HW 1 due 9/18/17

All these problems are from Laser Engineering Chapter 1 which is posted along with Sept. 6, 2017 summary, except problem 5).

1. Problem 1.1 (page 26)

2. Problem 1.5 (a), (c) and (d) (page 27)

3. Problem 1.7 and 1.8 (a) (page. 28)

4. Problem 1.10 (b) and (c)

Extra-credit for undergraduate

5. Compute the wavelengths for the following transitions in the hydrogen atom, usig the Bohr theory which given hydrogen energy level $E_n = -\frac{13.595(eV)}{n^2}$:
a) n=3 to n=1 and b) n=5 to n=4.

Extra-credit

In problem 1.8 (a), we implicitly assume that square pulses are emitted from the laser. Now we assume all parameters to be the same as problem 1.8 (a) except that triangular pulses are generated. Solve problem 1.8 (a) again.

In problem 1.10, we implicitly assume that cavities are arranged in standing wave configuration. Now we will use traveling wave configuration which has four mirrors forming a square optical path, with the length of each side of the square being L. Recalculate table (c) in problem 1.10.