CHEMISTRY

41. (4)
In this reaction ΔH is negative so reaction move forward by decrease in temperature while value of $\Delta n = 2-3 = -1$ i.e., negative so the reaction move forward by increase in pressure.

42. (2)
$K_p = K_c[RT]^{\Delta n_g}$; $\Delta n_g = 1-1.5 = -0.5$

$K_p = K_c[RT]^{-1/2}$ $\therefore \frac{K_p}{K_c} = [RT]^{-1/2}$

43. (2)
The reaction is endothermic in reverse direction and hence increase in temperature will favour reverse reaction.

44. (2)
At equilibrium, the addition of $(CN)^-$ would decrease the (H^+) ion concentration to produce more and more HCN to nullified the increase of CN^-_{aq}.

45. (1)

46. (4)

47. (1)
$\underset{2}{PCl_5} \rightleftharpoons \underset{0}{PCl_3} + \underset{0}{Cl_2}$

$\frac{2\times60}{100}\ \frac{2\times40}{100}\ \frac{2\times40}{100}$

Volume of container = 2 litre.

$K_c = \frac{\frac{2\times40}{100\times2}\times\frac{2\times40}{100\times2}}{\frac{2\times60}{100\times2}} = 0.266$.

48. (3)
$A + B \rightleftharpoons C + D$

Initial 1 1 0 0

remaining at equ. 0.4 0.4 0.6 0.6

$K = \frac{[C][D]}{[A][B]} = \frac{0.6\times0.6}{0.4\times0.4} = \frac{36}{16} = 2.25$.

49. (4)
$A + B \rightleftharpoons C + D$

x x 0 0

$K_c = \frac{[C][D]}{[A][B]} = \frac{2x.2x}{x.x} = 4$

50. (1)
$\underset{(a-x)}{\overset{a}{N_2}} + \underset{(b-3x)}{\overset{b}{3H_2}} \rightleftharpoons \underset{(2x)}{\overset{0}{2NH_3}}$

50% Dissociation of N_2 take place so,

At equilibrium $\frac{2\times50}{100} = 1$; value of $x = 1$

$K_c = \frac{[2]^2}{[1][3]^3} = \frac{4}{27}$ so, $K_c = \frac{4}{27}$