Date Planned : __ / __ / __	Daily Tutorial Sheet-9	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration :_____

106. A real gas obeying Vander Waal's equation will resemble ideal gas, if the:

(A) constants a & b are small **(B)** a is large & b is small

(C) a is small & b is large **(D)** constant a & b are large

107. If temperature and volume are same, the pressure of a gas obeying Vander Waals equation is:

(A) Smaller than that of an ideal gas **(B)** Larger than that of an ideal gas

(C) Same as that of an ideal gas **(D)** None of these

108. The critical pressure P_C and critical temperature T_C for a gas obeying van der Waal's equation are 80 atm and 87°C. Molar mass of the gas is 130 g/mole. The compressibility factor for the above gas will be smaller than unity under the following condition:

(A) 1 atm and 800°C **(B)** 1 atm and 1200°C

(C) 1 atm and 1000°C **(D)** 1 atm and 1100°C

109. For the non-zero values of force of attraction between gas molecules, gas equation will be:

(A) $PV = nRT - \frac{n^2a}{V}$ **(B)** $PV = nRT + nbP$

(C) $PV = nRT$ **(D)** $P = \frac{nRT}{V - b}$

110. At Boyle's temperature, the value of compressibility factor $Z = (PV_m / RT = V_{real} / V_{ideal})$ has a value of 1, over a wide range of pressure. This is due to the fact that in the van der Waal's equation

(A) The constant 'a' is negligible and not 'b'

(B) The constant 'b' is negligible and not 'a'

(C) Both the constant 'a' and 'b' are negligible

(D) The effect produced due to the molecular attraction compensates the effect produced due to the molecular volume

111. The critical density of the gas CO_2 is 0.44 g cm^{-3} at a certain temperature. If r is the radius of the molecule, r^3 in cm^3 is approximately. (N is Avogadro number)

(A) $\frac{25}{\pi N}$ **(B)** $\frac{100}{\pi N}$ **(C)** $\frac{6}{\pi N}$ **(D)** $\frac{25}{4N\pi}$

***112.** Which of the following is correct for critical temperature?

(A) It is the highest temperature at which liquid and vapour can coexist

(B) Beyond this temperature, the gas and the liquid phase have different critical densities

(C) At this temperature, the gas and the liquid phase have different critical densities

(D) All are correct

***113.** The vander waal gas constant 'a' is given by :

(A) $\frac{1}{3}V_C$ **(B)** $3P_CV_C^2$ **(C)** $\frac{1}{8}\frac{RT_C}{P_C}$ **(D)** $\frac{27}{64}\frac{R^2T_C^2}{P_C}$

***114.** Which of the following is(are) correct for real gases?

(A) $\underset{P\to 0}{Lt}(PV_m)$ = constant at constant high temperature

(B) $\underset{V_m\to 0}{Lt}(PV_m)$ = constant at constant low temperature

(C) $\underset{P\to 0}{Lt}\left(\frac{PV_m}{RT}\right) = 1$ at high temperature

(D) $\underset{V\to 0}{Lt}\left(\frac{PV_m}{RT}\right) = R$

***115.** Which of the following statements are incorrect?

(A) Molar volume of every gas at STP is 22.4 L

(B) Under critical states compressibility factor is 1

(C) All gases will have equal value of average KE at a given temperature

(D) At absolute zero, KE is 3/2 R