SALT ANALYSIS

1. Chlorine on reaction with hot and concentrated sodium hydroxide gives :
(1) Cl^- and ClO_2^-
(2) Cl^- and ClO_3^-
(3) Cl^- and ClO^-
(4) ClO_3^- and ClO_2^-

2. Iodine reacts with concentrated HNO_3 to yield Y along with other products. The oxidation state of iodine in Y, is :-
(1) 5 (2) 3 (3) 1 (4) 7

3. An organic compound 'A' is oxidized with Na_2O_2 followed by boiling with HNO_3.The resultant solution is then treated with ammonium molybdate to yield a yellow precipitate.
Based on above observation, the element present in the given compound is :
(1) Sulphur (2) Nitrogen
(3) Fluorine (4) Phosphorus

4. Which one of the following is likely to give a precipitate with $AgNO_3$ solution ?
(1) $(CH_3)_3CCl$ (2) $CHCl_3$
(3) $CH_2=CH-Cl$ (4) CCl_4

SOLUTION

1. Ans. (2)

$3Cl_2 + 6\ OH^- \rightarrow 5Cl^- + ClO_3^- + 3H_2O$

2. Ans. (1)

$I_2 + 10HNO_3 \longrightarrow 2HIO_3 + 10NO_2 + 4H_2O$

In HIO_3 oxidation state of iodine is +5.

3. Ans.(4)

The phosphorus containing organic compound are detected by 'Lassaigne's test' by heated with an oxidizing agent (sodium peroxide)

The phosphorus present in the compound in oxidised to phosphate.

The solution is boiled with nitric acid and then treated with ammonium molybdate to produced canary yellow precipitate.

$Na_3PO_4 + 3HNO_3 \rightarrow H_3PO_4 + 3NaNO_3$

$H_3PO_4 + 12\ (NH_4)_2MoO_4 + 21HNO_3 \rightarrow$

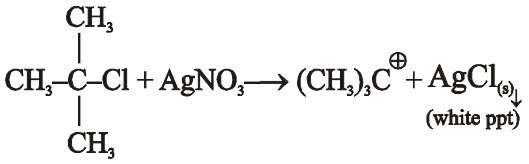
(Ammonium molybdate)

$(NH_4)_3PO_4.12MoO_3\downarrow + 21\ NH_4NO_3 + 12\ H_2O$

(Ammonium phosphomolybdate)

(canary yellow precipitate)

4. Ans.(1)



Reason :- Due to most stable carbocation formation tert-butyl chloride given the ppt immediately