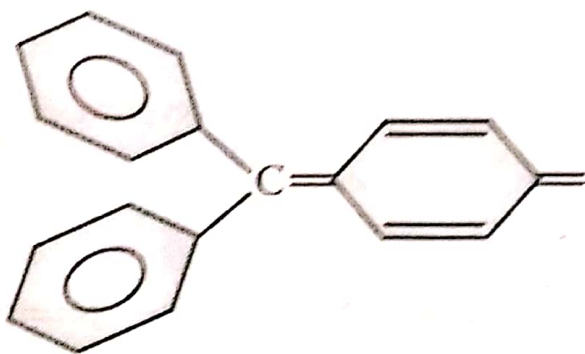


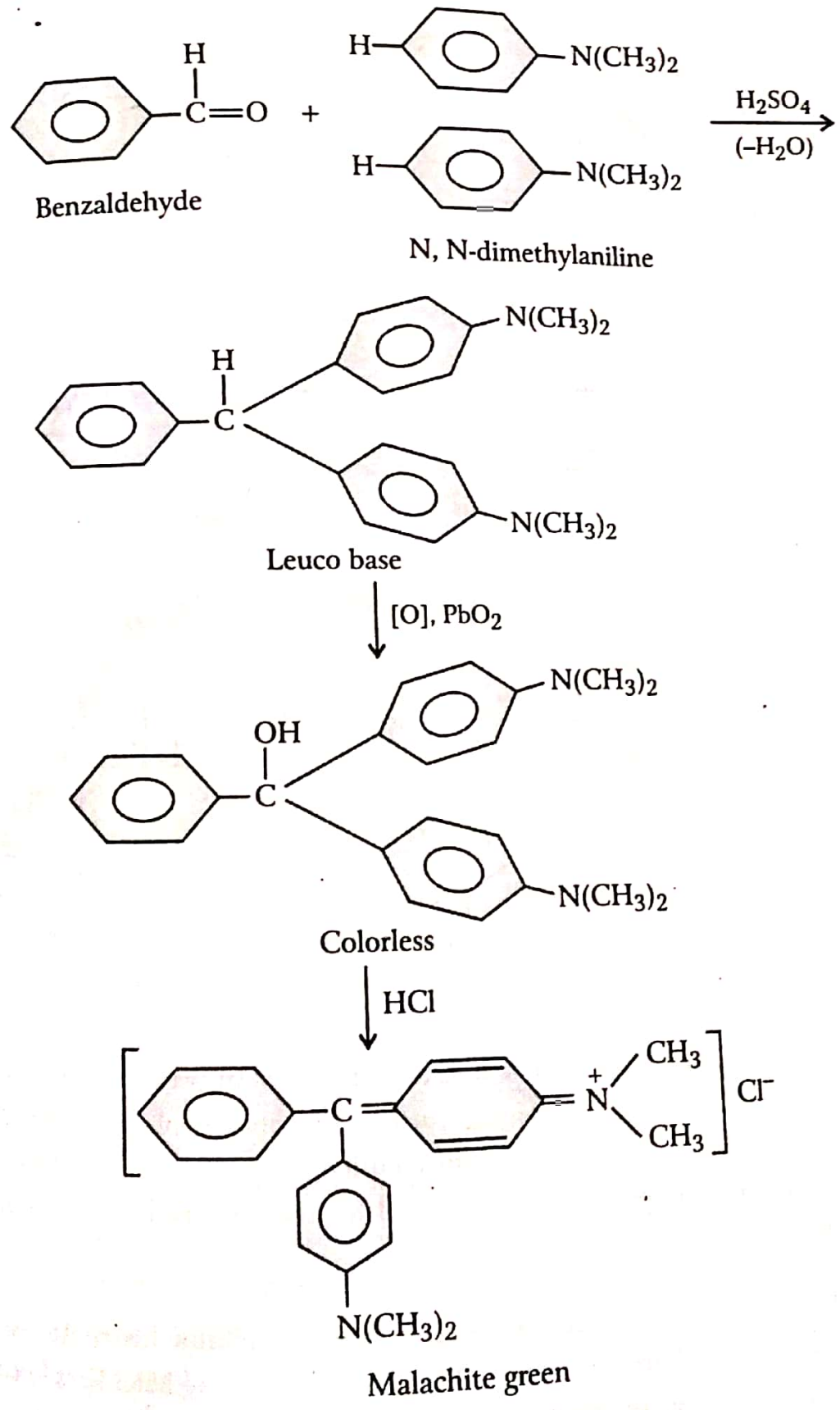
Auramine O

Triphenylmethane Dyes: Triphenylmethane dyes can be identified by common structural feature shown below.



It is important to note that the central carbon atom is joined to two benzene rings and to a *p*-quinoid group. However, triphenylmethane dyes are not fast to light or washing, except when applied to acrylic fibers. They are used in large quantities for coloring paper, and typewriter ribbons where fastness to light is not so important.

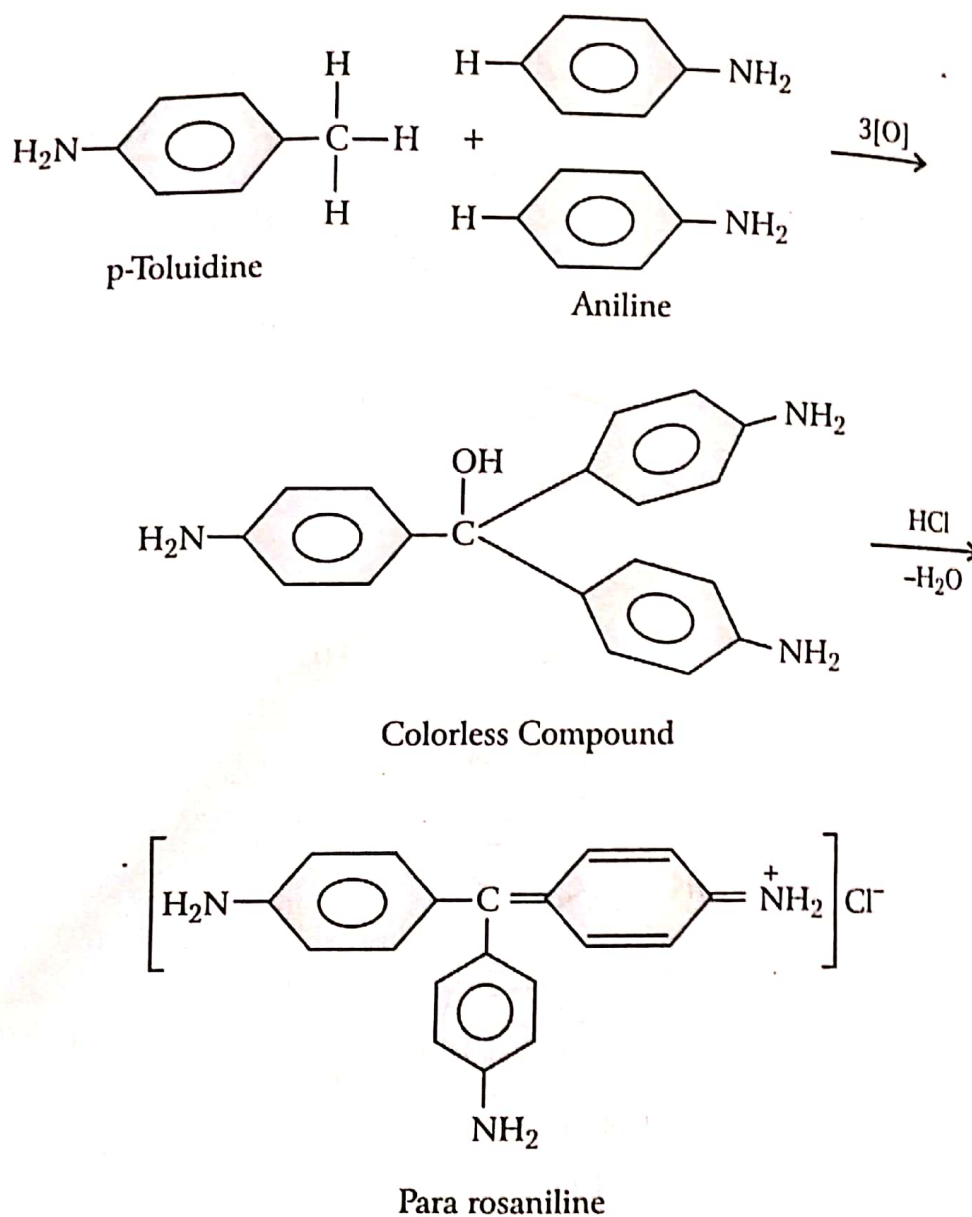
(i) **Malachite Green:** The name malachite green is derived from the fact that it has a deep blue-green color which resembles that of malachite. By the way malachite is an ore of copper. It is obtained by condensing one mole of benzaldehyde with two moles of N, N-dimethylaniline in the presence of concentrated sulfuric acid to give a leuco base (leuco means colorless). Oxidation of the leuco base with lead peroxide followed by treatment with hydrochloric acid yields the dye.



It is used as a dye for acrylic fibers, leather, paper, and lacquers.

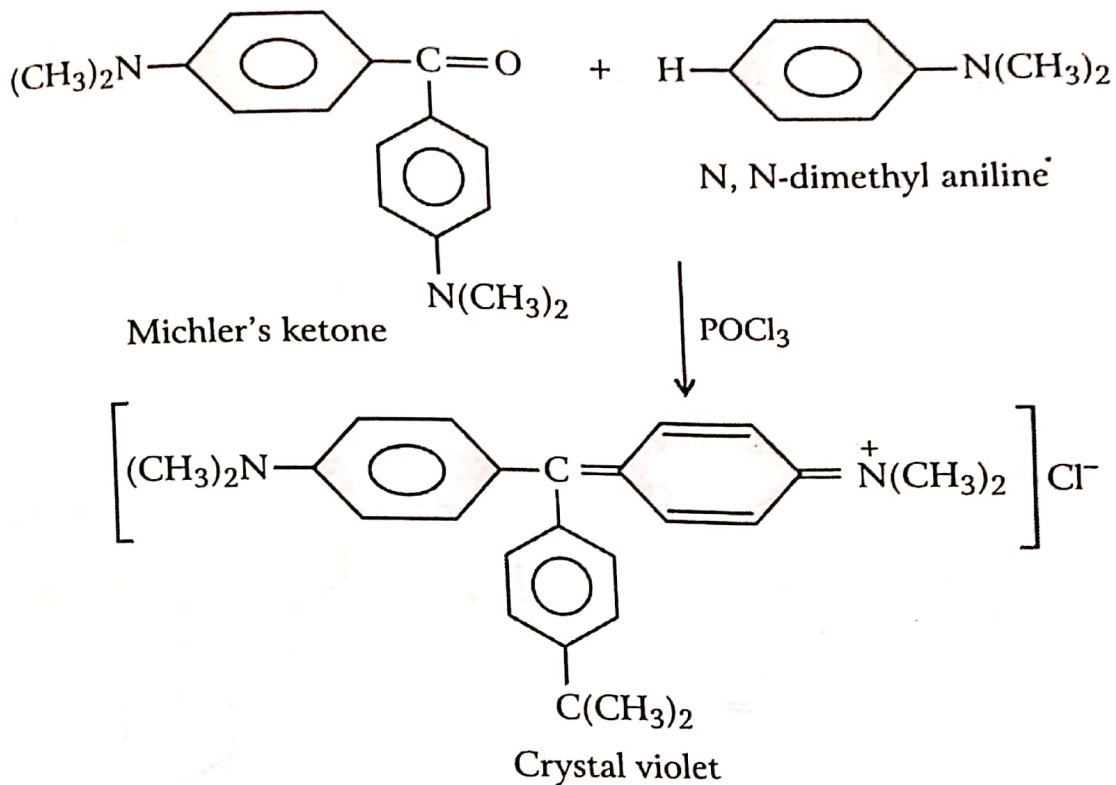
- (ii) **Pararosaniline:** Pararosaniline is obtained by condensing two moles of aniline with one mole of p-toluidine in presence of nitrobenzene to give a colorless carbinol. Nitrobenzene serves both as a solvent and an oxidizing agent. Treatment of the carbinol with hydrochloric acid yields the dye.

It is the simplest form of triphenylmethane dye.



Rosaniline has a greenish metallic lustre. It dissolves in water to give a deep-red color. Rosaniline is used for dyeing cotton, silk and wool. Addition of sulfur dioxide to the dye solution produces the colorless Schiff's reagent. Schiff's reagent is one of the most important reagents used for the detection of the presence of aldehyde.

- (iii) **Crystal Violet:** Crystal violet has a greenish-brown metallic lustre. It dissolves in water to give a deep-blue color. It is obtained by condensing Michler's ketone with N, N-dimethylaniline in the presence of phosphorous oxychloride (POCl₃) or phosgene (COCl₂).



There is one more method of preparation. If phosgene is used, then crystal violet can be prepared directly by heating phosgene and N, N-dimethylaniline, since these two react to give Michler's ketone. Crystal violet is used in the manufacture of inks, stamping pads, and typewriter ribbons. It is also used as an indicator for the determination of hydrogen-ion concentration of solutions.

5. **Xanthene Dyes:** Xanthene dyes have a characteristic structural feature shown