LECTURE 1: ELECTROMAGNETIC RADIATION

Problems

1.1 The wavelength of green light is in the neighborhood of 550 nm. What is the corresponding frequency?

\[
\nu = \frac{c}{\lambda} \\
= \frac{3 \times 10^8 \text{ m/sec}}{550 \times 10^{-9} \text{ m}} \\
= 5.45 \times 10^{14} \text{ Hz}
\]

1.2 What is the wavelength of a 50 keV photon?

\[
\lambda (\text{A}) = \frac{12.4}{E(\text{keV})} \\
= \frac{12.4}{50 \text{ keV}} \\
= 0.248 \text{ A}
\]

1.3 What is the energy of an x-ray photon whose wavelength is 0.2 Å?

\[
E(\text{keV}) = \frac{12.4}{\lambda (\text{A})} \\
= \frac{12.4}{0.2 \text{ A}} \\
= 62 \text{ keV}
\]