1. Calculate the frequency, energy in joules, and energy in eV of an X-ray photon with a wavelength of 6.24 Å.

$\nu = 5.0 \times 10^{17}\ s^{-1}$
$E = 3.19 \times 10^{-16}\ J = 2.0 \times 10^{3}\ eV$

2. When the D line of sodium light impinges an air-diamond interface at an angle of incidence of 30.0 degrees, the angle of refraction is 11.9 degrees. What is n_D for diamond?

$n_{dia} = 2.42$

3. Cs is used extensively in photocells and in television cameras because it has the lowest ionization energy of all the stable elements.

What is the maximum KE of a photoelectron ejected from Cs by 555 nm light? Note that if the wavelength of the light used to irradiate the Cs surface becomes longer than 660 nm, no photoelectrons are emitted.

KE = $h\nu$ – work function
$KE = 5.68 \times 10^{-20}\ J$

4. Convert the following percent transmittance data into absorbance:

29.9, 86.1, 2.97

$A = -\log T$

A = 0.52, 0.065, and 1.53