0$  is the number of incident photons,
- $e$  is the base of natural logarithm and
- $\mu$  is the linear attenuation coefficient of the absorber material.



# ABSORPTION AND SCATTERING

- Part of the radiation can pass the object unchanged, which is called transmission, part of it can change direction without a change in energy / frequency, which is called scattering,
- and part of it can disappear with the energy transferred to the object, which is called absorption.





# INTERROGATIONS



1. What is Attenuation ?
2. What is Absorption ?
3. What is Scattering ?



# REFERENCES

1. Physics for Radiography - Hay and Hughs
2. Ball and mores essential physics radiographers, IV edition, Blackwell publishing.
3. Basic Medical Radiation physics – Stanton.
4. Christensen's Physics of Diagnostic Radiology – Christensen.
5. The physics of Radiology and Imaging – K Thayalan.



**THANK YOU**