Daily Tutorial Sheet-9	Level - 2

106.(A) A real gas will resemble ideal gas if both 'a' and 'b' are small.
Under such circumstances the vander waals equation is reduced to the ideal gas equation.

107.(A) Due to force of attraction, the pressure exerted by the real gas is less than that exerted by ideal gases

108.(A) $T_C = 87°C$

$$T_B = \frac{27}{8} \times 360 = 1215\,K \text{ or } 942°C$$

Hence Z < 1 at T < 942°C

109.(A) The factor 'a' is a measure of force of attraction

$$\left(P + \frac{n^2a}{V^2}\right)V = nRT \quad \Rightarrow \quad PV = nRT - \frac{n^2a}{V}$$

110.(D) Effect of molecular attraction compensates the effect produced due to molecular size.

111.(D) 0.44 g occupies a volume of $1\,cm^3$

$\therefore$ 44 g (i.e 1 mol) occupies volume of $100\,cm^3$

$V_c = 3b$; b = 4times the volume of one molecule

$$3 \times 4 \times \frac{4}{3}\pi r^3 N = 100 \quad \Rightarrow \quad r^3 = \frac{25}{4\pi N}$$

112.(AB) The critical temperature is the highest temperature at which a gas can be liquefied. At this temperature the gas and liquid have same critical density.

113.(BD) $a = \frac{9}{8}RT_cV_c = \frac{27R^2T_c^2}{64P_c} = 3P_cV_c^2$

114.(AC) A gas behaves ideally when $P \to 0$ and temperature is high

PV_m = constant for ideal gas $\frac{PV_m}{RT} = 1$ for ideal gas

115.(ABCD) Molar volume of real gases $\neq 22.4\,L$. Under critical states, compressibility factor $= \frac{3}{8}$

The average K.E. at a given temperature is not equal for real gases.
At absolute zero, K. E is equal to zero.