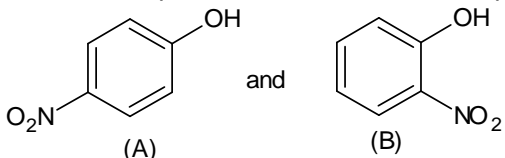


SINGLE CORRECT OPTION TYPE

- Assuming that all the four valency of carbon atoms in propane pointing towards the corners of a regular tetrahedron. Calculate the distance between the terminal carbon atoms in propane. Given  $c-c$  single bond length is  $1.54\text{\AA}$   $[\sin 54.75^\circ = 0.81664]$   
 (A)  $1.95\text{\AA}$  (B)  $2.514\text{\AA}$  (C)  $2.817\text{\AA}$  (D)  $3.021\text{\AA}$
- The dipole moment of LiH is  $1.964 \times 10^{-24}$  cm and the distance between Li and H in LiH is  $1.596\text{\AA}$ . what is percentage of ionic character in molecule?  
 (A) 76.82% (B) 68.91% (C) 77.32% (D) 63.91%
- Out of 2 compounds shown below, the vapour pressure of B at particular temp, is expected to be \_\_\_\_\_,  
  
 (A) higher than that of A (B) lower than that of A  
 (C) same as that of A (D) can be higher or lower depending upon the size of the vessel
- The correct order of the bond angle is  
 (A)  $\text{NH}_3 > \text{H}_2\text{O} > \text{PH}_3 > \text{H}_2\text{S}$  (B)  $\text{NH}_3 > \text{PH}_3 > \text{H}_2\text{O} > \text{H}_2\text{S}$   
 (C)  $\text{NH}_3 > \text{H}_2\text{S} > \text{PH}_3 > \text{H}_2\text{O}$  (D)  $\text{PH}_3 > \text{H}_2\text{S} > \text{NH}_3 > \text{H}_2\text{O}$
- An atom of element has 3 valence electrons and B atom has 6 valence electrons. The formula of the compound formed by A&B is:  
 (A)  $\text{A}_2\text{B}$  (B)  $\text{AB}_3$  (C)  $\text{A}_2\text{B}_3$  (D)  $\text{A}_3\text{B}_2$
- Polarisability of halide ions increases in the order :-  
 (A)  $\text{F}^-, \text{I}^-, \text{Br}^-, \text{Cl}^-$  (B)  $\text{Cl}^-, \text{Br}^-, \text{I}^-, \text{F}^-$  (C)  $\text{I}^-, \text{Br}^-, \text{Cl}^-, \text{F}^-$  (D)  $\text{F}^-, \text{Cl}^-, \text{Br}^-, \text{I}^-$
- Which of the following pairs have same shape.  
 (A)  $\text{SO}_4^{2-}, \text{SO}_3^{2-}$  (B)  $\text{NO}_2^+, \text{NO}_2^-$  (C)  $\text{CO}, \text{CO}_2$  (D)  $\text{SO}_2, \text{SO}_3$
- Nodal planes of  $\pi$  bonds in benzene are located  
 (A) all are in molecular plane  
 (B) one in molecular plane and two in plane perpendicular to molecular plane which contains  $c-c$   $\sigma$  bonds  
 (C) 2 in molecular plane and one in plane perpendicular to molecular plane which contain  $c-c$   $\sigma$  bonds and  $C-H$   $\sigma$  bonds  
 (D) perpendicular to molecular plane which bisects benzene ring in 2 equal halves
- Which of the following has fractional bond order?  
 (A)  $\text{O}_2^{2-}$  (B)  $\text{O}_2^{2+}$  (C)  $\text{F}_2^{2-}$  (D)  $\text{H}_2^-$
- Which is correct statement?  
 As s-character of hybrid decreases  
 (i) the bond angle decreases (ii) bond strength increases  
 (iii) bond length increases (iv) size of orbital increases  
 (A) (i), (ii), (iv) (B) (i), (iii), (iv) (C) (ii), (iii), (iv) (D) (i), (ii)

11. Which of the following compounds have the same number of lone pairs on their central atom.  
 (i)  $\text{XeF}_5^-$                       (ii)  $\text{BrF}_3$                       (iii)  $\text{XeF}_2$                       (iv) triplet methylene  
 (A) iii & iv                      (B) i & ii                      (C) ii & iv                      (D) i & iv
12. The shapes of  $\text{PCl}_4^+$ ,  $\text{PCl}_4^-$  and  $\text{AsCl}_5$  are respectively  
 (A) square planar, tetrahedral and see-saw  
 (B) tetrahedral, see saw and trigonal bipyramidal  
 (C) tetrahedral, square planar and pentagonal bipyramidal  
 (D) trigonal bipyramidal, tetrahedral is square pyramidal
13. Which of the following option with respect to increasing bond order is correct?  
 (A)  $\text{NO} < \text{C}_2 < \text{O}_2^- < \text{He}_2^+$                       (B)  $\text{C}_2 < \text{NO} < \text{He}_2^+ < \text{O}_2^-$   
 (C)  $\text{He}_2^+ < \text{O}_2^- < \text{NO} < \text{C}_2$                       (D)  $\text{He}_2^+ < \text{O}_2^- < \text{C}_2 < \text{NO}$
14. In which of the following species is the underlined carbon having  $\text{sp}^3$  hybridisation?  
 (A)  $\text{CH}_3\text{C}\underline{\text{O}}\text{OH}$                       (B)  $\text{CH}_3\text{C}\underline{\text{H}}_2\text{OH}$                       (C)  $\text{CH}_3\text{C}\underline{\text{O}}\text{CH}_3$                       (D)  $\text{CH}_2 = \underline{\text{C}}\text{H} - \text{CH}_3$
15. Which of the following molecules/ions does not contain unpaired electrons?  
 (A)  $\text{N}_2^+$                       (B)  $\text{O}_2$                       (C)  $\text{O}_2^{2-}$                       (D)  $\text{B}_2$
16. Which of the following molecules has maximum number of 'lone pair of electrons'.  
 (A)  $\text{XeO}_3$                       (B)  $\text{XeF}_4$                       (C)  $\text{XeF}_6$                       (D)  $\text{XeF}_2$
17. In which of the following pairs, the two species not isostructural?  
 (A)  $\text{AlF}_6^{3-}$  and  $\text{SF}_6$                       (B)  $\text{CO}_3^{2-}$  and  $\text{NO}_3^-$                       (C)  $\text{PCl}_4^+$  and  $\text{SiCl}_4$                       (D)  $\text{PF}_5$  and  $\text{BrF}_5$
18. In the dichromate anion,  
 (A) 4 Cr – O bonds are equivalent                      (B) 6 Cr – O bonds are equivalent  
 (C) all Cr – O bonds are equivalent                      (D) all Cr – O bonds are non-equivalent
19. In which of the following sets, all are diamagnetic.  
 (A)  $\text{B}_2, \text{C}_2, \text{N}_2$                       (B)  $\text{O}_2, \text{N}_2, \text{F}_2$                       (C)  $\text{O}_2^{2-}, \text{N}_2, \text{F}_2$                       (D)  $\text{B}_2, \text{O}_2^{2-}, \text{N}_2$
20. Which is false statement among the following?  
 (A)  $\text{PH}_5$  and  $\text{BiCl}_5$  do not exist                      (B)  $\text{p}_\pi - \text{d}_\pi$  bonds are present in  $\text{SO}_2$   
 (C)  $\text{SeF}_4$  and  $\text{CH}_4$  have same shape                      (D)  $\text{I}_3^+$  has bent geometry

#### INTEGER TYPE

21. The number of antibonding electrons in  $\text{C}_2$  \_\_\_\_\_.
22. How many of the following are paramagnetic.  
 $\text{N}_2, \text{O}_2, \text{N}_2^+, \text{O}_2^-, \text{CN}^-, \text{B}_2, \text{O}_2^+, \text{F}_2$
23. How many of the following molecules/ions contain the central atom with  $\text{sp}^3\text{d}$  hybridisation.  
 $\text{AsF}_5, \text{BrF}_5, \text{I}_3^-, \text{KrF}_2, \text{PCl}_3, \text{ClF}_3, \text{XeF}_4, \text{XeOF}_2$
24. The number of species (from the following) with pyramidal geometry is \_\_\_\_\_.  
 (A)  $\text{BH}_3, \text{NH}_3, \text{BF}_3, \text{NCl}_3, \text{SnCl}_3^-, \text{O}_3, \text{PH}_3, \text{AlCl}_3$
25. How many of the following molecules (or) ions have the bond order '3'.  
 $\text{O}_2, \text{N}_2, \text{CN}^-, \text{NO}^+, \text{C}_2, \text{O}_2^+, \text{CO}, \text{O}_2^-$

**KEY**

1. B	2. A	3. A	4. A	5. C
6. D	7. C	8. A	9. D	10. B
11. B	12. B	13. D	14. B	15. C
16. C	17. D	18. B	19. C	20. C
21. 4	22. 5	23. 5	24. 4	25. 4

*\* Wish You all the Best \**