

1. The correct order of strengths of back-bonding and lewis acidic strengths in Boron trihalides respectively is:
 - A. $BF_3 < BCl_3 < BBr_3$ and $BF_3 < BCl_3 < BBr_3$
 - B. $BF_3 > BCl_3 > BBr_3$ and $BF_3 > BCl_3 > BBr_3$
 - C. $BF_3 > BCl_3 > BBr_3$ and $BF_3 < BCl_3 < BBr_3$
 - D. $BF_3 < BCl_3 < BBr_3$ and $BF_3 > BCl_3 > BBr_3$

2. For BF_3 molecule, which of the following is true?
 - A. B atom is sp^2 hybridized
 - B. There is a $p\pi-p\pi$ back bonding in this molecule
 - C. Observed $B-F$ bond length is found to be less than the expected bond length
 - D. All of these

3. If the $B-F$ bond length in BF_3 is 1.30 \AA , then the $B-F$ bond length in $Me_3N.BF_3$ is:
 - A. 1.30 \AA
 - B. 1.28 \AA
 - C. 1.25 \AA
 - D. 1.35 \AA

4. In the case of alkali metal halides, the covalent character decreases in the order:
- A. $MF > MCl > MBr > MI$
 - B. $MF > MCl > MI > MBr$
 - C. $MI > MBr > MCl > MF$
 - D. $MCl > MI > MBr > MF$
5. $AlCl_3$ is covalent while AlF_3 is ionic. This can be justified on the basis of:
- A. Valence-bond theory
 - B. Fajan's rule
 - C. Molecular-orbital theory
 - D. Hydration energy