Physics 214 **Quiz 3-1 [20 points]**

A beam of electrons is accelerated through a potential of 1 Volt. This beam is incident on a screen with two slits separated by 1mm and detected on a screen 1m behind the slits.

1) [5 points] Find the de Broglie wavelength of the electrons.

2) [6 points] Sketch the pattern of electrons observed on the screen. What is the distance between maxima?

3) [4 points] If the electron beam were replaced by a beam of neutrons having the same kinetic energy, how would the observed pattern change?

4) [5 points] Now imagine that the beam of electrons is replaced by a beam of xrays having the same <u>momentum</u>. What is the energy of the xrays (give your answer in eVs)??