

CHEMISTRY

81. Which of the following gas mixture is not applicable for Dalton's law of partial pressure?

- (1) SO₂ and Cl₂
 (2) CO₂ and N₂
 (3) CO and CO₂
 (4) CO and N₂

82. A 10 g of a gas at atmospheric pressure is cooled from 273°C to 0°C keeping the volume constant, its pressure would become

- (1) $\frac{1}{2}$ atm
 (2) $\frac{1}{273}$ atm
 (3) 2 atm
 (4) 273 atm

83. Which of the following pairs will diffuse at the same rate through a porous plug?

- (1) CO, NO₂
 (2) NO₂, CO₂
 (3) NH₃, PH₃
 (4) NO, C₂H₆

84. An ideal gas will have maximum density when

- (1) P = 0.5 atm, T = 600 K
 (2) P = 2 atm, T = 150 K
 (3) P = 1 atm, T = 300 K
 (4) P = 1.0 atm, T = 500 K

85. The ratio of root mean square velocity to average velocity of gas molecules at a particular temperature is

- (1) 1.086 : 1
 (2) 1 : 1.086
 (3) 2 : 1.086
 (4) 1.086 : 2

86. Among the following gases which one has the lowest root mean square velocity at 25°C

- (1) SO₂
 (2) N₂
 (3) O₂
 (4) Cl₂

87. Root mean square velocity of a gas molecule is proportional to

- (1) M ^{$\frac{1}{2}$}
 (2) M⁰
 (3) M ^{$-\frac{1}{2}$}
 (4) M

88. The K.E. of an ideal gas in calories per mole is approximately equal to

- (1) Three times the absolute temperature
 (2) Absolute temperature
 (3) Two times the absolute temperature
 (4) 1.5 times the absolute temperature

89. At low pressure, the van der Waal's equation is reduced to

- (1) $Z = \frac{pV_m}{RT} = 1 - \frac{a}{VRT}$
 (2) $Z = \frac{pV_m}{RT} = 1 + \frac{b}{RT}p$
 (3) $pV_m = RT$
 (4) $Z = \frac{pV_m}{RT} = 1 - \frac{a}{RT}$

90. At high temperature and low pressure, the van der Waal's equation is reduced to

- (1) $\left(p + \frac{a}{V_m^2}\right)(V_m) = RT$
 (2) $pV_m = RT$
 (3) $p(V_m - b) = RT$
 (4) $\left(p + \frac{a}{V_m^2}\right)(V_m - b) = RT$