

***Physics 100 – Module 1 Study Guide***  
***In class quiz given on Monday, September 19, 2022***

Formulas that will be given on the quiz:

$$W = q\Delta V = \frac{1}{2}mv^2$$

$$E = hf = h\frac{c}{\lambda}$$

$$E_n = -13.57eV \frac{(Z-1)^2}{n^2}$$

Constants that will be given on the quiz:

$$c = 3 \times 10^8 \frac{m}{s}$$

$$h = 6.63 \times 10^{-34} Js$$

$$1e^- = 1.6 \times 10^{-19} C$$

$$1eV = 1.6 \times 10^{-19} J$$

$$m_{proton} = 1.67 \times 10^{-27} kg$$

$$m_{alpha} = 6.72 \times 10^{-27} kg$$

$$m_{e^-} = 9.11 \times 10^{-31} kg$$

Things to know for the quiz:

1. The Pelletron Accelerator – how does it work?
2. PIXE – what it is and how it works.
3. Energy levels and structure of the nucleus.
4. X-ray energies and wavelengths produced in the PIXE process.
5. Differences between K and L-Shell x-ray production.
6. Moseley Plots – what are they and what useful information to they provide?
7. How to read an x-ray energy spectrum.
8. How to read the x-ray chart from the laboratory experiment.