31.(A) $(NH_4)_2SO_4 + 2H_2O \longrightarrow \underset{\text{Strong acid}}{(2H^+ + SO_4^{2-})} + \underset{\text{Weak base}}{2NH_4OH}$

$(NH_4)_2SO_4$ on hydrolysis produces strong acid H_2SO_4, which increases the acidity of the soil.

32.(C) The correct formula of inorganic benzene is $B_3N_3H_6$ so (D) is incorrect statement.

Boric acid (H_3BO_3 or $\begin{matrix} OH \\ | \\ B-OH \\ | \\ OH \end{matrix}$) is a Lewis acid so (A) is incorrect statement.

The coordination number exhibited by beryllium is 4 and not 6 so statement (B) is incorrect.
Both $BeCl_2$ and $AlCl_3$ exhibits bridged structures in solid state so (C) is correct statement.

33.(A) The reaction is not feasible because XeF_6 formed will further produce XeO_3 by getting hydrolysed.

$XeF_6 + 3H_2O \longrightarrow XeO_3 + 3H_2F_2$

34.(C) In group 15 hydrides, the basic character decreases on going down the group due to decrease in the availability of the lone pair of electrons because of the increase in size of elements form N to Bi. Thus, correct order of basicity is $NH_3 > PH_3 > AsH_3 > SbH_3$.

35.(A) Thermal stability decreases gradually from NH_3 to BiH_3. So the stability also decreases.

	NH_3	**PH_3**	**AsH_3**	**SbH_3**	**BiH_3**
Decompostion Temperature	1300°C	440°C	280°C	150°C	Room temp.

The size of the central atom increases from N to Bi therefore, the tendency to form a stable covalent bond with small atom like hydrogen decreases and therefore, stability decreases.

36.(D) Sulphur exhibits –2. +2, +4, +6 oxidation states but +4 and +6 are more common.

37.(A) Boron cannot form BF_6^{3-} due to non-availability of d-orbitals.

38.(C) All the numbers form volatile halides of the type AX_3. All halides are pyramidal in shape. The bond angle decrease on moving down the group due to decrease in bond pair-bond pair repulsion.

NCl_3	PCl_3	$AsCl_3$
107°	94°	92°

39.(A) All the statements are correct.

40.(D) No. of O-atoms (*i.e.*, oxidation state) $\propto$ Acidic strength. Hence, the decreasing order of acidic strength will be $HClO_4 > HClO_3 > HClO_2 > HOCl$

41.(A) Nitric oxide is paramagnetic in the gaseous state because of the presence of one unpaired electron in its outermost shell. The electronic configuration of NO is $\sigma_{1s}^2 \sigma_{1s}^{*2} \sigma_{2s}^2 \sigma_{2p_z}^2 \pi_{2p_x}^2 = \pi_{2p_y}^2 \pi_{2p_x}^{*1}$

42.(B) CsI_3 dissociation as $CsI_3 \rightarrow Cs^+ + I_3^-$

43.(B) Interhalogen compounds are generally more reactive than the halogens (except F_2)

44.(C) Dinitrogen and dioxygen combine to form nitric oxide when the mixture is heated to 2273 – 3273 K in an electric arc.

45.(C) Fluorine is the most electronegative element and has least tendency to form double bonds.