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Chemistry Class - 11: Chapter – 4. Chemical Bonding and Molecular Structure Part – 1

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I. Multiple Choice Questions (Type-I)

Question: 1

Isostructural species are those which have the same shape and hybridization. Among the given species identify the isostructural pairs.

- (i) $[NF_3 \text{ and } BF_3]$
- (ii) $[BF_4^- \text{ and } NH_4^+]$
- (iii) $[BCl_3 \text{ and } BrCl_3]$
- (iv) $[NH_3 \text{ and } NO_3^-]$

Answer: (ii)

Question: 2

Polarity in a molecule and hence the dipole moment depends primarily on Electronegativity of the constituent atoms and shape of a molecule. Which of the following has the highest dipole moment?

- (i) CO_2
- (ii) HI
- (iii) H_2O
- (iv) SO_2

Answer: (iii)

Question: 3

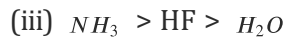
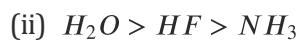
The types of hybrid orbitals of nitrogen in NO_2^+ , NO_3^- and NH_4^+ respectively are expected to be

- (i) $sp, sp^3 \text{ and } sp^2$
- (ii) $sp, sp^2 \text{ and } sp^3$
- (iii) $sp^2, sp \text{ and } sp^3$
- (iv) $sp^2, sp^3 \text{ and } sp$

Answer: (ii)

Question: 4

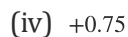
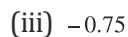
Hydrogen bonds are formed in many compounds e. g. , H_2O , HF , NH_3 . The boiling point of such compounds depends to a large extent on the strength of hydrogen bond and the number of hydrogen bonds. The correct decreasing order of the boiling points of above compounds is:



Answer: (ii)

Question: 5

In PO_4^{3-} ion the formal charge on the oxygen atom of P – O bond is



Answer: (ii)

Question: 6

In NO_3^- ion, the number of bond pairs and lone pairs of electrons on nitrogen 3 atom are



Answer: (iv)