

CHEMISTRY

41. (4)

Among these Cl_2 has the highest molecular weight so it will possess lowest root mean square velocity

42. (3)

$$V_{\text{rms}} = \sqrt{\frac{3RT}{\text{Molecular weight}}}$$

$$\text{i.e., } V_{\text{rms}} \propto \frac{1}{\sqrt{M}} \propto (M)^{-\frac{1}{2}}$$

43. (1)

$$\text{K.E.} = \frac{3}{2} \cdot RT = \frac{3}{2} \cdot 2 \cdot T \because R \approx 2 \text{ cal K}^{-1} \text{ mol}^{-1}$$

$$\text{K.E.} = 3T$$

44. (1)

When pressure is low

$$\left[p + \frac{a}{V^2} \right] (V - b) = RT$$

$$\text{or } pV = RT + pb - \frac{a}{V} + \frac{ab}{V^2}$$

$$\text{or } \frac{pV}{RT} = 1 - \frac{a}{VRT}$$

$$Z = -\frac{a}{VRT} \left(\because \frac{pV}{RT} = Z \right)$$

45. (2)

At high temperature and low pressure, Vander Waal's equation is reduced to ideal gas equation.

$$pV = nRT$$

$$pV = RT \text{ (For 1 mole of gas)}$$

46. (2)

Greater are the concentrations of the reactants, faster is the reaction. Conversely, as the concentrations of the reactants decrease, the rate of reaction also decreases.

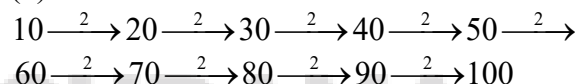
47. (3)

$$r = \frac{-\Delta C}{\Delta t}$$

48. (4)

'A' will disappear at twice the rate at which 'B' will decrease.

49. (2)



Increase in rate, $r = 2^9$ or $r = 2^{\frac{\Delta t}{10}}$

50. (1)