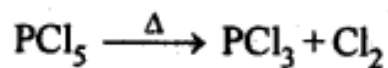




7.9. What happens when PCl_5 is heated?

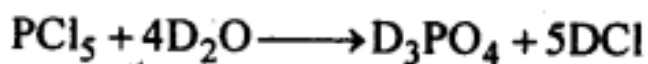
Ans:



On heating, the less stable axial bonds break to form PCl_3 .

7.10. Write a balanced equation for the hydrolytic reaction of PCl_5 in heavy water.

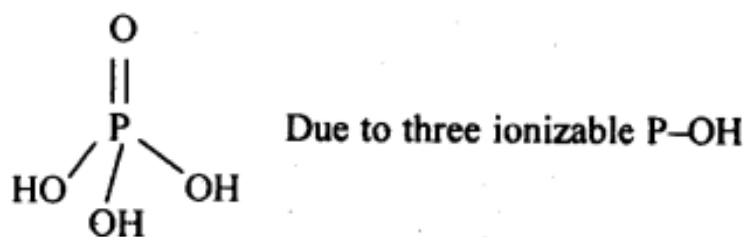
Ans:



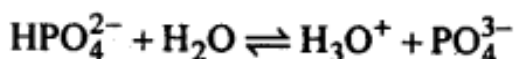
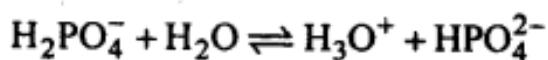
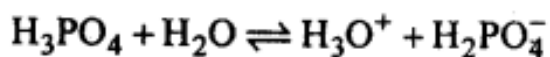
7.11. What is the basicity of H_3PO_4 ?

Ans:

H_3PO_4 is tribasic as shown below :

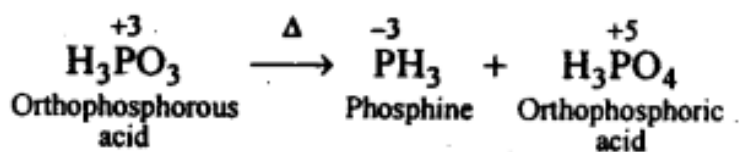


bonds, H_3PO_4 is tribasic.



7.12. What happens when H_3PO_3 is heated?

Ans: On heating, H_3PO_3 disproportionates to form PH_3 and H_3PO_4 with O.S. of -3 and +5.



7.13. List the important sources of sulphur.

Ans: Sulphur mainly occurs in the combined states in earth's crust in the form of sulphates and sulphides.

Sulphates: gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$); epsom ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$); baryte (BaSO_4), etc.

Sulphides: Galena (PbS); zinc blende (ZnS); copper pyrites (CuFeS_2); iron pyrites (FeS_2), etc. Traces of sulphur occur as H_2S and in organic materials such as eggs, proteins, garlic, onion, mustard, hair and wool.

7.14. Write the order of thermal stability of the - hydrides of Group 16 elements.

Ans: The thermal stability of hydrides of group 16 elements decreases down the group. This is because down the group, size of the element (M) increases, M-H bond length increases and thus, stability of M-H bond decreases so that it can be broken down easily. Hence, we have order of thermal stability as $\text{H}_2\text{O} > \text{H}_2\text{S} > \text{H}_2\text{Se} > \text{H}_2\text{Te} > \text{H}_2\text{PQ}$

7.15. Why is H_2O a liquid and H_2S a gas ?

Ans: Due to high electronegativity of O than S, H_2O undergoes extensive intermolecular H-bonding. As a result, H_2O exists as an associated molecule in which each O is tetrahedrally surrounded by four H_2O molecules. Therefore, H_2O is a liquid at room temperature.

On the other hand, H_2S does not undergo H-bonding. It exists as discrete molecules which are held together by weak van der Waals forces of attraction. A small amount of energy is required to break these forces of attraction. Therefore, H_2S is a gas at room temperature.

7.16. Which of the following does not react with oxygen directly?

Zn, Ti, Pt, Fe

Ans: Pt being a noble metal does not react with oxygen directly. In contrast, Zn, Ti and Fe are active metals and hence they react with oxygen directly to form their oxides.

***** END *****