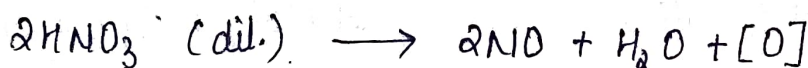
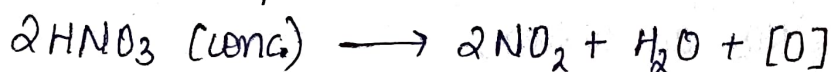


NITRIC ACID : AS AN OXIDISING AGENT

Nitric acid vigorously oxidises non-metals, metals, inorganic compounds and organic substances.

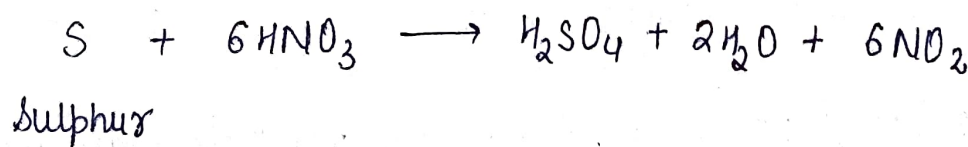
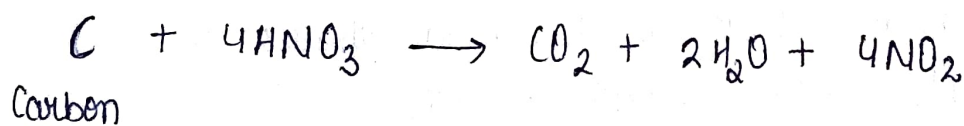
Oxidising properties of nitric acid are due to nascent oxygen which it gives on decomposition.
 dil HNO₃ is generally considered a typical acid except for its reaction with metals since it does not liberate hydrogen.



★ Nitric acid is a powerful oxidising agent & the nascent oxygen formed on decomposition oxidises hydrogen to water.

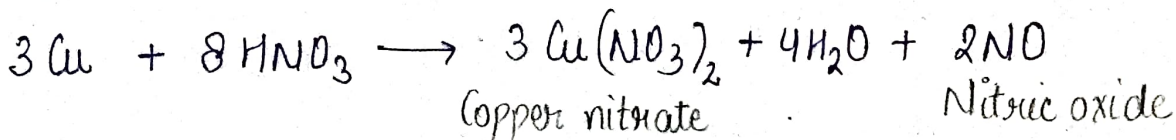
(1) Action on non-metals :

Non-metal + Acid (conc.) \longrightarrow Oxidised product + Water + Nitrogen dioxide

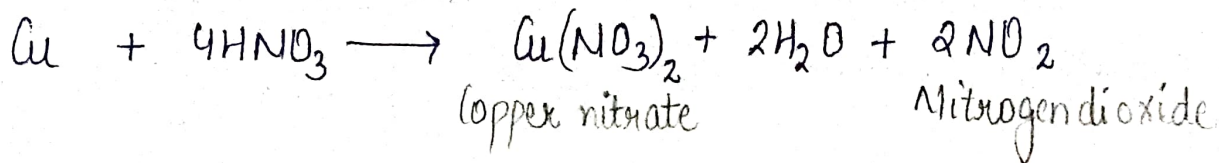


(2) Action on metals: [Copper]

(a) Cold & dilute nitric acid :

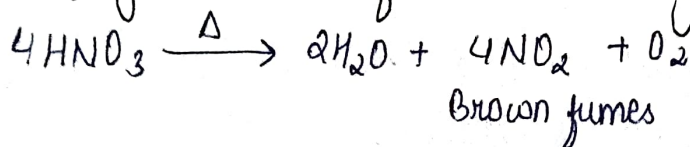


(b) Conc. nitric acid [or hot dilute HNO₃] :

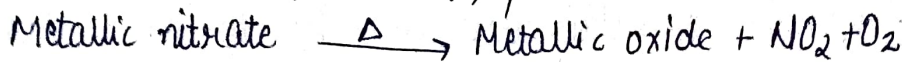


TESTS FOR NITRIC ACID AND NITRATES :

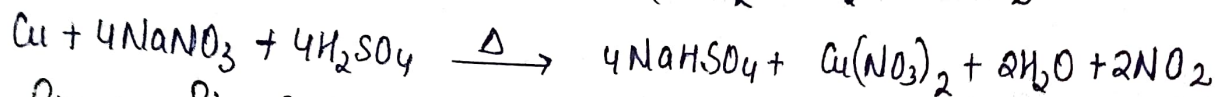
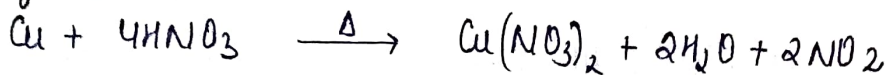
1. Conc. HNO_3 gives brown fumes on heating.



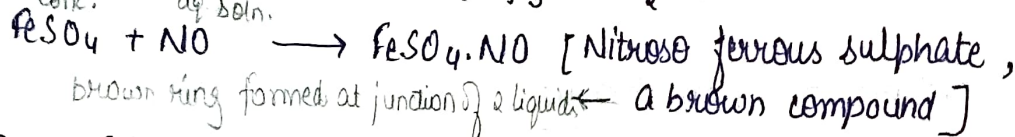
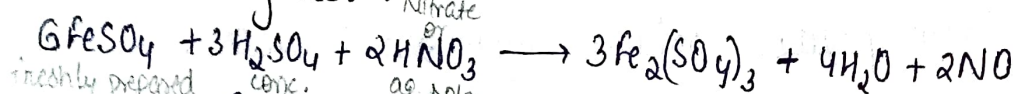
2. Nitrates (other than K , Na , NH_4) produce reddish brown fumes of NO_2 .



3. On adding copper to HNO_3 or acidified nitrates - dense reddish brown fumes of NO_2 are evolved.

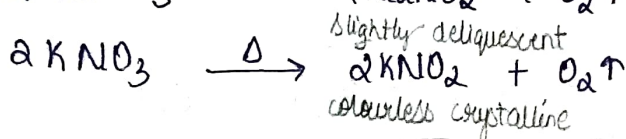
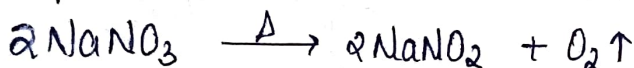


4. Brown Ring Test :



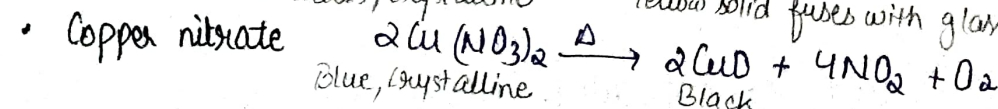
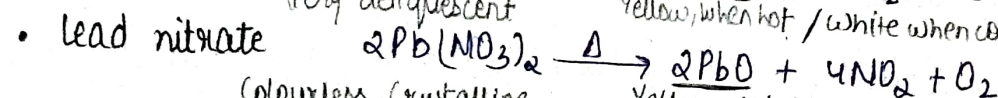
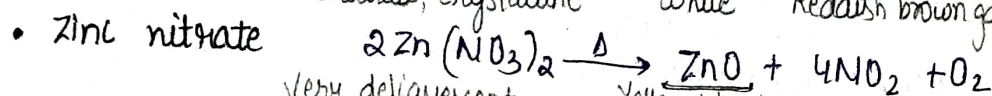
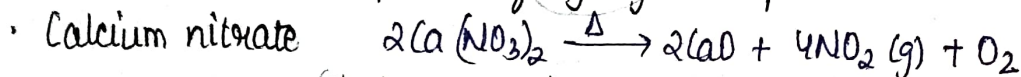
EFFECTS OF HEAT ON NITRATES :

1. Sodium & potassium nitrates or alkali metal nitrates:

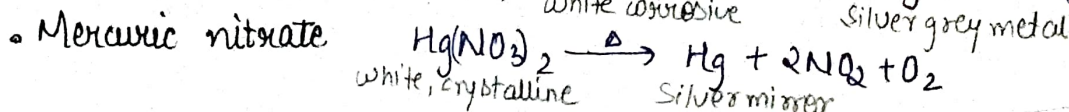


Metal + $\text{NO}_2 + \text{O}_2$

2. All other nitrates (except those of Ag & Hg) decomposes into their oxides, NO_2 & O_2 .



3. Silver nitrate (lunar caustic) $2\text{AgNO}_3 \xrightarrow{\Delta} 2\text{Ag} + 2\text{NO}_2 + \text{O}_2$



4. Ammonium nitrate $\text{NH}_4\text{NO}_3 \xrightarrow{\Delta} \text{N}_2\text{O}(\text{g}) + 2\text{H}_2\text{O}(\text{vap.})$

Colourless, crystalline Nitrous oxide

laughing gas 😊