PHYS 328

HOMEWORK #2

Due : Thursday 12 September 2013
(Note : There is no class on Thursday 5 September 2013)

1. 1. Refer to problem 1.16 on p. 8 of the text. The problem assumes an isothermal atmosphere, that is, one in which the temperature does not vary with height above the surface of the Earth. A more realistic model of the temperature in the Earth' s troposphere is given by :

$$T(z) = T_o - \alpha z$$

where T_o is the temperature at the surface of the Earth and α is the lapse rate, the average rate at which temperature decreases with height above the surface of the Earth. On average, the tropospheric lapse rate is 6.5^o C/km. Starting with the barometric equation given in the text, and remembering that T is a function of z, find a relationship for P (z).

2. Problem 1.22 on p. 14, parts a, b, c, and f. 5 pts for each part.

3. Problem 1.28 on p. 20 of the text.

4, Refer to problem 1.23 in the text. What changes do you have to take into account in computing the thermal energies of He and air.

5. Problem 1.31, all parts, 5 pts for each part.