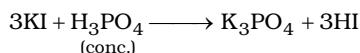
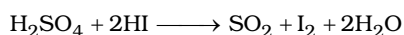


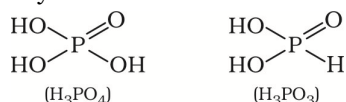
Daily Tutorial Sheet 2

JEE Advanced (Archive)

- 16.** It is not possible to prepare HI by heating alkali metal iodide (e.g. KI) with concentrated H_2SO_4 because HI is a strong reducing agent and sulphuric acid oxidises it to I_2 . Phosphoric acid does not oxidise HI.

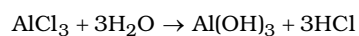


- 17.** H_3PO_4 is tribasic and H_3PO_3 is dibasic due to presence of three and two $-\text{OH}$ group present respectively.



- 18.** Phosphine gas is evolved.

- 19.(C)** AlCl_3 exists as a dimer (Al_2Cl_6). It is a strong Lewis acid as it has an incomplete octet and has a tendency to gain electrons. AlCl_3 undergoes hydrolysis easily and forms an acidic solution.

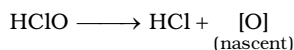
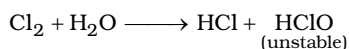


Option (C) is true that AlCl_3 sublimes at 100°C under vacuum.

AlCl_3 is a Lewis acid.

- 20.(B)** Graphite shows moderate electrical conductivity due to the presence of unpaired or free fourth valence electron on each carbon atom.

- 21.(B)** Cl_2 shows bleaching action only in presence of moisture.



Nascent oxygen thus formed is responsible for bleaching action of Cl_2 .

- 22.** Liquor ammonia possesses high vapour pressure at room temperature so before opening a bottle of liquor ammonia, it should be cooled to lower down the vapour pressure of ammonia inside the bottle, otherwise the NH_3 will dump out of the bottle.

- 23.(C)** SO_2 is soluble in water ($\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_3$) and so it cannot be collected over water.

- 24.(A)** Nitrates of heavy metals and lithium when heated decompose to produce NO_2 . KNO_3 on heating do not give NO_2 .

- 25.** Anhydrous HCl is a non-polar compound so it is a bad conductor. In aqueous solution HCl ionises to give H^+ and Cl^- ions and then it becomes a good conductor.

- 26.** The value of E°_{red} is maximum for fluorine. It is placed at the top of the electrochemical series. Thus it cannot be oxidised by any reagent. It is the strongest oxidising agent.

- 27.** $(\text{NH}_4)_2\text{SO}_4 + \text{NO} + \text{NO}_2 \longrightarrow 2\text{N}_2 + 3\text{H}_2\text{O} + \text{H}_2\text{SO}_4$

