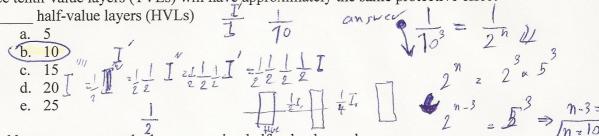
Homework assignment RONC601B Lecture 2 X-ray Tubes/X-ray beams

Due by January 25<sup>th</sup> 2012

For questions contact Georgi N Georgiev at georgi@email.arizona.edu

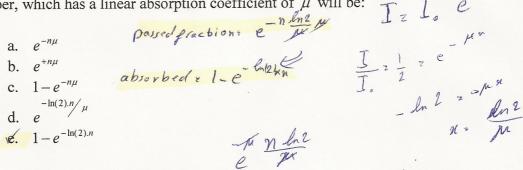
Amir Moghadam

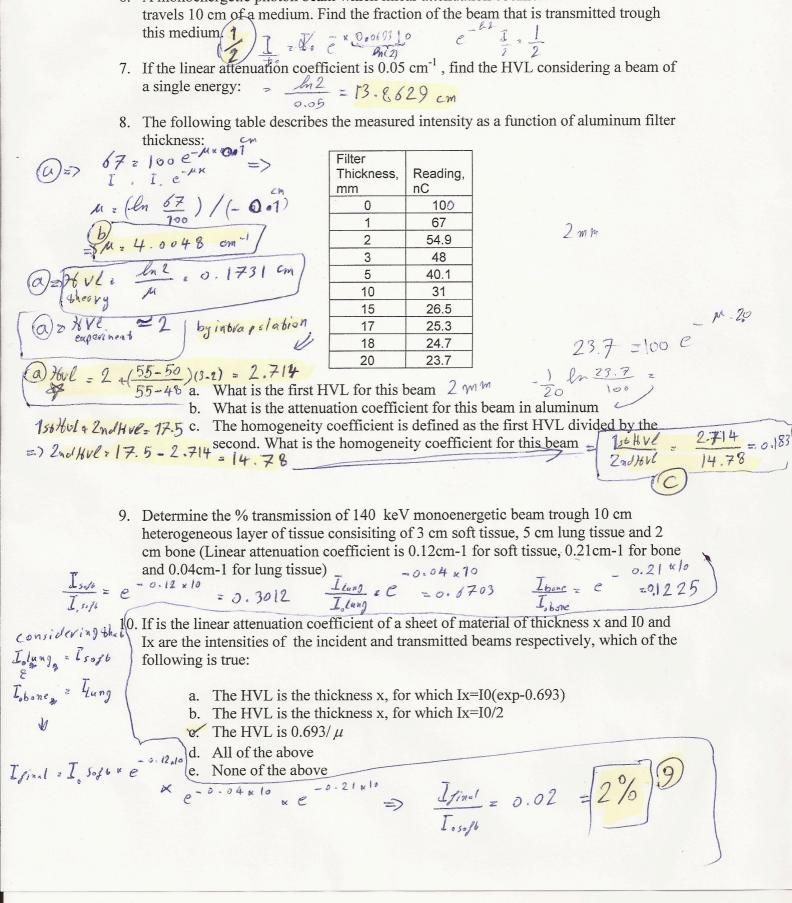
1. Three tenth-value layers (TVLs) will have approximately the same protective effect



- 2. Broad beams are not used when measuring half-value layers because:
  - a. The beam must be smaller than the detector
  - b. Scattered x-rays may reach the detector giving false reading
  - c. The average beam energy would be increased
  - d. All of the above
  - e. None of the above
- 3. Tungsten has the following binding energies: K=69 keV, L=12keV, M=2keV. A 100 keV electron strikes a tungsten target can cause emission of a characteristic x-rays, including which three of the following energies (in keV):
  - a. 100, 69, 31
  - b. 98, 88, 31
  - c. 95, 63, 15
  - d. 57, 67, 10

- 69-2 267 12-2 = 10
- 4. If the filtration of an x-ray beam is increased, the resulting beam will have:
  - A lower dose rate and a grater HVL
  - b. A higher dose rate and a higher effective energy
  - c. A lower dose rate, but the same HVL
  - d. The same dose rate, but lower HVL
  - e. The same dose rate, but higher HVL
- 5. The fraction of photons absorbed after passing trough n half-value layers of an The fraction of photons absorbed after passing a substraction of photons absorber, which has a linear absorption coefficient of  $\mu$  will be:  $\frac{-n \ln^2 \mu}{\ln^2 \mu}$





6. A monoenergetic photon beam which linear attenuation coefficient is 0.0693 cm<sup>-1</sup>