

CHEMISTRY STUDY MATERIALS FOR CLASS 12 (NCERT Based Reasoning of Chapter -07)

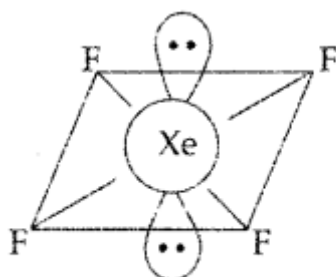
GANESH KUMAR

DATE:- 05/01/2021

P – block elements

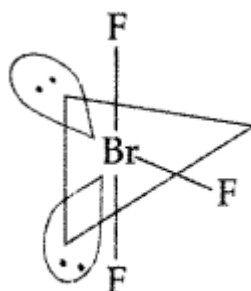
Question 49: Draw the structures of the following molecules: (i) XeF₄ (ii) BrF₃

Answer: (i) XeF₄



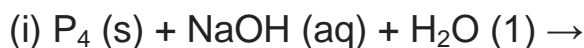
Shape : Square planar

(ii) BrF₃

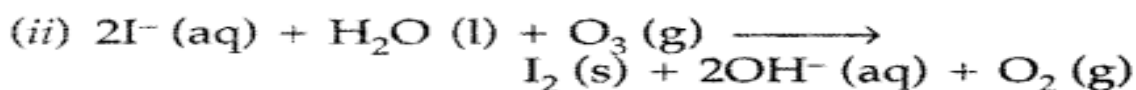
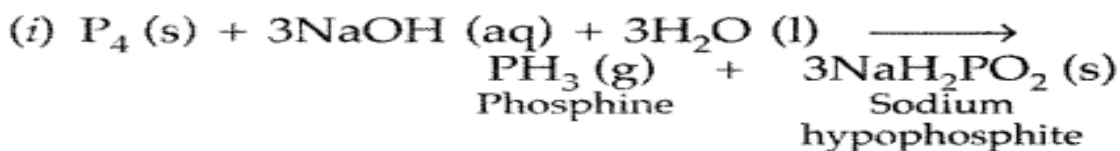


Shape : T-shape

Question 50: Complete the following chemical reaction equations :

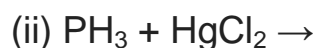
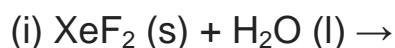


Answer:

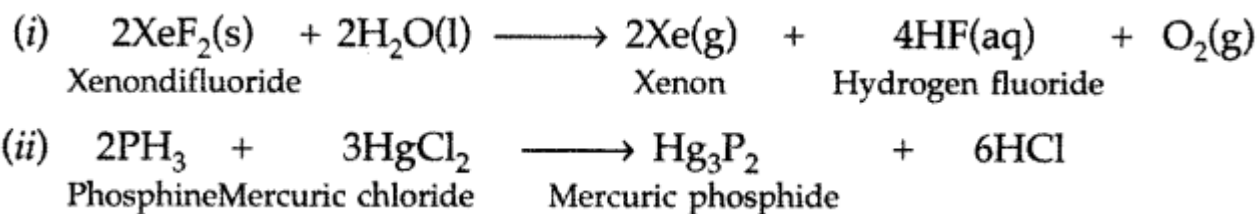


Question 51.

Complete the following chemical reaction equations:

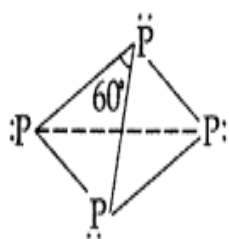


Answer:

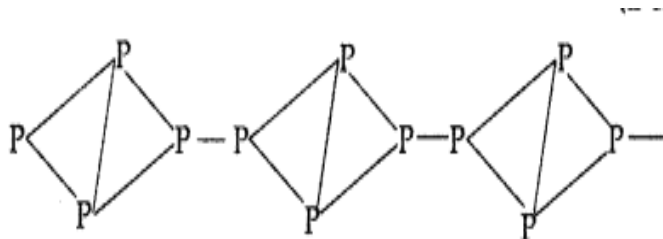


Question 52: Draw the structures of white phosphorus and red phosphorus, phosphorus is more reactive and why? Which one of these two types of

Answer:



Structure of white phosphorus : Tetrahedral structure



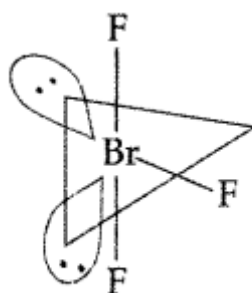
Structure of red phosphorus : Polymeric structure

White phosphorus is more reactive due to its discrete tetrahedral structure and angular strain.

Question 53.

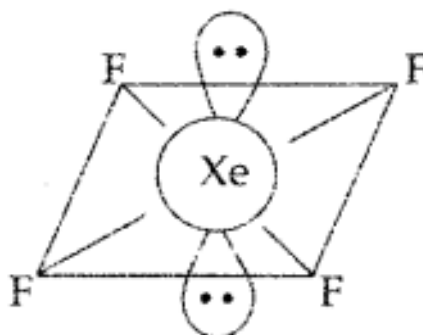
Draw the structural formulae of molecules of following compounds: (i) BrF_3 (ii) XeF_4

Answer: (i) BrF_3



Shape : T-shape

(ii) XeF_4

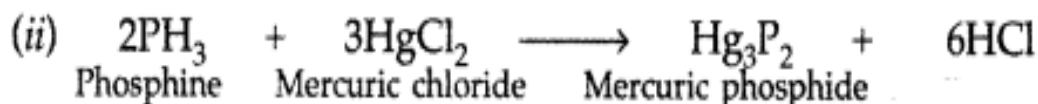
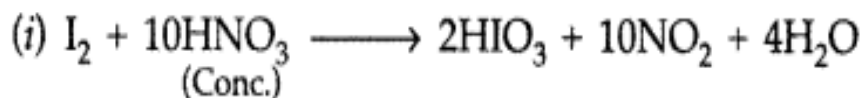


Shape : Square planar

Question 54: Complete the following chemical reaction equations:



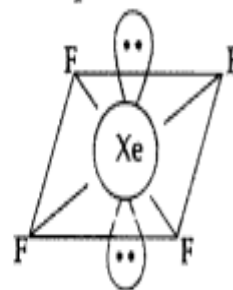
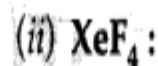
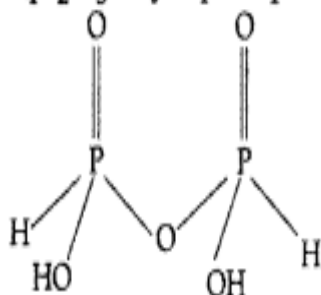
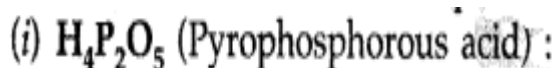
Answer:



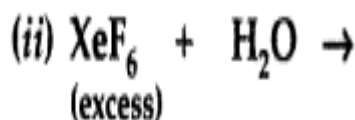
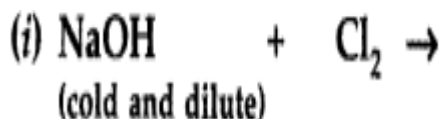
Question 55: Draw the structural formulae of the following compounds :



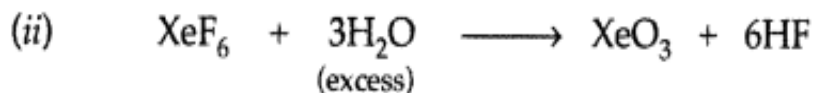
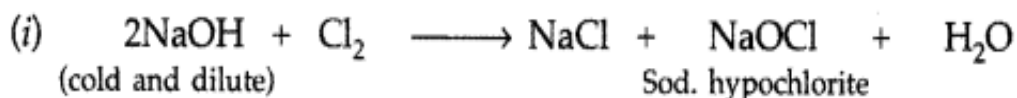
Answer:



Question 56: Complete the following chemical reaction equations : (All India 2010)



Answer:



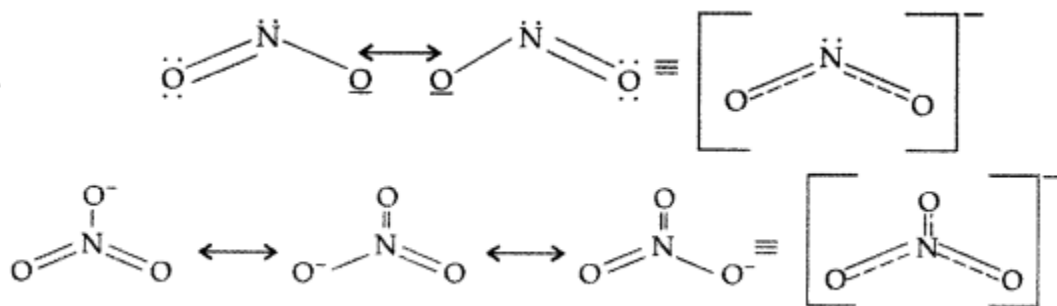
Question 57: State reasons for each of the following:

(i) The N-O bond in NO_2 is shorter than the N-O bond in NO_3 .

(ii) SF_6 is kinetically an inert substance. (Delhi 2011)

Answer: (i) The resonating structure of NO_2 and NO_3 show that in NO_2 two bonds are sharing a double bond while in NO_3 , 3 bonds are sharing a double bond. That's why NO_2 has shorter bond than that of NO_3 .

Answer:



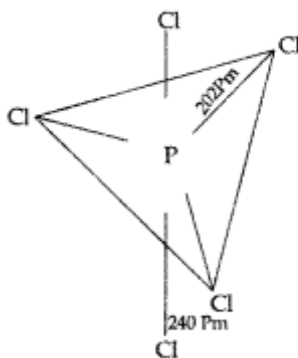
- (ii) Because SF_6 is showing steric hindrance due to 6 (six) fluorine atoms which make it unable to react further with any other atom.

Question 58: State reasons for each of the following:

- (i) All the P-Cl bonds in PCl_5 molecule are not equivalent.
(ii) Sulphur has greater tendency for catenation than oxygen.

Answer:

- (i) The PCl_5 molecule has sp^3d hybridization and trigonal bipyramidal geometry. Therefore it has 3 equatorial P – Cl bonds and two axial P-Cl bonds. Since two axial P-Cl bonds are repelled by 3 bond pairs while 3 equatorial bonds are repelled by two bond pairs, so axial bonds are longer than equatorial bonds.



- (ii) The greater catenation tendency of sulphur is due to two reasons :
(a) The lone pair of electrons feels more repulsion in O-O bond than S-S bond due to its small size and thus S-S forms strong bond.
(b) As the size of atom increases down the group from O – PO, the strength of bond increases and therefore catenation tendency also increases.
