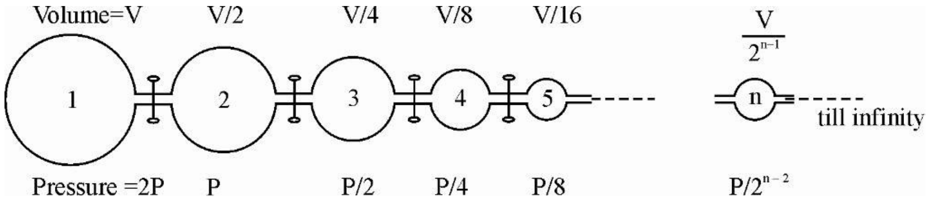
Date Planned : __ / __ / __	Daily Tutorial Sheet-10	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration :________

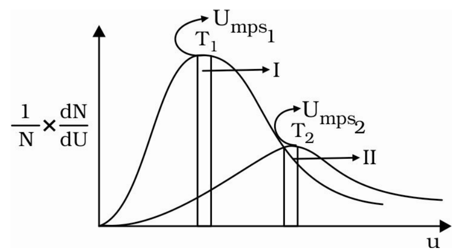
116.



Infinite number of flask are connected to one another as shown above. The volumes and pressure in each flask vary as shown. The stopcocks are initially closed. The common pressure, when all the stopcocks are opened, is : (Assume constant temperature)

(A) P **(B)** $\frac{1}{2}P$ **(C)** $\frac{P}{4}$ **(D)** $\frac{4}{3}P$

117. Following represents the Maxwell distribution curve for an ideal gas at two temperatures T_1 and T_2. Which of the following option(s) is/are true?



(A) Total area under the two curves is independent of moles of gas

(B) u_{mp} decreases as temperature decreases

(C) $T_1 > T_2$ and hence higher the temperature, sharper the curve

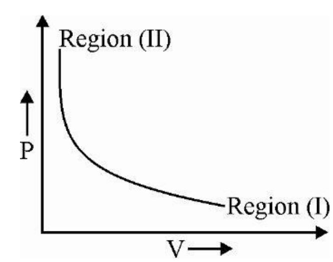
(D) The fraction of molecules having speed u_{mp} decreases as temperature increases

118. At low pressure, vander waal's equation is reduced to $\left[P + \frac{a}{V^2}\right]V = RT$. The compressibility factor can be given as :

(A) $1-\frac{a}{RTV}$ **(B)** $1-\frac{RTV}{a}$ **(C)** $1+\frac{a}{RTV}$ **(D)** $1+\frac{RTV}{a}$

119. Following graph represents a pressure (P) volume (V) relationship at a fixed temperature (T) for n moles of a real gas. The graph has two regions marked.

(I) and (II). Which of the following options is true.



(A) Z < 1 in the region (II)

(B) Z = 1 in the region (II)

(C) Z = 1 for the curve

(D) Z approaches 1 as we move from region (II) to region (I)

120. Density of dry air (only N_2 and O_2) is $1.24\,g\ litre^{-1}$ at 760 mm and 300 K. Find the partial pressure of N_2 gas in air (Take $R = \frac{1}{12}$ litre atm/mol K ; mol. wt. of N_2 = 28)

(A) 0.25 **(B)** 0.365 **(C)** 0.5 **(D)** 0.75

121. The root mean square velocity of hydrogen is $\sqrt{5}$ times than that of nitrogen. If T is the temperature of the gas, then:

(A) $T_{H_2} = T_{N_2}$ **(B)** $T_{H_2} > T_{N_2}$ **(C)** $T_{H_2} < T_{N_2}$ **(D)** $T_{H_2} < \sqrt{7}\ T_{N_2}$

122. A gaseous mixture containing He, CH_4 and SO_2 was allowed to effuse through a fine hole then find what molar ratio of gases coming out initially? If mixture contain He, CH_4 and SO_2 in $1:2:3$ mole ratio.

(A) 2 : 2 : 3 **(B)** 6 : 6 : 1 **(C)** $\sqrt{2} : \sqrt{2} : 3$ **(D)** 4 : 4 : 3

123. 6×10^{22} gas molecules each of mass 10^{-24} kg are taken in a vessel of 10 litre. What is the pressure exerted by gas molecules? The root mean square speed of gas molecules is 100 m/s.

(A) 20 Pa **(B)** 2×10^4 Pa **(C)** 2×10^5 Pa **(D)** 2×10^7 Pa

124. Two flask A and B of equal volumes maintained at temperature 300 K and 700 K contain equal mass of He(g) and N_2(g) respectively. What is the ratio of total translational kinetic energy of gas in flask A to that of flask B?

(A) 1 : 3 **(B)** 3 : 1 **(C)** 3 : 49 **(D)** None of these

125. The density of gas A is twice that of B at the same temperature the molecular weight of gas B is twice that of A. The ratio of pressure of gas A and B will be:

(A) 1 : 6 **(B)** 1 : 1 **(C)** 4 : 1 **(D)** 1 : 4