ASSIGNMENT 4

CHEMISTRY 300

Due: Noon Tuesday 14 October 2008

1. Do question 6 on page 852 of the text.

2. Do queston 8 on page 852 of the text.

3. Consider 170 cylindrical individuals in a mosh pit. The dimensions of the mosh pit are 27 m $\times$ 27 m. The diameter of each individual is 0.35 m and their speed in 0.41 m s^{-1}. Assuming chaotic motion, calculate:
   (a) the mean free path.
   (b) the number of collisions per minute an individual is involved in.
   (c) the total number of collisions per minute.

4. Consider a gas at constant temperature. If the pressure is doubled, what effect that does this have on:
   (a) the number of collisions per second made by any one molecule.
   (b) the total number of collisions per second occurring in 1 m^3 of gas.
   (c) the mean free path of a gas molecule.