Nishant Jindal

O-I 89 - 94

S-I 68 — 71

Ionic

Nishant Jindal

S-I

(70)

$$K_{sp} = 4(10^{-3})^3 = 4 \times 10^{-9}$$

$$[Ag^+] = 2 \times 10^{-3}$$

$$2 \times 10^{-3} - 2 \times 10^{-4}$$

$$18 \times 10^{-4} \text{ mol}$$

$$Ag_2CrO_4 \longrightarrow 2Ag^+ + CrO_4^{2-}$$

$$2S \qquad 0.1 + S$$

$$\eta_{Ag_2CrO_4} = \frac{18 \times 10^{-4}}{2}$$

$$(2S)^2(0.1) = 4 \times 10^{-9}$$

$$[Ag^+]^2 = 4 \times 10^{-8}$$

$$[Ag^+] = 2 \times 10^{-4}$$

Nishant Jindal

(92)

$$[Ag^+] = \frac{10^{-5}}{100} = 10^{-7}$$

$$[Br^-] = \frac{2 \times 10^{-7} \times 50}{100}$$

$$= 10^{-7}$$

$$Q = 10^{-7} \times 10^{-7} = 10^{-14} < K_{sp}$$

(94)

$AgCl(s) \longrightarrow Ag^+ + Ce^-$

$(Ag^+)\ (10^{-5}) = 10^{-10}$

$[Ag^+] = 10^{-5}$

$10^{-5} \times \frac{100}{1000} = 10^{-6}$

4×10^{-6}

$= 4 \times 10^{-5} - 10^{-5}$

Change in conc $= 3 \times 10^{-5}$

mole ppt $= 3 \times 10^{-5} \times \frac{1000}{1000} = 3 \times 10^{-6}$

(93) $Ag_2CrO_4 \longrightarrow 2Ag^+ + CrO_4^{2-}$

$\frac{100 \times 0.1}{500}$ $\qquad$ $\frac{400 \times 0.2}{500}$

$= \frac{10 \times 10^{-2}}{5}$ $\qquad$ $\frac{80 \times 10^{-2}}{5}$

$= 2 \times 10^{-2}$ $\qquad$ 16×10^{-2}

$= 0 + 25$ $\qquad$ $15 \times 10^{-2} + 1$

$[Ag^+]^2 [15 \times 10^{-2}] = 15 \times 10^{-12}$ $\quad 10^{-10}$

$[Ag^+] = 10^{-5}$

Q. In 0.1 M $AgNO_3$ soln Cl^- are added such that its conc. becomes (0.01 M.) find final Ag^+ conc. $K_{sp}(AgCl) = 10^{-10}\ M^2$

$$10^{-10} = K_{sp} = [Ag^+][Cl^-]$$

$$10^{-10} = [Ag^+](0.01)$$

$$10^{-8} = [Ag^+]$$

Ag^+	+	Cl^-
a		b
0		(b-a)

Nishant Jindal

Selective ppt^n :

$[Ag^+] = 10^{-9}$ → $[Ag^+]_{min} = 10^{-13}$ → $[Ag^+]_{min} = 10^{-16}$

$[Ag^+]$	$K_{sp} = 10^{-10}$ $[Cl^-]$	$K_{sp} = 10^{-14}$ $[Br^-]$	$K_{sp} = 10^{-17}$ $[I^-]$
	✓	? 10^{-5}	? 10^{-8}
10^{-13}		✓	10^{-4}
10^{-14}		0.1M	10^{-3}
10^{-15}		0.1M	10^{-2}
10^{-18}		0.1M	0.1M
	0.1M	0.1M	0.1M

$[Ag^+][I^-] = 10^{-17}$

$(10^{-9})[I^-] = 10^{-17}$

$[Ag^+][Br^-] = 10^{-14}$

$10^{-9}[Br^-] = 10^{-14}$

Ag_2CrO_4

Nishant Jindal

Ag^+ ions are added to a soln containing $0.1M\ Cl^-$ & $0.1M\ CrO_4^{2-}$. find

① Sequence of ppt^n

② conc. of already ppting ion when other ion starts ppting.

$K_{sp}(AgCl) = 10^{-10}$

$K_{sp}(Ag_2CrO_4) = 10^{-13}$ ✓

$[Ag^+](0.1) = 10^{-10}$ $\quad [Ag^+]_{min} = 10^{-9}$

$[Ag^+]^2(0.1) = 10^{-13}$ $\quad [Ag^+]_{min} = 10^{-6}$

$(10^{-6})[Cl^-] = 10^{-10}$

$[Cl^-] = 10^{-4}$

Nishant Jindal