

PART-II_CHEMISTRY**Max Marks : 60****Section-1****(One or More options Correct Type)**

This section contains 10 multiple choice questions. Each question has four choices (A) (B)(C) and (D) out of which **ONE or MORE** are correct.

21. The correct statements are.

- A) $B_3N_3H_6$ physical properties are similar to Benzene
- B) $B_3N_3H_6$ non polar molecule
- C) $B_3N_3H_6$ is aromatic with delocalized π -electrons
- D) $B_3N_3H_6$ if heated with hot water hydrolyses slowly

22. $LiH + AlCl_3 \xrightarrow{\text{ether}} (A)$

$\xrightarrow[\text{(excess)}]{\text{Ether}} (B)$

The correct statements about (A) and (B)

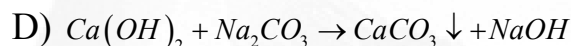
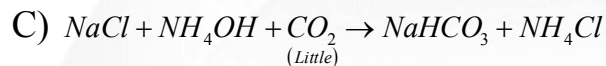
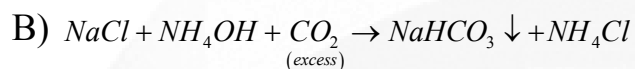
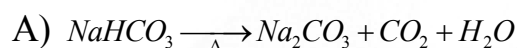
- A) (A) is polymeric each Al is surrounded by six hydrogen atoms
- B) (B) is a complex hydride with Coordination number of aluminium four
- C) (A) is a complex hydride with Coordination number of aluminium four
- D) (B) is polymeric each 'Al' is surrounded by six hydrogen atoms

23. The compounds soluble in water are

- A) $Mg(NO_3)_2$ B) $BeSO_4$ C) $MgSO_4$ D) $Ca(NO_3)_2$

24. The correct statements about Borax.
- A) It is a meta borate
 - B) It's aqueous solution act as buffer
 - C) It has four Boron atoms with sp^3 hybridization
 - D) It has four B-O-B bonds
25. The correct statement about Ortho boric acid.
- A) It is a three dimensional solid with hydrogen bonding
 - B) B atom is sp^3 hybridized
 - C) It is a tribasic acid
 - D) It is a white solid freely soluble in water
26. The correct statements are
- A) The maximum covalency of 'B' in its complex hydride and fluoride is 4
 - B) The maximum covalency of aluminium in its complex fluoride is 6
 - C) Galium can form complex halides with fluoride and chloride with maximum covalency 6
 - D) Anhydrous $AlCl_3$ is ionic in nature

27. The reactions involved in solvay ammonia process are



28. The correct statements are

A) Lithium has most negative E_{red}^0 value

B) Lithium vigorously reacts with water than other alkali metals

C) Sodium vigorously reacts with water and forms sodium oxide and Liberates hydrogen gas

D) Reactivity of potassium with water is greater than sodium

29. Correct order for given property

A) Thermal stability : $\text{Ba}(\text{OH})_2 > \text{Ca}(\text{OH})_2$

B) Solubility in water : $\text{Mg}(\text{OH})_2 > \text{Ca}(\text{OH})_2$

C) ionic character : $\text{Sr}(\text{OH})_2 > \text{Mg}(\text{OH})_2$

D) Covalent character : $\text{Be}(\text{OH})_2 > \text{Ca}(\text{OH})_2$

30. The correct statements are

- A) The most abundant source of NaCl is Sea water
- B) In tropical countries like india, NaCl is obtained by solar evaporation of sea water
- C) Common salt is hygroscopic due to impurities like $\text{MgCl}_2, \text{CaCl}_2$
- D) Pure NaCl can be obtained by passing HCl gas through saturated solution of NaCl

Section-2
(Integer Value Correct Type)

This section contains 10 questions. The answer to each question is a **single digit integer, ranging** from 0 to 9 (both inclusive).

31. Alkali metals dissolves in liquid ammonia and forms solvated electrons. The number of electrons released per metal atom is
32. $\text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2 \rightarrow \text{'X'}$. The number of $-\text{OH}$ groups directly attached to central atom of X is
33. Among Li, Na, K, Rb the number of metals which forms Ethynide on reaction with Ethyne.

34. In $BeCl_2$ dimer the number of atoms in the same plane is
35. The maximum number of water molecules in hydrated beryllium salt
36. The number of replaceable H^+ ion in ortho boric acid (H_3BO_3) is
37. $Al_{(s)} + HCl \rightarrow Al_{(aq)}^{+3} + Cl^- + H_2(\uparrow)$. The number of water molecules around Al^{+3} is
38. Borax is used for preparation of sodium per borate which is used in detergents as whitener, the number of sp^3 hybrid boron atoms in it is
39. Aqueous solution of Borax on reaction with HCl forms ortho boric acid. The number of moles of HCl which reacts with one mole of Borax is
40. $B_2H_6 + NH_3 \xrightarrow{\text{low temp.}} B_2H_6 \cdot 2NH_3$ or $[(NH_3)_2 BH_2]^+ [BH_4]^-$
(excess)

↓ heating

‘X’

The number of ‘B’ atoms in ‘X’ is ‘a’ and the number Hydrogen atoms attached to ‘B’ atoms is b the $a + b$ value is