| Date Planned : __ / __ / __ | Daily Tutorial Sheet-9 | Expected Duration : 90 Min |
|---|---|---|
| Actual Date of Attempt : __ / __ / __ | Level-2 | Exact Duration :_________ |

**106.** The best indicator for titrating HCl against $NH_4OH$ is :

**(A)** Litmus **(B)** Phenolphthalein
**(C)** Phenol red **(D)** Methyl orange

**107.** In the titration of $NH_4OH$ with HCl, the indicator which cannot be used is :

**(A)** Phenolphthalein **(B)** Methyl orange
**(C)** Methyl red **(D)** Both methyl orange and methyl red

**108.** 2.5 mL of $\frac{2}{5}$M weak monoacidic base $(K_b = 1 \times 10^{-12}$ at $25^\circ C)$ is titrated with $\frac{2}{15}$M HCl in water at 25°C. The concentration of $H^+$ at equivalence point is : $(K_w = 1 \times 10^{-14}$ at $25^\circ C)$

**(A)** $3.7 \times 10^{-13}$ M **(B)** $3.2 \times 10^{-7}$ M **(C)** $3.2 \times 10^{-2}$ M **(D)** $2.7 \times 10^{-2}$ M

**109.** 0.1 M acetic acid solution is titrated against 0.1 M NaOH solution. What would be the difference in pH between $\frac{1}{4}$ and $\frac{3}{4}$ stages of neutralisation of acid ?

**(A)** $2\log\frac{3}{4}$ **(B)** $2\log\frac{1}{4}$ **(C)** $\log\frac{1}{3}$ **(D)** $2\log 3$

**110.** A weak acid of dissociation constant $10^{-5}$ is being titrated with aqueous NaOH solution. The pH at the point of one-third neutralisation of the acid will be :

**(A)** $5 + \log 2 - \log 3$ **(B)** $5 - \log 2$
**(C)** $5 - \log 3$ **(D)** $5 - \log 6$

**111.** On adding 0.1 M solution each of $[Ag^+]$, $[Ba^{2+}]$, $[Ca^{2+}]$ in a $Na_2SO_4$ solution, species first precipitated is: $[K_{sp}BaSO_4 = 10^{-11}, K_{sp}CaSO_4 = 10^{-5}, K_{sp}Ag_2SO_4 = 10^{-5}]$

**(A)** $Ag_2SO_4$ **(B)** $BaSO_4$ **(C)** $CaSO_4$ **(D)** All of these

***112.** A solution which is $10^{-3}$ M each in $Mn^{2+}$, $Fe^{2+}$, $Zn^{2+}$ and $Hg^{2+}$ is treated with $10^{-16}$M sulphide ion. If $K_{sp}$ of MnS, FeS, ZnS and HgS are $10^{-15}, 10^{-23}, 10^{-20}$ and $10^{-54}$ respectively, which of the following will be precipitated if $H_2S$ is passed in alkaline solution.

**(A)** FeS **(B)** MnS **(C)** HgS **(D)** Zns

**113.** In the following reaction, $AgCl + KI \rightleftharpoons KCl + AgI$

As KI is added, the equilibrium is shifted towards right giving more AgI precipitate, because :

**(A)** both AgCl and AgI are sparingly soluble
**(B)** the $K_{sp}$ of AgI is lower than $K_{sp}$ of AgCl
**(C)** the $K_{sp}$ of AgI is higher than $K_{sp}$ of AgCl
**(D)** both AgCl and AgI have same solubility product

**114.** The best explanation for the solubility of MnS in dil. HCl is that :

**(A)** Solubility product of $MnCl_2$ is less than that of MnS

**(B)** Concentration of $Mn^{2+}$ is lowered by the formation of complex ions

**(C)** Concentration of sulphide ions is lowered by oxidation to free sulphur

**(D)** Concentration of sulphide ions is lowered by the formation of weak acid $H_2S$

**115.** $K_{sp}(AgCl) > K_{sp}(AgBr) > K_{sp}(AgI)$. This means that :

**(A)** AgCl is less ionised than AgBr and AgI

**(B)** Both AgBr and AgI are less soluble than AgCl

**(C)** AgI is most soluble

**(D)** AgBr is more soluble than AgCl but less soluble than AgI