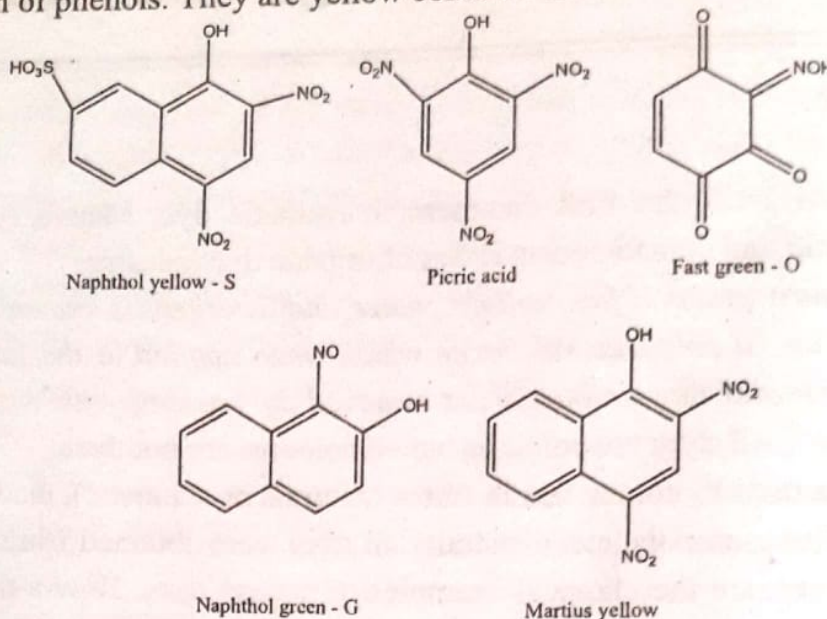


**a) Nitro and Nitroso dyes:**

Nitro dyes contain  $-\text{NO}_2$  group and nitroso dyes contain  $(-\text{N}=\text{O})$  as chromophoric group and  $-\text{OH}$  groups as auxochrome. They are acidic dyes and prepared by the nitration of phenols. They are yellow coloured and not fast to light.



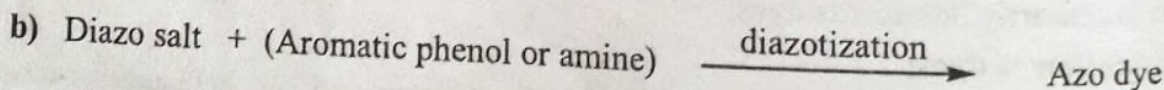
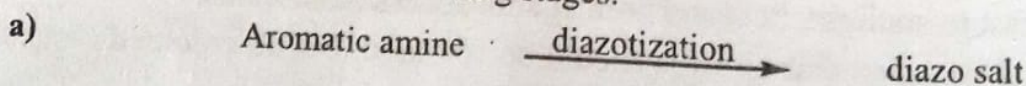
These are polynitro derivatives of phenols and naphthols in which at least one nitro ( $-\text{NO}_2$ ) group or nitroso ( $-\text{N}=\text{O}$ ) group is ortho or para to the  $-\text{OH}$  group. Colours of these dyes are not fast and hence they are industrially less important. Naphthol yellow-S is one of the dyes used for colouring edible materials.

**b) Azo dyes:**

These dyes contain one or more azo groups ( $-\text{N}=\text{N}-$ ) as chromophore which form a bridge between two or more aromatic rings. The azo dye form the largest and most important group of dyes. For eg. Aniline yellow, methyl orange, congo red and bismark brown.

The auxochromes present in these dyes are  $-\text{OH}$ ,  $-\text{SO}_3\text{H}$ ,  $-\text{NH}_2$ ,  $-\text{NR}_2$  etc.

These dyes possess a wide range of colours ranging from yellow to orange and red. These are prepared in the following stages.



For examples, methyl orange, congo red, para red, bismark brown etc.

**1. Methyl orange: (Helianthin)**

Formula

