The enolic form of acetone contains?

**Chemical Bonding**

1. Which pair is not correctly matched?
   - **Molecule/ion** | **Bond order**
   - 1) NO | 2.5
   - 2) HF | 1
   - 3) NO* | 3
   - 4) CO | 2.5

2. The hybridization of nitrogen in NO₂, NO₃ and NH₄⁺ respectively is
   - sp², sp³ and sp⁴
   - sp³, sp³ and sp²
   - sp², sp³ and sp⁴
   - sp³, sp² and sp³

3. According to VSEPR theory which of the following is not correct?
   - 1) Electron pair tend to minimize repulsions
   - 2) Repulsions are of the order BP – BP > BP – LP > LP – LP
   - 3) The ideal geometry for five electron pairs is TBP
   - 4) Double bonds occupy more space than single bonds

4. In which of the following processes the bond order has increased and paramagnetic character has changed to diamagnetic?
   - 1) N₂ → N₂⁺
   - 2) NO → NO²⁻
   - 3) O₂ → O₂²⁻
   - 4) O₃ → O₃⁺

5. In the molecules H₂O, NH₃ and CH₄
   - 1) The bond angles are same
   - 2) The bond distances are same
   - 3) The hybridisations are same
   - 4) The shapes are same

6. The molecules having ideal shape according to VSEPR theory is
   - 1) SF₆
   - 2) SO₂
   - 3) PCl₃
   - 4) SOCl₂

7. The highest occupied MO in N₂ and O₂ respectively are (take X – axis as inter nuclear axis)
   - 1) e₂pₓ, e₂pᵧ → 2pₓ, 2pᵧ
   - 2) e₂pₓ, e₂pᵧ → 2pₓ, 2pᵧ
   - 3) e₂pₓ, e₂pᵧ → 2pₓ, 2pᵧ

8. Match List – I (compounds) with List – II (structures) and select the correct answer using the codes given below.
   - List – I
     - A) XeO₃
     - B) BrF₅
     - C) SF₄
     - D) SOCl₂
   - List – II
     - i) square planar
     - ii) tetrahedral
     - iii) distorted tetrahedral
     - iv) A- i, B- ii, C- iii
   - Answer: A- i, B- ii, C- iii

9. Among CO₂, XeO₃ and SO₃ species with pyramidal shape is/are
   - 1) CO₂
   - 2) XeO₃
   - 3) CO₃
   - 4) SO₃

10. The molecular shapes of SF₄, CF₄, and XeF₄ are
    - 1) the same with 2, 0 and 1 lone pairs of electrons on the central atom respectively
    - 2) the same with 1, 1 and 1 lone pair of electrons on the central atom respectively
    - 3) different with 0, 1 and 2 lone pairs of electrons on the central atom respectively
    - 4) different with 1, 0 and 2 lone pairs of electrons on the central atom respectively

11. The hydrogen bond is strongest in
    - 1) O – H ... S
    - 2) S – H ... O
    - 3) F – H ... O
    - 4) F – H ... F

12. Which of the following molecules have dipole moment?
    - A) BeF₂
    - B) BF₃
    - C) NF₃
    - D) H₂S
    - A) C and D
    - B) C and D
    - 4) Only C

13. Point out the non-existing molecule out of the following:
    - A) CB₄
    - B) XeF₄
    - C) SF₄
    - 4) NF₃

14. The enolic form of acetone contains
    - 1) 9c, 10x and 2 lone pairs
    - 2) 8c, 2x and 2 lone pairs
    - 3) 10c, 1x and 1 lone pair
    - 4) 9c, 2x and 1 lone pair

15. The lesser solubility of silver halides in comparison to alkali metal halides is due to
    - 1) low lattice energies of silver halides as compared to alkali metals
    - 2) less ionic character of silver halides because of greater polarization of Ag+ ion
    - 3) tendency of Ag⁺ ion to form complexes
    - 4) small size of Ag⁺ ion

16. The dipole moment of NF₃ is much less than NH₃ because
    - 1) the size of N atom is much less than that of H atom
    - 2) number of lone pairs in NF₃ is more than in NH₃
    - 3) F atom is more electronegative than N atom

17. Which of the following does not correctly represent the bonding capacity of the atoms involved?

   **ANSWERS**

18. The dipole moment of molecule HX is 1.92 D and bond distance is 1.2 Å. The percentage ionic character of HX is ...... (electronic charge = 4.8 × 10⁻¹⁰ e.u.)
   - 1) 50% 2) 33.3% 3) 66.7% 4) 75%

19. The correct order of the O – O bond length in O₂, H₂O and O₃ is
    - 1) 0₂ > 0₃ > O₂
    - 2) 0₂ > O₃ > 0₂
    - 3) 0₂ > O₃ > 0₃
    - 4) 0₂ > 0₂ > O₃

20. The bonds present in H₂O₂ are
    - 1) only hydrogen
    - 2) only covalent
    - 3) covalent and ionic
    - 4) covalent and coordinate