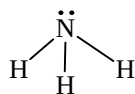


SOLUTION TEST-B

1. The highest bond angle is in NH_3 due to less lone pair-bond repulsions. In NH_3 , the bond angle is 107° .



The correct answer is (i)

2. The thermodynamically most stable form of sulphur is rhombic sulphur. Monoclinic sulphur is stable at temperature above 369K.

The correct answer is (ii)

3. I_3^- and XeF_2 are AX_2E_3 type species and have same linear structure.

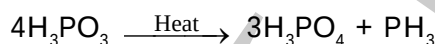
The correct answer is (i)

4. **The correct answer is (i)**

5. The reason is incorrect. Red phosphorus is a polymer of P_4 tetrahedra unit.

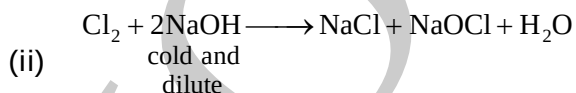
The correct answer is (iii)

6. Due to small size and strong interelectronic repulsions, N–N bond is weaker than P–P bond. Hence, N–N bond dissociation energy is less than that of P – P bond.
7. Sulphur vapours, S_2 are attracted towards magnetic poles due to the presence of two unpaired electrons in antibonding molecular orbitals.
8. (i) In phosphorus acid, H_3PO_3 , the oxidation state of phosphorus is +3. This +3 oxidation state can be changed to + 5 by the loss of two electrons and to –3 by the gain of six electron. Hence, H_3PO_3 disproportionate on heating.

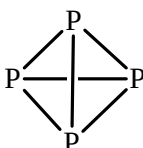
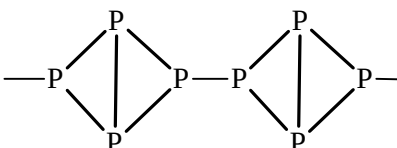


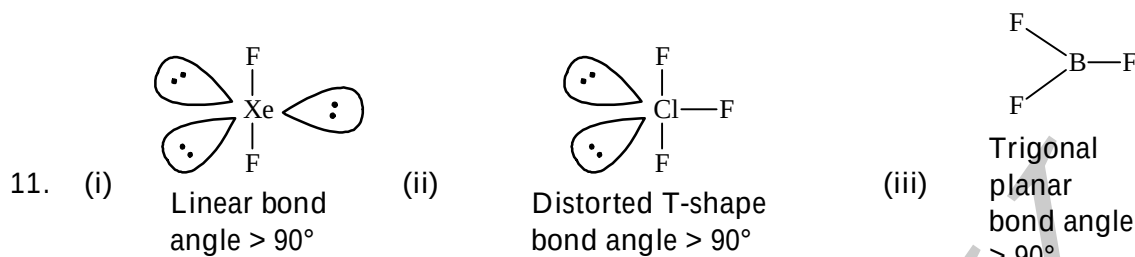
(ii) H_2SO_4 is a better dehydrating agent than HNO_3 due to the presence of empty d-atomic orbitals in sulphur.

9. (i) $\text{P}_4 + 8\text{SOCl}_2 \longrightarrow 4\text{PCl}_3 + 4\text{SO}_2 + 2\text{S}_2\text{Cl}_2$



10.

	White phosphorus	Red phosphorus
(i) Structure	It has a discrete P_4 tetrahedral structure 	It has a polymeric structure 
(ii) Chemical reactivity	It is highly reactive and spontaneously ignites in air	It is chemically inert



12. (i) The stability of -2 oxidation state decreases down the group 16 due to decrease in electronegativity and increase in metallic character.
- (ii) Cl_2 when passed through water, it disproportionates to give HCl and HOCl . Hence, the greenish yellow colour of Cl_2 fades away
- $$\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HCl} + \text{HOCl}$$
- (iii) SCl_6 does not exist due to
- low electronegativity of Cl as compared to F
 - large size of Cl , it is difficult for sulphur to accommodate six Cl atoms in its coordination sphere
13. (i) PCl_5 in the solid state exists as $[\text{PCl}_4]^+[\text{PCl}_6]^-$ and being ionic, conducts electricity in the molten state.
- (ii) Fluorine forms only one oxoacid due to high electronegativity and absence of d-atomic orbitals.
- (iii) This is due to more negative electron gain enthalpy of Cl than F . Cl accepts one electron more easily than F . Hence, Cl^- ion is more stable than F^- ion.
14. (i) $\text{M}-\text{F} > \text{M}-\text{Cl} > \text{M}-\text{Br} > \text{M}-\text{I}$
- (ii) $\text{HOCl} < \text{HOClO} < \text{HOClO}_2 < \text{HOClO}_3$
- (iii) $\text{H}_2\text{O} < \text{H}_2\text{Te} < \text{H}_2\text{Se} < \text{H}_2\text{S}$
15. (a) (i) $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$
- (ii) $\text{XeF}_6 + \text{H}_2\text{O} \rightarrow \text{XeOF}_4 + 2\text{HF}$
(Partial hydrolysis of XeF_6)
- (iii) $\text{P}_4 + 10\text{SO}_2\text{Cl}_2 \rightarrow 4\text{PCl}_5 + 10\text{SO}_2$
- (b) (i) XeF_4 is isostructural with ICl_4^-
- (ii) X stands for Br and I .