STD: XI **ONE MARK TEST – 8** **Lesson: 10**
Marks: 30 / Time: 45 Min. **CHEMISTRY**
Choose the correct answer.

1. **Assertion:** Oxygen molecule is paramagnetic.
   Reason: It has two unpaired electron in its bonding molecular orbital
   a) both assertion and reason are true and reason is the correct explanation of assertion
   b) both assertion and reason are true but reason is not the correct explanation of assertion
   c) assertion is true but reason is false
   d) Both assertion and reason are false
2. Which of the following has to see-saw shape?
   a) PCl_5 b) $IO_2F_2^-$ c) SOF_4 d) ClO_3^{3-}
3. In which of the following compounds does the central atom obey the octet rule?
   a) XeF_4 b) $AlCl_3$ c) SF_6 d) SCl_2
4. Which of these represents the correct order of their increasing bond order.
   a) $C_2 < C_2^{2-} < O_2^{2-} < O_2$ b) $C_2^{2-} < C_2^{+} < O^2 < O_2^{2-}$
   c) $O_2^{2-} < O_2 < C_2^{2-} < C_2^{+}$ d) $O_2^{2-} < C_2^{+} < O_2 < C_2^{2-}$
5. The structure of $XeOF_4$ is
   a) tetrahedral b) square pyramidal c) square planner d) octahedral
6. If XeF_2, XeF_4 and XeF_6, the number of lone pair of electrons on Xe are respectively.
   a) 2, 3, 1 b) 1, 2, 3 c) 4, 1, 2 d) 3, 2, 1
7. The correct order of O–O bond length in hydrogen peroxide, ozone and oxygen is
   a) $H_2O_2 > O_3 > O_2$ b) $O_2 > O_3 > H_2O_2$ c) $O_2 > H_2O_2 > O_3$ d) $O_3 > O_2 > H_2O_2$
8. The percentage of s-character of the hybrid orbitals in methane, ethane, ethene and ethyne are respectively
   a) 25, 25, 33.3, 50 b) 50, 50, 33.3, 25 c) 50, 25, 33.3, 50 d) 50, 25, 25. 50
9. Number of lone pair (s) in $XeOF_4$ is / are
   a) 0 b) 1 c) 2 d) 3
10. Which of the following is electron deficient?
    a) PH_3 b) $(CH_3)_2$ c) BH_3 d) NH_3
11. Pick out the molecule which has zero dipole moment
    a) NH_3 b) H_2O c) BCl_3 d) SO_2
12. When one s and three p orbitals hybridise,
    a) four equivalent orbitals at 90^0 to each other will be formed
    b) four equivalent orbitals at 109^0 28' to each other will be formed
    c) four equivalent orbitals, that are lying the same plane will be formed
    d) none of these
13. Which of the following compounds is paramagnetic?
    a) CO b) NO c) O_2^{2-} d) O_3
14. Pick out the incorrect statement from the following
    a) sp^3 hybrid orbitals are equivalent and are at an angle of 109°28' with each other
    b) dsp^2 hybrid orbitals are equivalent and bond angle between any two of them is 90°
    c) All five sp^3d hybrid orbitals are not equivalent Out of these five sp^3d hybrid orbitals, three are at an angle of 120°, remaining two are perpendicular to the plane containing the other three
    d) none of these
15. The structure of IF_7 is
    a) square pyramidal b) trigonal bipyramidal c) octahedral d) pentagonal bipyramidal
16. According to VSEPR theory, the repulsion between different parts of electrons obeys the order
    a) l.p – l.p > b.p – b.p > l.p – b.p b) b.p – b.p > b.p – l.p > l.p – b. p
    c) l.p – l.p > b.p – l.p > b.p – b.p d) b.p – b.p > l.p – l.p > b.p – l.p

17. Bond order of a species is 2.5 and the number of electrons in its bonding molecular orbital is formed to be 8 The no. of electrons in its antibonding molecular orbital is
a) three b) four c) zero d) cannot be calculated form the given information

18. Bond order of O_2, O_2^+, O_2^- and O_2^{2-} is in order
a) $O_2^- < O_2^{2-} < O_2 < O_2^+$ b) $O_2^2 < O_2^- < O_2 < O_2^+$
c) $O_2^+ < O_2 < O_2^- < O_2^{2-}$ d) $O_2 < O_2^+ < O_2^- < O_2^{2-}$

19. CaO and NaCl have the same crystal structure and approximately the same radii. If U is the lattice energy of NaCl, the approximate lattice energy of CaO is
a) U b) 2U c) U/2 d) 4U

20. Which of the following molecules has trigonal planar geometry?
a) IF_3 b) PCl_3 c) NH_3 d) BF_3

21. Some of the following properties of two species, NO_3^- and H_3O^+ are described below. Which one of them is correct?
a) dissimilar in hybridisation for the central atom with different structure
b) isostructural with same hybridisation for the Central atom
c) different hybridiration for the central atom with same structure
d) none of these

22. Which of the following compounds, the one having a linear structure is
a) NH_2 b) CH_4 c) C_2H_2 d) H_2O

23. According to Valence bond theory, a bond between two atoms is formed when
a) fully filled atomic orbitals overlap b) half-filled atomic orbitals overlap
c) non-bonding atomic orbitals overlap d) empty atomic orbitals overlap

24. Which of the following conditions is not correct for resonating structures?
a) the contributing structure must have the same number of unpaired electrons
b) the contributing structures should have similar energies
c) the resonance hybrid should have higher energy than any of the contributing structure
d) none of these

25. Among the following, the maximum covalent character is shown by the compound
a) $FeCl_2$ b) $SnCl_2$ c) $AlCl_3$ d) $MgCl_2$

26. Non-zero dipole moment is shown by
a) CO_2 b) p – dichlorobenzene c) carbon tetrachloride d) water

27. Which of the following molecular species has unpaired electrons(s)?
a) N_2 b) F_2 c) O_2^- d) O_2^{2-}

28. Which one of the following compounds has sp2 hybridization?
a) CO_2 b) SO_2 c) NO_2^+ d) CO

29. In ClF_3, NF_3 and BF_3 molecules the chlorine, nitrogen and boron atoms are
a) sp^3 hybridised b) sp^3, sp^3 and sp^2 respectively
c) sp^2 hybridised d) sp^3d, sp^3 and sp^2 hybridised respectively

30. The bond in the formation of fluorine molecule will be
a) Due to s – s overlapping b) Due to s – p overlapping
c) Due to p – p overlapping d) Due to hybridization