Chú ý: là 28 gram/mole, đổi sang kg là kg/mole. cũng vậy.

Q2

Given that: g, .

a) The mean free path of molecules is given by

With is number of molecules in the container of volume .

Solve for from , we get

b) The total translational kinetic energy of the oxygen gas is given by

Then the average speed for the molecules is

Thus, the mean free time is

Q3

a) The total kinetic energy the gas is given by

Solve for , we get

From the equation of ideal gas

b)

The rms speed of the nitrogen molecules is given by

Q4

Assume that the specific heat capacity for water and ice and heat fusion are , respectively.

a) Consider the ice completely melts, then

Consider the water drops its temperature down to , then

Clearly, , therefore, ice is not completely melting which means that the final temperature is .

b) Heat transfer diagram

The equation of thermal equilibrium gives us

We have

Thus, the change in entropy of system is

The physical meaning of this result is that the process of ice block melts in water is irreversible process due to via second law of thermodynamics.