Homework 8 PS405

Due: Friday, October 28, 2016

1. Problem 9.5 Solve Equation 9.13 to second order in perturbation theory, for the general case $c_a(0) = a, \quad c_b(0) = b.$

2. Work out Example 9.1 on your own; however, calculate the following:

   a. the lifetime of nth stationary state -- Eq. 9.64

   Assume that the atom is "carbon" and the nth quantum state is $n = 1$. Recall that this is a harmonic oscillator, so, the ground state is $n = 0$.
   Also assume its ω corresponds to a visible wavelength, let's say λ =700 nm.
   Also assume the q = +e and that $^{12}_{6}C$ has a mass of 12 atomic mass units.

   $\tau =$ _____ seconds

3. Problem 9.10

4. Problem 9.11