CHEMISTRY

1. The stable bicarbonate in the solid state is

   1) $LiHCO_3$ 2) $Mg(HCO_3)_2$ 3) $Be(HCO_3)_2$ 4) $KHCO_3$

2. Which of the following pairs form stable nitride when the metals burn in air ?

   1) Ca, Na 2) K, Mg 3) Li, Mg 4) Cs, Ba

3. $NH_3 + CO_2 + H_2O \rightarrow$ 'A'

   $NaCl +$ 'A' $\rightarrow B + C$

   $B \xrightarrow[\Delta]{} D + CO_2 + H_2O$

   D and C are respectively

   1) $Na_2CO_3, NaHCO_3$ 2) $NaCl, Na_2CO_3$

   3) $NaHCO_3, Na_2CO_3$ 4) Na_2CO_3 and NH_4Cl

4. $KO_2 + H_2O \rightarrow$ 'A'+'B"+'C'. B and C are respectively.

   1) K_2O, O_2 2) H_2O_2, O_2 3) K_2O_2, O_2 4) KOH, H_2

5. $\left[Be(H_2O)_x\right]^{2+}, \left[Mg(H_2O)_y\right]^{2+}, \left[Al(H_2O)_z\right]^{3+}$

x, y, z are respectively

1) 2, 4, 6 2) 4, 6, 6 3) 6, 6, 6 4) 4, 6, 4

6. $LiNO_3 \xrightarrow[\Delta]{} A + B\uparrow + C\uparrow$

$NaNO_3 \xrightarrow[\Delta]{550^0C} D + C\uparrow$

The oxidation states of nitrogen in B and D are respectively

1) $+4, +3$ 2) $+3, +3$ 3) $+5, +3$ 4) $+3, +5$

7. Which one has the lowest thermal decomposition temperature ?

1) Li_2CO_3 2) $BaCO_3$ 3) $CaCO_3$ 4) $BeCO_3$

8. The most soluble pair in water is

1) NaF, KI 2) LiF, CsI 3) LiI, CsF 4) NaI, KF

9. Which pair is the best reducing agent ?

1) Li, Mg 2) Be, Al 3) Li, Be 4) Be, H_2

10. Sodium in liquor ammonia gives

1) Blue color due to solvated electron

2) The solution is paramagnetic

3) Sodamide is formed and H_2 is liberated

4) Sodium hydroxide is formed and H_2 is liberated

11. True statements regarding lithium compounds

P) $LiOH$ is a weaker base Q) LiH_2PO_4 is insoluble in water

R) Li_3N is stable and $LiHCO_3$ is unstable

S) Li can form many organometallic and coordination complexes

1) PQR 2) QRS 3) PQRS 4) PRS

12. Which pair does not give red brown gas on strong heating in laboratory test ?

1) $Be(NO_3)_2, Ba(NO_3)_2$ 2) $Al(NO_3)_3, Mg(NO_3)_2$

3) $Ca(NO_3)_2, Sr(NO_3)_2$ 4) $KNO_3, CsNO_3$

13. The radio active elements are

1) Fr, Ra, Tl 2) Fr, Ra 3) Sr, K, Na 4) Ca, Ba, Ra

14. An alkaline earth metal carbide on reaction with water gave a gas used in welding. The carbide is

1) Be_2C 2) Mg_2C_3 3) CaC_2 4) Al_4C_3

15. Which of these pairs become passive with conc. HNO_3?

1) Li, Mg 2) Ca, Ba 3) Sr, Ba 4) Be, Al

16. The salt that is soluble in water is

1) $MgCO_3$ 2) $Mg_3(PO_4)_2$ 3) MgC_2O_4 4) $Mg(ClO_4)_2$

17. An alkaline earth carbide reacted with water and gave a gas with molecular weight of 40. The incorrect statement regarding the anion part of the metal carbide is

1) It has 2σ and 2π bonds 2) It has four lone pairs

3) It has two lone pairs 4) It has linear structure

18. Which of the following can be used as mordant in dyeing industry ?

1) $NaOH, KOH$ 2) $Ba(OH)_2, RbOH$

3) $LiOH, CsOH$ 4) $Mg(OH)_2, Al(OH)_3$

19. The incorrect statement regarding Magnesia mixture is

1) It contains $MgCl_2 + NH_4Cl + NH_4OH$

2) It is completely soluble in water

3) It is used to test nitrates

4) It is used to test phosphates

20. The water insoluble pair is

1) $Ba(NO_3)_2, Ba(CH_3COO)_2$ 2) $MgCl_2, Mg(NO_3)_2$

3) $BeCl_2, BaCl_2$ 4) $BaCO_3, BaCrO_4$

21. $LiH + BF_3 \xrightarrow[ether]{Dry} A(\text{gas})$

$CH_3 - CH = CH_2 + A \rightarrow B \xrightarrow[H_2O_2]{NaOH} C$. C is

1) $n-propane$ 2) $1-propanol$ 3) $2-propanol$ 4) $propyne$

22. Which one of the following does not exist as dimer ?

1) BH_3 2) BCl_3 3) $AlCl_3$ 4) $BeCl_2$

23. Which of the following pair is amphoteric ?

1) $B(OH)_3, Mg(OH)_2$ 2) $RbOH, Sr(OH)_2$

3) $Be(OH)_2, Al(OH)_3$ 4) $Tl(OH)_3, Ca(OH)_2$

24. The incorrect statement regarding the boric acid is

1) It has intramolecular hydrogen bonding

2) It has B in sp^2 hybridization

3) It is used as lubricant

4) The acidity increases on adding glycerol to the boric acid solution.

25. The correct statement regarding B_2H_6 is

1) Both B_2H_6 and C_2H_6 are isostructural

2) B is in sp^2 hybridization

3) All the bonds in B_2H_6 are $2e^- - 3c$ bonds.

4) It has higher specific heat than ethane.

26. The correct statement regarding "inorganic benzene" is

1) It is obtained by reaction of B_2H_6 with excess NH_3 at low temperature

2) It is less reactive than benzene

3) It has lower boiling point than benzene

4) The bonds are polar in nature.

27. The acidic oxide is

1) Tl_2O 2) B_2O_3 3) Al_2O_3 4) Ga_2O_3

28. The true statement regarding borax is

1) The aqueous solution is alkaline

2) It has one sp^2 and three sp^3 in $\left[B_4O_5(OH)_4\right]^{2-}$

3) It has four $B-O-B$ bridges in $\left[B_4O_5(OH)_4\right]^{2-}$

4) The negative charges in $\left[B_4O_5(OH)_4\right]^{2-}$ are on two oxygen atoms.

29. The incorrect statement regarding alums is

1) $K_2SO_4.Al_2(SO_4)_3.24H_2O$ is a true alum.

2) Mohrs salt is an alum.

3) Potash alum is used in water purification.

4) Alums are double salts.

30. Ruby contains

1) Fe^{3+} in Al_2O_3 2) Ni^{2+} in Al_2O_3

3) Cr^{3+} in Al_2O_3 4) Cu^{2+} in Al_2O_3