TOSHKENT KIMYO-TEXNOLOGIYA INSTITUTI

SHAHRISABZ FILIALI

FIZIKA

Fanidan amaliy mashg’ulot

Ideal gaz qonunlari. Ideal gazning holat tenglamasi.

Shahrisabz-2020

Bahromova Anzura

1. 8. 27 V=12 l sig’imli ballonda karbonat angidrid gazi bor. Gazning bosimi P=1 MPa da, harorati T=300 K. Ballondagi gaz massasi aniqlansin.

Berilgan

$V=12\ l = 12\cdot10^{-3}\ m^3$

$P= 10^6\ Pa$

$T=300\ K$

$M=44\cdot10^{-3}\ kg/mol$

$R=8,31\ J/mol\cdot K$

kg

m-?

Yechilishi

$$PV = \frac{m}{M}RT \qquad (1)$$

$$m = \frac{PVM}{RT} \qquad (2)$$

$$m = \frac{10^6\cdot12\cdot10^{-3}44\cdot10^{-3}}{8,31\cdot300} = 0,12$$

2. 8. 32 T=300 K haroratda havodagi to’yingan suv bug’larining zichligi ρ aniqlansin. Shu haroratda to’yingan suv bosimi P=3,55 kPa.

Berilgan

T=300 K

P= 3,55 kPa=$3{,}55\cdot10^{3}$ Pa

M=$18\cdot10^{-3}$ kg/mol

R=8,31 J/mol·K

ρ-?

Yechilishi

$$PV = \frac{m}{M}RT \quad (1)$$

$$m = \rho V \quad (2)$$

$$\rho = \frac{PM}{RT} \quad (3)$$

$$\rho = \frac{3{,}55\cdot10^{3}\cdot18\cdot10^{-3}}{8{,}31\cdot300} = 0{,}0256\ \frac{kg}{m^3}$$

3. 8.36 m=1 kg massali azot va m=1 kg massali geliy gazlarining aralashmasi normal sharoitda qanday V hajmni egallaydi?

Berilgan

m_1=1 kg

m_2=1 kg

M_1=28·10^{-3} kg/mol

M_2=4·10^{-3} kg/mol

T=273 K

P= 10^5 Pa

V-?

Yechilishi

$$V=V_1+V_2 \quad (1)$$

$$V_1=\frac{m_1}{M_1P}RT \quad (2)$$

$$V_2=\frac{m_2}{M_2P}RT \quad (3)$$

$$V=\left(\frac{m_1}{M_1}+\frac{m_2}{M_2}\right)\frac{RT}{P} \quad (4)$$

$$V=\left(\frac{1}{28\cdot10^{-3}}+\frac{1}{4\cdot10^{-3}}\right)\cdot\frac{8{,}31\cdot273}{10^5}=6{,}48\ m^3$$

Topshiriq

1. V=12 l sig’imli ballonda karbonat angidrid gazi bor. Gazning bosimi P = **n** MPa da, harorati T=300 K. Ballondagi gaz massasi aniqlansin.

2. Normal sharoitda biror gazning o’rtacha kvadratik tezligi 461m/s ga teng bu gazning **n** g dagi molekulalarining soni qancha?

3. Idishda 10 g karbonat angidrid gazdan va **n** g azotdan iborat aralashma bor. Bu aralashmaning 27^0 C temperature va $1,5 \cdot 10^5$ N/m^2 bosimda zichligi topilsin?

Izoh**:** **n** sonining o’rniga har bir talaba o’zining jurnaldagi nomerini masalaga qo’yib ishlaydi.