



Worksheet: Dipole moment

- Which of the following has zero dipole moment?
(A) CO, (B) SO₂, (C) SO₃, (D) NH₃
- Which are non-polar molecules?
(I) NCl₃, (II) SO₃, (III) PCl₅, (IV) The correct option is:
(A) I only, (B) II only, (C) I and II only, (D) II and III only
- Which of the following molecules does not have a dipole moment?
(A) IBr, (B) CHCl₃, (C) CH₂Cl₂, (D) BF₃
- Select the correct statement.
(A) BF₃ and NH₃ have same dipole moment,
(B) Dipole moment of NH₃ is smaller than that of BF₃,
(C) BF₃ molecule has a planar structure, while the NH₃ molecule is tetrahedral,
(D) The nitrogen atom has unshared pair of electrons, while the boron atom has a free (vacant) valence orbital
- Which of the following is non-polar but contains polar bonds?
(A) HCl, (B) CO₂, (C) NH₃, (D) NO₂
- The nitrogen atom in NH₃, NH₂⁻, and NH₄⁺ are all surrounded by eight electrons. When these species are arranged in increasing order of H-N-H bond angle, correct order is:
(A) NH₃ < NH₂⁻ < NH₄⁺, (B) NH₄⁺ < NH₂⁻ < NH₃, (C) NH₃ < NH₄⁺ < NH₂⁻, (D) NH₂ < NH₃ < NH₄⁺
- Select correct order of bond angle.
(A) H₂O < H₂S, (B) NH₃ < NF₃, (C) PH₃ < NH₃, (D) H₂S < H₂Se
- Select the non-polar molecule from the following:
(A) CH₃F, (B) CH₂Cl₂, (C) PF₅, (D) NH₃
- The correct order of dipole moments of HF, H₂S and H₂O is:
(A) HF < H₂S < H₂O, (B) HF < H₂S > H₂O, (C) HF > H₂S > H₂O, (D) H₂S < HF < H₂O
- Which of the following is a set of molecules of nearly same bond angles?
(A) NH₃ and H₂O, (B) CH₄ and CCl₄, (C) PH₃ and H₂O, (D) CO₂ and CH₄

11. Percentage ionic character is in order:

(A) $\text{HF} < \text{HCl} < \text{HBr} < \text{HI}$, (B) $\text{HCl} < \text{HBr} < \text{HI} < \text{HF}$, (C) $\text{HI} < \text{HCl} < \text{HBr} < \text{HF}$, (D) $\text{HI} < \text{HBr} < \text{HCl} < \text{HF}$

12. In the following molecules which one have zero dipole moment (A) BF_3 , (B) CCl_4 , (C) BeCl_2 , (D) All of these

13. Which of the following have permanent dipole moment

(A) BF_3 , (B) SiF_4 , (C) SF_4 , (D) XeF_4

14. The polarity of a covalent bond between two atoms depends on

(A) Atomic size, (B) Electronegativity, (C) Ionic size, (D) None of these

15. Which of the following molecule is non polar

(A) PCl_5 , (B) PCl_3 , (C) SF_6 , (D) IF_7

16. N_2 is less reactive than CN^- because

(A) presence of more electron in orbital, (B) Absence of dipole moment, (C) Difference in spin quantum number, (D) None of these

17. Non polar solvent is

(A) Dimethyl sulphoxide (DMSO), (B) carbon tetrachloride, (C) Ammonia, (D) Ethanol

18. Fluorine is more electronegative than phosphorous and boron. Which conclusion can be drawn from the fact that BF_3 has no dipole moment but PF_3 does.

(A) PF_3 is spherically symmetrical but BF_3 not

(B) BF_3 molecule must be linear

(C) The atomic radius of P is larger than B

(D) BF_3 molecule is trigonal planar

19. Which molecule has largest dipole moment

(A) CH_4 , (B) CHCl_3 , (C) CCl_4 , (D) CHI_3

20. Carbon tetrachloride has zero dipole moment because

(A) Planar structure

(B) Tetrahedral structure

(C) carbon and chlorine have similar atomic size

(D) Carbon and chlorine have similar electron affinity

.....

All the best