Question 11:

Give reasons for the following:

(i) N_2 is less reactive at room temperature.

(ii) H_2Te is the strongest reducing agent amongst all the hydrides of group 16-elements.

(iii) Helium is used in diving apparatus as a diluent for oxygen.

Answer:

(i) It is due to presence of triple bond which has high bond dissociation enthalpy.

(ii)H_2Te has longest bond length which has lowest bond dissociation enthalpy.

(iii) It is because helium is less soluble than N_2 in blood and does not cause pain.

tion 12:

Give reasons for the following:

(i) NH_3 has a higher boiling point than PH_3.

(ii) H_2Te is more acidic than H_2S.

(iii) Chlorine water on standing loses its yellow colour.

Answer:

(i) NH_3 is associated with inter molecular H-bonding, PH_3 is not.

(ii) H_2Te has lower bond dissociation enthalpy than H_2S due to longer bond length.

(iii) Cl_2+H_2O ——> HCL+HOCL

If forms HCl and HOCl, both are colourless.

Question 13:

(a) Account for the following:

(i) Bond angle in NH_4 is greater than that in NH_3.

(ii)Reducing character decreases from $S0_2$ to TeO_2.

(iii) $HClO_4$ is a stronger acid than HClO.

(b) Draw the structures of the following:

(i) $H_2S_2O_8$

(ii) $XeOF_4$.

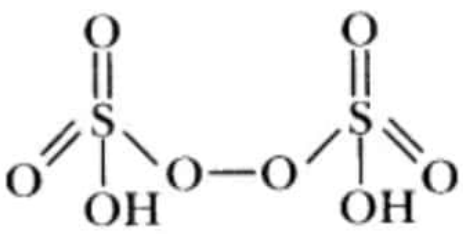
Answer:

(a) (i) NH_3 has lone pair of electron, so, bond angle is 107°, whereas NH^{+4} does not, therefore, bond angle is 109.5°.

(ii) It is due to stability of higher oxidation state which decreases due to inert x , effect.

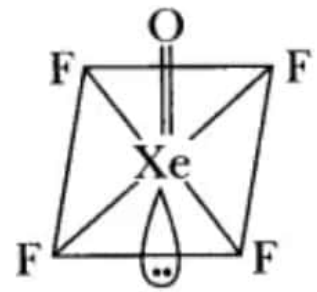
(iii) It is because ClO_4^- is more stable than ClO- due to more dispersal charge on four oxygen atoms.

(b) (i)



Tetrahedral

(ii)



Square pyramidal