20-04
Question 306
■.45-26%
A closed tank, at room temperature, has a mixture of hydrogen molecules and helium atoms.
The ratio of rms speed of hydrogen molecules to that of helium is: [Note: The molar mass of
the hydrogen molecule is 2.0 g/mol and the molar mass of the helium atom is 4.0 g/mol]
(a)   0.1
(b)   2.1
(c)   1.4
(d)   3.2
(e)   0.3

20-04
Question 307
0.51-22%
An ideal gas has an RMS speed of 254 m/s. If each gas particle has a mass of $6.62*10**(-26)$kg, what is the temperature of the gas?
(a)   310 K
(b)   611 K
(c)   103 K
(d)   425 K
(e)   79 K

20-04
Question 308
0.28-15%
Two moles of a monatomic ideal gas with an RMS speed of 254 m/s are contained in a tank
that has a volume of 0.15 m**3. If the molar mass of the gas is 0.39 kg/mole, what is the
pressure of the gas?
(a) $2.3*10**5$ Pa.
(b) $1.1*10**5$ Pa.
(c) $2.2*10**4$ Pa.
(d) $3.2*10**6$ Pa.
(e) $6.8*10**4$ Pa.

20-5   Translational Kinetic Energy

20-05
Question 309
0.50-40%
Which one of the following statements is WRONG?
(a)   For the same increase in temperature, solids generally expand less than liquids.
(b)   The number of molecules (N), the universal gas constant (R) and the absolute
        temperature (T) are all thermodynamic variables.
(c)   As the temperature increases from zero degrees-C to 4 degrees-C, the water's density
        increases.
(d)   Water, ice and water vapor can coexist in equilibrium.
(e)   Two objects in thermal equilibrium must be at the same temperature.

20-05
Question 310
Two moles of nitrogen are in a 6.0 Liter container at a pressure of $5.0*10**5$ Pa. Find the
average transnational kinetic energy of a single molecule.
(a) $1.9*10**(-21)$ J.
(b) $9.3*10**(-22)$ J.
(c) $7.5*10**(-22)$ J.
(d) $1.2*10**(-21)$ J.
(e) $3.7*10**(-21)$ J.