1. Which one of the following pairs of molecules will have permanent dipole moments for both members?
(1) NO_2 and CO_2 (2) NO_2 and O_3
(3) SiF_4 and CO_2 (4) SiF_4 and NO_2

2. The pair of species having identical shapes for molecules of both species is :
(1) XeF_2, CO_2 (2) BF_3, PCl_3
(3) PF_5, IF_5 (4) CF_4, SF_4

3. The correct order of bond angles (smallest first) in H_2S, NH_3, BF_3 and SiH_4 is :–
(1) $H_2S < NH_3 < SiH_4 < BF_3$
(2) $NH_3 < H_2S < SiH_4 < BF_3$
(3) $H_2S < SiH_4 < NH_3 < BF_3$
(4) $H_2S < NH_3 < BF_3 < SiH_4$

4. lattice energy of an ionic compound depends upon
(1) charge on the ion only
(2) size of the ion only
(3) packing of the ion only
(4) charge and size of the ion

5. The correct order of increasing C - O bond length of, CO, CO_3^{2-}, CO_2 is
(1) $CO_3^{2-} < CO_2 < CO$
(2) $CO_2 < CO_3^{2-} < CO$
(3) $CO < CO_3^{2-} < CO_2$
(4) $CO < CO_2 < CO_3^{2-}$

6. Amongst H_2O, H_2S, H_2Se and H_2Te, the one with the highest boiling point is
(1) H_2O because of hydrogen bonding
(2) H_2Te because of higher molecular weight
(3) H_2S because of hydrogen bonding
(4) H_2Se because of lower molecular weight

7. Which species has the maximum number of lone pair of electrons on the central atom?
(1) ClO_3^- (2) XeF_4
(3) SF_4 (4) I_3^-

8. Which is not an exception to octet rule ?
(1) BF_3 (2) $SnCl_4$
(3) BeI_2 (4) ClO_2

9. The correct order of decreasing bond energy is:-
(1) O–O > S – S > Se – Se
(2) C – C > Si – Si > Ge – Ge
(3) F – F > O – O > N – N
(4) F – F > Cl – Cl > Br – Br

10. Both CO_2 and H_2O contain polar covalent bonds but CO_2 is nonpolar while H_2O is polar because–
(1) H atom is smaller than C atom
(2) CO_2 is a linear molecule while H_2O is an angular molecule
(3) O – H bond is more polar than C – H bond
(4) CO_2 contains multiple bonds while H_2O has only single bonds

11. Maximum bond energy will be shown by the species
(1) O_2^+ (2) O_2 (3) O_2^- (4) O_2^{-2}

12. Resonance is not shown by -
(1) C_6H_6 (2) CO_2 (3) CO_3^{2-} (4) SiO_2

13. Two ice cubes are pressed over each other until they unite to form one block. The force mainly responsible for holding them together is–
(1) van der Waals force
(2) dipole-dipole interaction
(3) H bonding
(4) covalent bonding

14. Which order of decreasing bond angle is correct?
(1) $CCl_4 > BF_3 > NO_2^+$
(2) $NH_3 > NCl_3 > NBr_3$
(3) $Br_2O > Cl_2O > OF_2$
(4) $PCl_3 > PBr_3 > PI_3$

15. On the basis of hybridization of one s & one p orbitals they are arrange at :-
(1) Two orbitals mutually at 90° angle
(2) two orbitals mutually at 180° angle
(3) Two orbitals mutually at 120°angle
(4) Two orbitals mutually at 150° angle

16. The shape of IF_4^+ will be :-
(1) Square planar
(2) Tetranedral
(3) Pentagonal bipyramidal
(4) Distorted tetrahedral

17. Which of the following has the highest value of dipole moment ?
(1) HCl (2) HF (3) HI (4) HBr

18. The AsF_5 molecule is trigonal bipyramidal. The hybrid orbitals used by the As atoms for bonding are:
(1) $d_{x^2-y^2}, d_{z^2}, s, p_x, p_y$ (2) d_{xy}, s, p_x, p_y, p_z
(3) $s, p_x, p_y, p_z, d_{z^2}$ (4) $d_{x^2-y^2}, s, p_x, p_y$

19. Which of the following is paramagnetic ?
(1) O_2^- (2) CN^- (3) CO (4) NO^+

20. Acetic acid exists as dimer in benzene due to:-
(1) Condensation reaction
(2) Hydrogen bonding
(3) Presence of carboxyl group
(4) None of the above

21. Which of the following compound gives paramagnetic gas on heating ?
(1) $LiNO_3$ (2) $NaNO_3$
(3) KNO_3 (4) All of these

22. Which of the following statement is correct ?
As the %s- character of a hybrid orbital decreases
(1) The bond angle decreases
(2) The bond strength increases
(3) The bond length decreases
(4) Size of orbital decreases

23. In S_8 each sulphur atom is :-
(1) sp hybridised with a planar ring
(2) sp^3 hybridised with a planar ring
(3) sp^3 hybridised with a non-planar ring
(4) sp^3d hybridised two sulphur atoms

24. Maximum number of identical bond length are present in
(1) SF_6 (2) IF_7 (3) PCl_5 (4) SO_4^{-2}

25. Which of the following molecule is planar as well as polar ?
(1) $PC\ell_3$ (2) SF_4
(3) $C\ell F_3$ (4) None of these

26. Which one is formed in II[nd] excited state ?
(1) PCl_5 (2) SH_6
(3) SO_3 (4) IF_7

27. In which of the following compounds, breaking of covalent bond take place :-
(1) Boiling of H_2O (2) Melting of KCN
(3) Boiling of CF_4 (4) Melting of SiO_2

28. Which of the following order is incorrect ?
(1) Ionic character = $MCl < MCl_2 < MCl_3$
(2) Polarisibility = $F^- < Cl^- < Br^- < I^-$
(3) Polarising power = $Na^+ < Ca^{+2} < Mg^{+2} < Al^{+3}$
(4) Covalent character = LiF < LiCl < LiBr < LiI

29. The salt having least solubility in water :-
(1) $BaCl_2$ (2) $Ba(NO_3)_2$
(3) $MgSO_4$ (4) $BaSO_4$

30. Which of the following substance on being heated will give a gas that does not turn lime water milky?
(1) $LiNO_3$ (2) $ZnCO_3$
(3) $ZnSO_3$ (4) $MgCO_3$

ANSWER KEY — Exercise-I

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	**2**	**1**	**1**	**4**	**4**	**1**	**4**	**2**	**2**	**2**
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	**1**	**4**	**3**	**3**	**2**	**4**	**2**	**3**	**1**	**2**
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	**4**	**1**	**3**	**1**	**3**	**3**	**4**	**1**	**4**	**1**