Resonance® Educating for better tomorrow

TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

I-CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP NO. 1

Organic Chemistry : CHEMICAL BONDING

DPP No. : 1

1. Which one of the following pairs is isostructural (i.e. having the same shape and hybridization) ?

(1) [BCl_3 and $BrCl_3$] (2) [NH_3 and NO_3^-] (3) [NF_3 and BF_3] (4) [BF_4^- and NH_4^+]

2. Bond order of 1.5 is shown by :

(1) O_2^+ (2) O_2^- (3) O_2^{2-} (4) O_2

3. Which of the following species contains three bond pairs and one lone pair around the central atom ?

(1) H_2O (2) BF_3 (3) NH_2^- (4) PCl_3

4. The pair of species with the same bond order is :

(1) O_2^{2-} , B_2 (2) O_2^+ , NO^+ (3) NO, CO (4) N_2, O_2

5. During change of O_2 to O_2^- ion, the electron adds on which one of the following orbitals ?

(1) π orbital (2) π orbital (3) σ orbital (4) σ orbital

6. Four diatomic species are listed below. Identify the correct order in which the bond order is increasing in them:

(1) $NO < O_2^- < C_2^{2-} < He_2^+$ (2) $O_2^- < NO < C_2^{2-} < He_2^+$

(3) $C_2^{2-} < He_2^+ < O_2^- < NO$ (4) $He_2^+ < O_2^- < NO < C_2^{2-}$

7. Which of the following is electron-deficient ?

(1) $(SiH_3)_2$ (2) $(BH_3)_2$ (3) PH_3 (4) $(CH_3)_2$

8. Which one of the following molecules contains no π bond ?

(1) H_2O (2) SO_2 (3) NO_2 (4) CO_2

9. Which of the following is a polar molecule ?

(1) SF_4 (2) SiF_4 (3) XeF_4 (4) BF_3

10. Which of the following is paramagnetic ?

(1) O_2^- (2) CN^- (3) NO^+ (4) CO

11. XeF_2 is isostructural with :

(1) ICl_2^- (2) $SbCl_3$ (3) $BaCl_2$ (4) TeF_2

12. Dipole-induced dipole interactions are present in which of the following pairs :

(1) Cl_2 and CCl_4 (2) HCl and He atoms (3) SiF_4 and He atoms (4) H_2O and alcohol

13. Which of the following molecules has the maximum dipole moment ?
(1) CO_2 (2) CH_4 (3) NH_3 (4) NF_3

14. Which one of the following species has plane triangular shape ?
(1) N_3^- (2) NO_3^- (3) NO_2 (4) CO_2

15. The correct bond order in the following species is :
(1) $O_2^{2+} < O_2^- < O_2^+$ (2) $O_2^+ < O_2^- < O_2^{2+}$ (3) $O_2^- < O_2^+ < O_2^{2+}$ (4) $O_2^{2+} < O_2^+ < O_2^-$

16. Which of the following pairs of ions are isolectronic and isostructural ?
(1) ClO_3^-, CO_3^{2-} (2) SO_3^{2-}, NO_3^- (3) ClO_3^-, SO_3^{2-} (4) CO_3^{2-}, SO_3^{2-}

17. Maximum bond angle at nitrogen is present in which of the following ?
(1) NO_2^- (2) NO_2^+ (3) NO_3^- (4) NO_2

18. Which of the following species contains equal number of σ-and π-bonds ?
(1) XeO_4 (2) $(CN)_2$ (3) $CH_2(CN)_2$ (4) HCO_3^-

19. Predict the **correct** order among the following :
(1) lone pair – bond pair > bond pair – bond pair > lone pair – lone pair
(2) lone pair – lone pair > lone pair – bond pair > bond pair – bond pair
(3) lone pair – lone pair > bond pair – bond pair > lone pair – bond pair
(4) bond pair – bond pair > lone pair – bond pair > lone pair – lone pair

20. Consider the molecules CH_4, NH_3 and H_2O. Which of the given statement is **false** ?
(1) The H–C–H bond angle is CH_4 is larger than the H–N–H bond angle is NH_3
(2) The H–C–H bond angle is CH_4 the H–N–H bond angle in NH_3 and the H–O–H bond angle in H_2O are all greater than 90º.
(3) Then H–O–H bond angle in H_2O is larger than the H–C–H bond angle in CH_4
(4) The H–O–H bond angle in H_2O is smaller than the H–N–H bond angle in NH_3

Answer Key

1.	4	**2.**	2	**3.**	4	**4.**	1	**5.**	1	**6.**	4	**7.**	2
8.	1	**9.**	1	**10.**	1	**11.**	1	**12.**	2	**13.**	3	**14.**	2
15.	3	**16.**	3	**17.**	2	**18.**	1	**19.**	2	**20.**	3		