

The Pressure of A + Pressure of B = 3 Bar (Given : Pressure when both gases are present in the flask under same conditions is 3bar)

Using Daltons law of partial Pressures,

Pressure of B = 3 - 2 = 1 bar

According to an ideal gas equation,

For gas A:

$$P_1V = n_1RT \implies P_1V = RT \frac{m_1}{M}$$

Similarly for the gas B:

$$P_2V = n_2RT \implies P_2V = RT \frac{m_2}{M_2}$$

Dividing both the Equ. We get:

$$\frac{P_1 P_1}{P_2} = \frac{m_1 M_2}{m_2 M_1} \implies \frac{P_1 m_2}{P_2 m_1} = \frac{M_2}{M_1} = \frac{P_1 m_2}{P_2 m_1}$$

So the ratio of their

Molecular masses:

$$\frac{M_2}{M_1} = \frac{2 \times 2}{1 \times 1} = 4:1$$