Deviation of gases from ideal behaviour :-)

The following Condition of gases which deviate from ideality.

(i) Molecular Size is finite.

(ii) Force of attraction or repulsion is exist.

(iii) Compressibility factor which is defined as ratio of obsorbed volume to the Calculated volume. if z is the indication of Compressibility factor.

Then $z = \dfrac{obsorbed\ volume}{Calculated\ volume} = \dfrac{V_{ob}}{V_{cal}}$ —(i)

Now from ideal gas

$$PV = mRT, \qquad V_{cal} = \dfrac{mRT}{P}$$

from equation (i)

$$Z = \dfrac{V_{ob}}{\dfrac{mRT}{P}} = \dfrac{PV}{mRT}, \quad if\ for\ ideal\ gas$$

$PV = mRT,$ Then $\boxed{Z = 1}$ And for deviation

$Z \neq 1$ i.e

(iv) At low temperature and high Pressure. gas show deviation from ideality.