Q.1. Calculate the volume occupied by 30kg of chlorine at a pressure 743mm Hg at 40^0C.
(Ans. 11.1 m^3)

R = 0.08206 atm.m^3/kmol.K
R= 0.08206 atm.lit/mol.K
R = 8.314 J/mol.K
R = 8.314 kJ/kmol.K

Q.2. Calculate the weight of 100 ft^3 of water vapor measured at a pressure of 15.5 mm Hg and 23^0C. (Ans. 42.84 g)

Q.3. It is desired to compress 10kg of CO_2 to a volume of 200 lit. Calculate the pressure in kPa that is required at a temperature of 40^0C (Assume ideal gas law). (Ans. 2955 kPa)

Q.4. Assuming ideal gas law, calculate the maximum temperature to which 10lb of nitrogen enclosed in a 30 ft^3 chamber may be heated without the pressure exceeding 150 psi.
(Ans. 651.7 K)

Q.5. Calculate the average molecular weight of a flue gas having the following composition:

CO_2 : 13.1%
O_2 : 7.7%
N_2 : 79.2% (Ans. 30.4)

Q.6. Air is assumed to contain 79% nitrogen and 21% oxygen by volume. Calculate its density in g/lit at a temperature of 70^0F and a pressure of 741 mm Hg. (Ans. 1.16 g/lit)