Level - 2	**DTS-6**

76.(A) $B(OH)_3$ is accepting electron pair from (OH^-). So it is acting as Lewis acid.

77.(C) In case of $N(CH_3)_3$, geometry is pyramidal, but in case of $N(SiH_3)_3$ it is planar. It is due to the fact that in the latter, the lone pair of N-atom is transferred to empty d-orbital of silicon (p -d overlapping)

78.(C) $NH_3 > NF_3 > BF_3$

This is due to different directions of the bond dipole moments of N – H and N – F bonds. In NH_3, N is more electronegative but in NF_3, F is more electronegative. Thus in NH_3, the dipole-moment of N – H bond are in the same direction as that of the lone pair. BF_3 being trigonal planar has zero dipole moment.

79.(C) The ability of boron carbide to absorb neutrons without forming long lived nuclides make it attractive as an absorbent for neutron radiation arising in nuclear power plants. It is one of the hardest material known, after boron nitride and diamond. Hence, it is used as an abrasive.

80.(D) When borax is dissolved in water, both $B(OH)_3$ and $[B(OH_4)]^-$ are formed, but only $[B(OH_4)]^-$ reacts with HCl.

$$Na_2B_4O_7 + 7H_2O \longrightarrow 2Na[B(OH)_4] + 2H_3BO_3$$

$$2Na\left[B(OH)_4\right] + 2HCl \longrightarrow 2NaCl + 2H_3BO_3 + 2H_2O$$

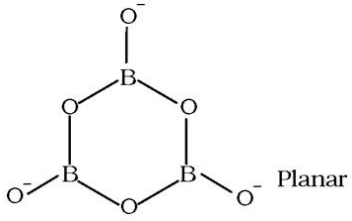
81.(B) $$H_3BO_3 + 3MeOH \xrightarrow{H_2SO_4} \underset{\text{Green Colour}}{B(OMe)_3} + 3H_2O$$

82.(C) $$3NaBH_4 + BF_3 \longrightarrow 2B_2H_6(g) + 3NaF \downarrow$$

83.(A) Boron nitride (inorganic graphite) has organic graphite like structure (planar)

Borazole : Inorganic Benzene (planar)

$B_3O_6^{3-}$:



Planar

84.(A) Borax dissolves in water and gives an alkaline solution.

$$Na_2B_4O_7 + 7H_2O \rightleftharpoons \underset{\text{strong base}}{2NaOH} + \underset{\text{weak acid}}{4H_3BO_3}$$

85.(C) $$B_2H_6 + 3O_2 \longrightarrow B_2O_3 + 3H_2O$$

$$B_2H_6 + 6H_2O \longrightarrow 2H_3BO_3 + 6H_2$$

$$B_2H_6 + 2NH_3 \longrightarrow B_2H_6 \cdot 2NH_3 \xrightarrow{\Delta} B_3N_3H_6$$