

Q3. Which of the following statements is incorrect?

- (a) In equilibrium mixture of ice and water kept in perfectly insulated flask, mass of ice and water does not change with time.**
- (b) The intensity of red colour increases when oxalic acid is added to a solution containing iron (III) nitrate and potassium thiocyanate.**
- (c) On addition of catalyst the equilibrium constant value is not affected.**
- (d) Equilibrium constant for a reaction with negative AH value decreases as the temperature increases.**

Sol: (b) $\text{Fe}^{3+} + \text{SCN}^- \rightleftharpoons \text{FeSCN}^{2+} (\text{Red})$

When oxalic acid is added to a solution containing iron nitrate and potassium thiocyanate, oxalic acid reacts with Fe^{3+} ions to form a stable complex ion $[\text{Fe}(\text{C}_2\text{O}_4)_3]^{3-}$, thus, decreasing the concentration of free Fe^{3+} ions which in turn decreases the intensity of red colour.

$\text{Fe}^{3+} + \text{SCN}^- \rightleftharpoons [\text{Fe}(\text{SCN})]^{2+} (\text{Red})$