

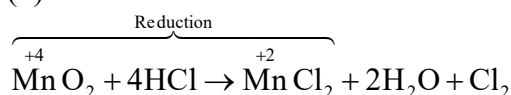
CHEMISTRY

p-Block Elements (from 13 to 18 Group Elements)

21. (4)

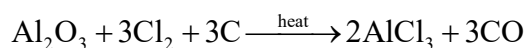


22. (1)

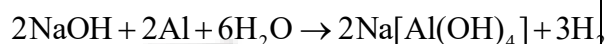
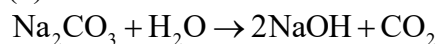


23. (3)

The reaction is



24. (3)

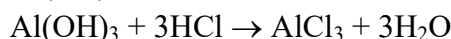
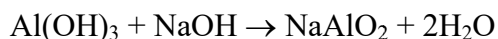


25. (3)

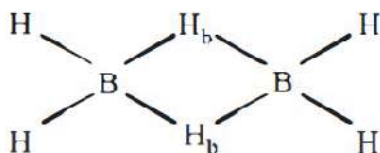
$\text{B}(\text{OH})_3$ dissolves in alkalis forming metal borates,



$\text{Al}(\text{OH})_3$ is amphoteric. It dissolves in acids as well as bases



26. (1)

Two $3c-2e^-$: $\text{B}-\text{H}_b-\text{B}$ Four $2c-2e^-$: $\text{H}_b-\text{B}-\text{H}$

27. (1)

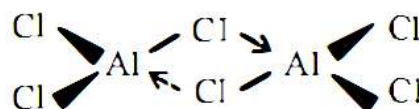
The strength of Lewis acid of boron trihalides increases in the following order $\text{BF}_3 < \text{BCl}_3 < \text{BBr}_3 < \text{BI}_3$

This is due to back-donation in BF_3 (from three F-atoms into vacant 2p-orbital of B) due to which the electron deficiency of B decreases and thus BF_3 is weakest Lewis acid. As the size of halogen increases, the extent of overlap between 2p-orbital of B and bigger p-orbital of halogen decreases and consequently electron-deficiency of B increases and Lewis acid character also increases.

28. (2)

29. (1)

Due to its bigger size and availability of vacant d-orbitals. Al can easily accommodate four big sized Cl atoms around it. Since, in AlCl_3 , there are only six electrons around Al atom, therefore, it completes its octet by accepting a lone pair of electrons from Cl atom of another AlCl_3 molecule resulting in a bridged dimeric structure.



30. (3)

