| Date Planned : __ / __ / __ | Daily Tutorial Sheet-3 | Expected Duration : 90 Min |
|---|---|---|
| Actual Date of Attempt : __ / __ / __ | JEE Advanced Archive | Exact Duration :_____ |

**31.** The crystalline salts of alkaline earth metals contain more water of crystallization than the corresponding alkali metal salt. Why ? **(1997)**

**32.** Element A burns in nitrogen to give an ionic compound B. Compound B reacts with water to give C and D. A solution of C becomes 'milky' on bubbling carbon dioxide gas. Identify A, B, C and D. **(1997)**

**33.** Sodium nitrate decomposes above 800°C to give : **(1998)**

**(A)** $N_2$ **(B)** $O_2$ **(C)** $NO_2$ **(D)** $Na_2O$

**34.** Hydrogen peroxide acts both as an oxidizing and as a reducing agent in alkaline solution towards certain first row transition metal ions. Illustrate both these properties of $H_2O_2$ using chemical equations. **(1998)**

**35.** **Statement-I** : LiCl is predominantly a covalent compound. **(1998)**

**Statement-II** : Electronegativity difference between Li and Cl is too small.

**(A)** Statement-I is True, Statement-II is True and Statement-II is a correct explanation for Statement-I

**(B)** Statement-I is True, Statement-II is True and Statement-II is NOT a correct explanation for Statement-I

**(C)** Statement-I is True, Statement-II is False

**(D)** Statement-I is False, Statement-II is True

**36.** Highly pure dilute solution of sodium in liquid ammonia : **(1998)**

**(A)** shows blue colour **(B)** exhibits electrical conductivity

**(C)** produces sodium amide **(D)** produces hydrogen gas

**37.** A white solid is either $Na_2O$ or $Na_2O_2$. A piece of red litmus paper turns white when it is dipped into a freshly made aqueous solution of the white solid. **(1999)**

**(i)** Identify the substance and explain with balanced equation.

**(ii)** Explain what would happen to the red litmus if the white solid were the other compound

**38.** Give reasons for the following in one two sentences only : **(1999)**

"$BeCl_2$ can be easily hydrolysed."

**39.** A sodium salt of an unknown anion when treated with $MgCl_2$ gives white precipitate only on boiling. The anion is : **(2004)**

**(A)** $SO_4^{2-}$ **(B)** $HCO_3^-$ **(C)** $CO_3^{2-}$ **(D)** $NO_3^-$

**40.** $MgSO_4$ on reaction with $NH_4OH$ and $Na_2HPO_4$ forms a white crystalline precipitate. What is its formula? **(2006)**

**(A)** $Mg(NH_4)PO_4$ **(B)** $Mg(PO_4)_3$

**(C)** $MgCl_2 \cdot MgSO_4$ **(D)** $MgSO_4$

**41.** The compound(s) formed upon combustion of sodium metal in excess air is (are) : **(2007)**

**(A)** $Na_2O_2$ **(B)** $Na_2O$ **(C)** $NaO_2$ **(D)** NaOH

**42.** **Statement-I** : Alkali metals dissolve in liquid ammonia to give blue solution. **(2007)**

**Statement-II** : Alkali metals in liquids ammonia give solvated species of the type $[M(NH_3)_n]^+$ (M = alkali metals).

**(A)** Statement-I is True, Statement-II is True and Statement-II is a correct explanation for Statement-I

**(B)** Statement-I is True, Statement-II is True and Statement-II is NOT a correct explanation for Statement-I

**(C)** Statement-I is True, Statement-II is False

**(D)** Statement-I is False, Statement-II is True

**43.** The temporary hardness of water is due to calcium bicarbonate can be removed by adding : **(2007)**

**(A)** CaO **(B)** $Ca(OH)_2$ **(C)** $CaCl_2$ **(D)** HCl

**44.** The reagent(s) used for softening the temporary hardness of water is(are) : **(2010)**

**(A)** $Ca_3(PO_4)_2$ **(B)** $Ca(OH)_2$ **(C)** $Na_2CO_3$ **(D)** NaOCl

**45.** Hydrogen peroxide in its reaction with $KIO_4$ and $NH_2OH$ respectively, is acting as a : **(2014)**

**(A)** Reducing agent, oxidizing agent **(B)** Reducing agent, reducing agent

**(C)** Oxidizing agent, oxidizing agent **(D)** Oxidising agent, reducing agent

**46.** The pair(s) of reagents that yield paramagnetic species is/are : **(2014)**

**(A)** Na and excess of $NH_3$ **(B)** K and excess of $O_2$

**(C)** Cu and dilute $HNO_3$ **(D)** $O_2$ and 2-ethylanthraquinol

***47.** $Fe^{3+}$ is reduced to $Fe^{2+}$ by using : **(2015)**

**(A)** $H_2O_2$ in presence of NaOH **(B)** $Na_2O_2$ in water

**(C)** $H_2O_2$ in presence of $H_2SO_4$ **(D)** $Na_2O_2$ in presence of $H_2SO_4$

**48.** Which of the following combination will produce $H_2$ gas ? **(2017)**

**(A)** Au metal and NaCN(aq) in the presence of air

**(B)** Cu metal and conc. $HNO_3$

**(C)** Fe metal and conc. $HNO_3$

**(D)** Zn metal and NaOH(aq)