

**Daily Tutorial Sheet-3**

**Level – 1**

**31.(B)**  $PM_0 = dRT \Rightarrow M_0 = \frac{1.15 \times 0.08 \times 373}{0.8} = 44$

**32.(A)**  $PV = nRT \Rightarrow P = \frac{\rho RT}{M_0}$  or  $M_0 = \frac{\rho RT}{P}$

**33.(A)** When temp is constant, K.E is constant the pressure will fall when expansion of gas occurs at constant T

**34.(B)** K.E depends only on temperature and not the nature of gas.

**35.(C)** All the molecules of heavier gas will move at a slower speed as compared to any molecule of a lighter gas

**36.(C)**  $\frac{(C_{rms})_{O_3}}{(C_{rms})_{O_2}} = \sqrt{\frac{M_{O_2}}{M_{O_3}}} = \sqrt{\frac{32}{48}} = \sqrt{\frac{2}{3}}$

**37.(B)**  $\mu_{rms} = \sqrt{\frac{3RT}{M_0}}$

**38.(A)** At same temperature, K.E will be same

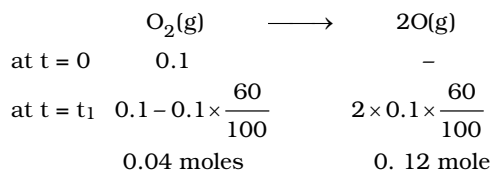
**39.(C)**  $\frac{r_A}{r_B} = \frac{P_A}{P_B} \sqrt{\frac{M_B}{M_A}}$

**40.(D)**  $d = 0.001293 \text{ g / ml} = 1.293 \text{ g / lt .}$

Now  $(M_0)_{air} = \frac{d \times R \times T}{P} = 1.293 \times 224 = 28.96$

$V.D. = \frac{(M_0)_{air}}{2} = \frac{28.96}{2} = 14.48$

**41.(B)** 3.2 g of  $O_2$ , No. of moles contain are  $\Rightarrow \frac{3.2}{32} = 0.1$  mole of  $O_2$  gas



Initial moles  $n_i = 0.1$  mole

Final moles  $n_f = 0.04 + 0.12 = 0.16$  moles

Volume = 10 lt.

Temperature = 1000 k

Using ideal gas equation.

$PV = nRT$

$P = \frac{nRT}{V} = \frac{0.16 \times 0.0821 \times 1000}{10}$

$P = 1.31 \text{ atm}$

**42.(B)**  $C_{rms} = \sqrt{\frac{3RT}{M_0}}$

**43.(A)**  $u_{rms} > u_{avg} > u_{mp}$

**44.(D)** Suppose initially, pressure of  $C_6H_6(g) = P_1$  mm and that of  $H_2(g) = P_2$  mm .

$\therefore P_1 + P_2 = 60 \text{ mm}$

... (1)

After the reaction

Pressure of  $C_6H_6(g) = 0$

Pressure of  $\text{H}_2(\text{g}) = P_2 - 3P_1$

Pressure of  $\text{C}_6\text{H}_{12}(\text{g}) = P_1$

Total pressure =  $P_2 - 3P_1 + P_1 = 30 \text{ mm}$

Or,  $P_2 - 2P_1 = 30 \text{ mm}$  ... (2)

Solving (1) & (2) we get :  $P_1 = 10 \text{ mm}$  ;  $P_2 = 50 \text{ mm}$

Fraction of  $\text{C}_6\text{H}_6(\text{g})$  by volume = Fraction of moles = Fraction of pressures =  $\frac{10}{60} = \frac{1}{6}$

**45.(D)** Root means square speed depends on Temperature only