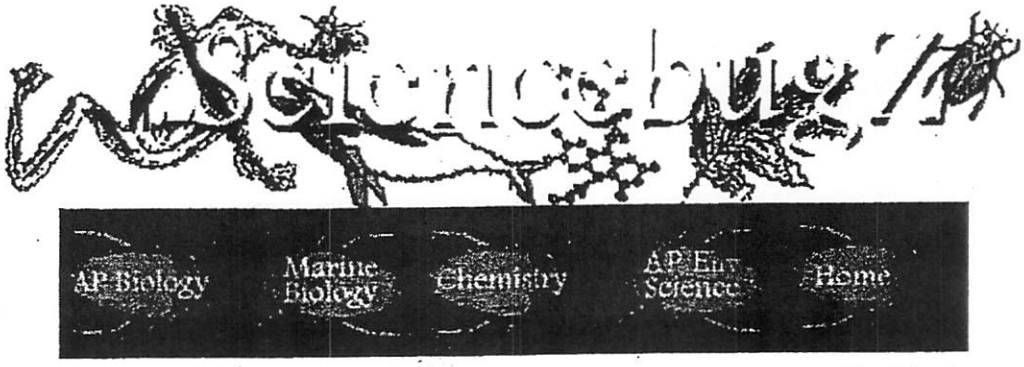

Frequency Answers Frequency Solutions Problems

Frequency and Energy Problems

Frequency and Energy Problems

$\lambda = c/\nu$ $c = 3.00 \times 10^8$ m/s

$E = h\nu$ $h = 6.626 \times 10^{-34}$ J/s 1Hz = 1/s

1) What is the energy of a photon whose frequency is 3.0×10^{12} Hz?

2) Calculate ν for a $\lambda = 700$ nm. $\nu = c/\lambda$ nm = nanometers
Calculate ν for a $\lambda = 400$ nm. $\nu = c/\lambda$ nm = nanometers
Calculate the energy for each wavelength.
Which wavelength has the greatest frequency? Which wavelength has more energy?

3) A red light has a wavelength of 728 nm.
What is the frequency of the light?
What is the speed of the wave in m/s?

4) A purple light has a frequency of 7.42×10^{14} Hz.
What is its wavelength?
What is the energy of one quanta of light.

5) You broke your big toe! The x ray they take of toe uses waves that have a length 2.19×10^{10}m.
What is the speed of the wave in m/s?
What is the wavelength in nm?
What is the frequency of the x ray?