20-05

Question 311
0.32-62%

Two identical containers, one has 2.0 moles of type 1 molecules, of mass m1, at 20 degrees Celsius. The other has 2.0 moles of type 2 molecules, of mass m2 = 2*m1, at 20 degrees Celsius. The ratio between the average translational kinetic energy of type 2 to that of type 1 is:
(a)   16.
(b)   2.
(c)   8.
(d)   4.
(e)   1.

20-05

Question 312

Two moles of nitrogen are in a 3-liter container at a pressure of 5.0*10**6 Pa. Find the average translational kinetic energy of a molecule.
(a)   1.9*10**(-20) J.
(b)   7.1*10**(-22) J.
(c)   1.0*10**(-24) J.
(d)   3.6*10**(-20) J.
(e)   1.1*10**(-23) J.

20-05

Question 313
0.28-64%

The average translational kinetic energy of the molecules of an ideal gas in a closed, rigid container is increased by a factor of 4. What happens to the pressure of the gas?
(a)   it increases by a factor of 8.
(b)   it increases by a factor of 4.
(c)   it decreases by a factor of 8.
(d)   it remains the same.
(e)   it decreases by a factor of 4.

20-5   Mean Free Path

20-06

Question 314
Which one of the following statements is FALSE:
(a)   For an ideal gas the specific heat at constant volume is less than the specific heat at constant pressure.
(b)   At 400K, the specific heat at constant volume for Oxygen is equal to the specific heat at constant pressure for Helium.
(c)   In an adiabatic compression there is no heat transfer between the system and its surroundings.
(d)   The average energy per molecule of an ideal monatomic gas increases linearly with temperature.
(e)   When an isolated ideal gas expands its temperature increases.