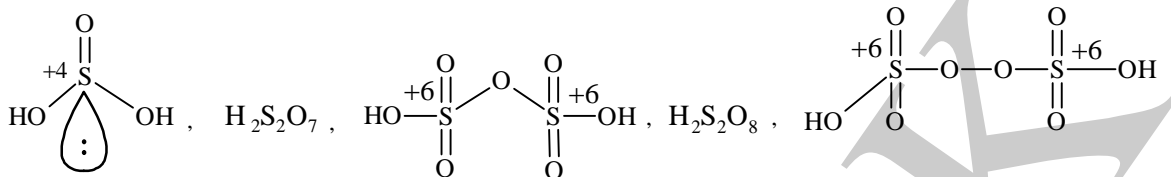


SOLUTION TEST-A

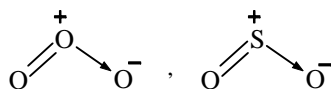
1. (i)

**The correct answer is (i)**2. ICl_2^- and XeF_2 are isoelectronic with AX_2E_3 type molecule. Both are linear in shape.**The correct answer is (i)**

3. \gg In HNO_3 , the hybridisation of N is sp^2 .
 \gg CO_2 and SO_2 both turns lime water milky
 \gg Phosphine, PH_3 has less tendency to accept H^+ ion than NH_3 .

The correct answer is (iii)

4.



Both are used as bleaching agent.

Ozone bleaching action is due to its oxidising action whereas bleaching action of SO_2 is due to its reducing nature.**The correct answer is (ii)**

5. The assertion is correct. Fluorine forms only one oxoacid due to its high electronegativity and absence of d-atomic orbitals. The reason is wrong. Chlorine has most negative electron gain enthalpy not fluorine.

The correct answer is (iii)6. In N_2O_5

Covalency of N = 4

Oxidation state of N = + 5

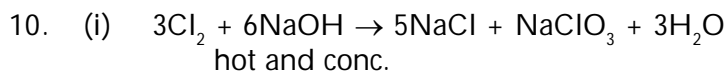
7. Zero

8. (i) $\text{NH}_3 < \text{H}_2\text{O} < \text{HF} < \text{HI}$ (ii) $\text{PH}_3 < \text{AsH}_3 < \text{NH}_3 < \text{SbH}_3 < \text{BiH}_3$

9. (i) Ammonia is capable of forming hydrogen bonds with water and so gives a clear solution. Phosphine does not form hydrogen bonds with water and so insoluble and gives bubbles.

(ii) This is due to

- \rightarrow low bond dissociation enthalpy of F – F bond.
- \rightarrow high electron gain enthalpy of F.
- \rightarrow high hydration enthalpy of F^-



(ii) The reaction is a disproportionation reaction as oxidation state of Cl is changing from 0 in Cl_2 to -1 in NaCl and 0 in Cl_2 to +5 in NaClO_3 .

11. (i) Bi (+5) is a stronger oxidant than Sb(+5) due to inert pair effect. The tendency to involve ns^2 electrons in the bond formation decreases as we move down the group. Bi(+5) gains two electron easily to attain Bi(+3) and hence a stronger oxidant than Sb(+5).

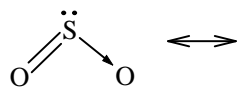
(ii) K_2 of H_2SO_4 is less than K_1 of H_2SO_4 because the proton is more strongly held by negatively charged oxygen present in HSO_4^- . Therefore, the removal of second H^+ is difficult.

(iii) Fluorine and oxygen are the two most electronegative elements in the periodic table and this help in the formation of compound with Xenon.

12. **Laboratory preparation of SO_2**

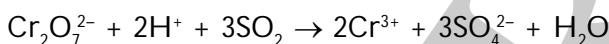


Structure



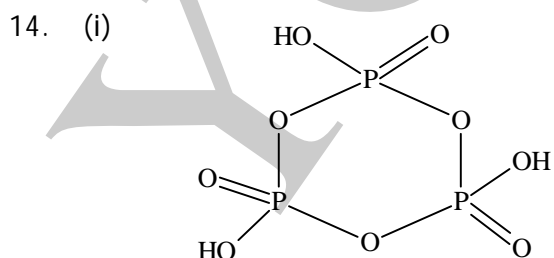
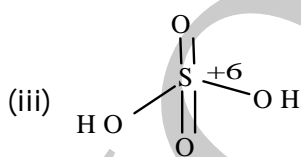
Test for SO_2

SO_2 gas turns the acidified $\text{K}_2\text{Cr}_2\text{O}_7$ paper green

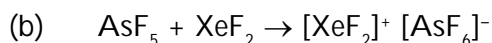
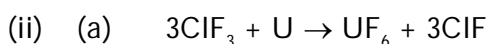


orange

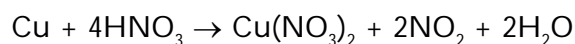
green



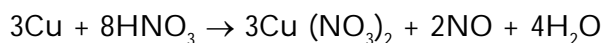
Number of p-p sigma bonds = zero



15. (i) Copper reacts with conc. HNO_3 to give brown fumes of NO_2 gas



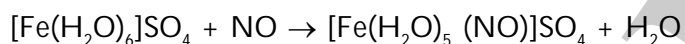
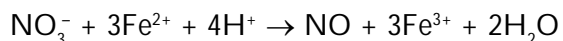
Copper on reaction with dilute HNO_3 gives fumes of NO gas



dilute

(ii) **Brown ring** test is used for NO_3^- .

The solution containing nitrate ion is treated with freshly prepared FeSO_4 and conc. H_2SO_4 is added along the side of the test tube. FeSO_4 reduced NO_3^- to NO and itself gets oxidised to Fe^{3+} . NO combines with excess ferrous sulphate to form a brown ring.



brown ring

(iii) Structure (A) is not acceptable as N cannot form five covalent bonds due to non-availability of d-atomic orbitals.

