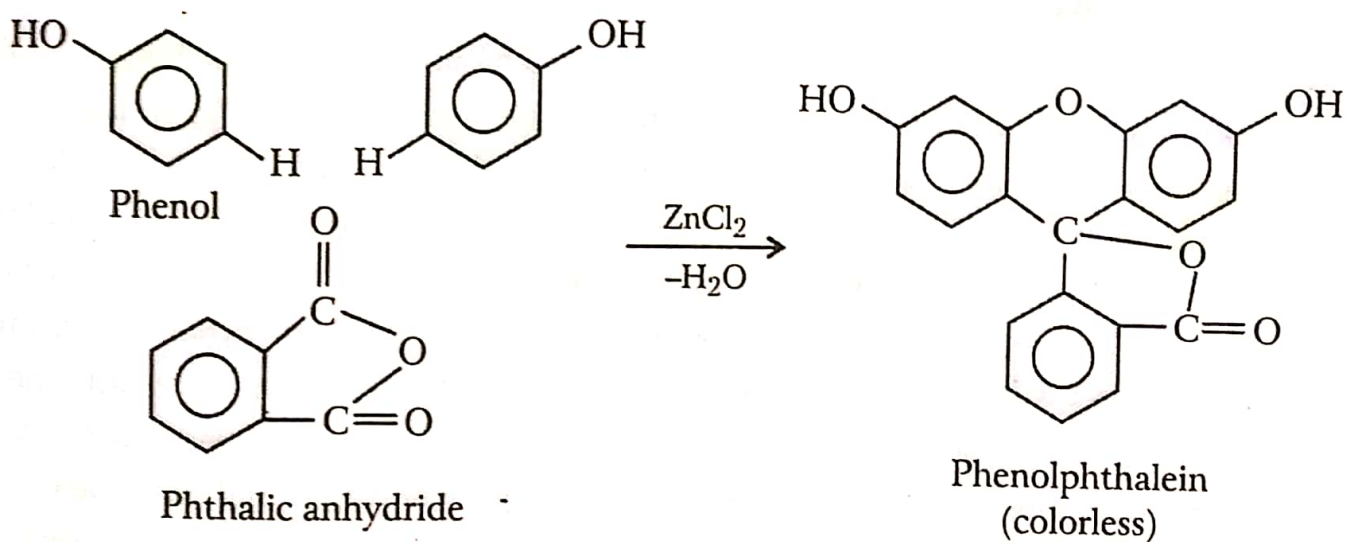


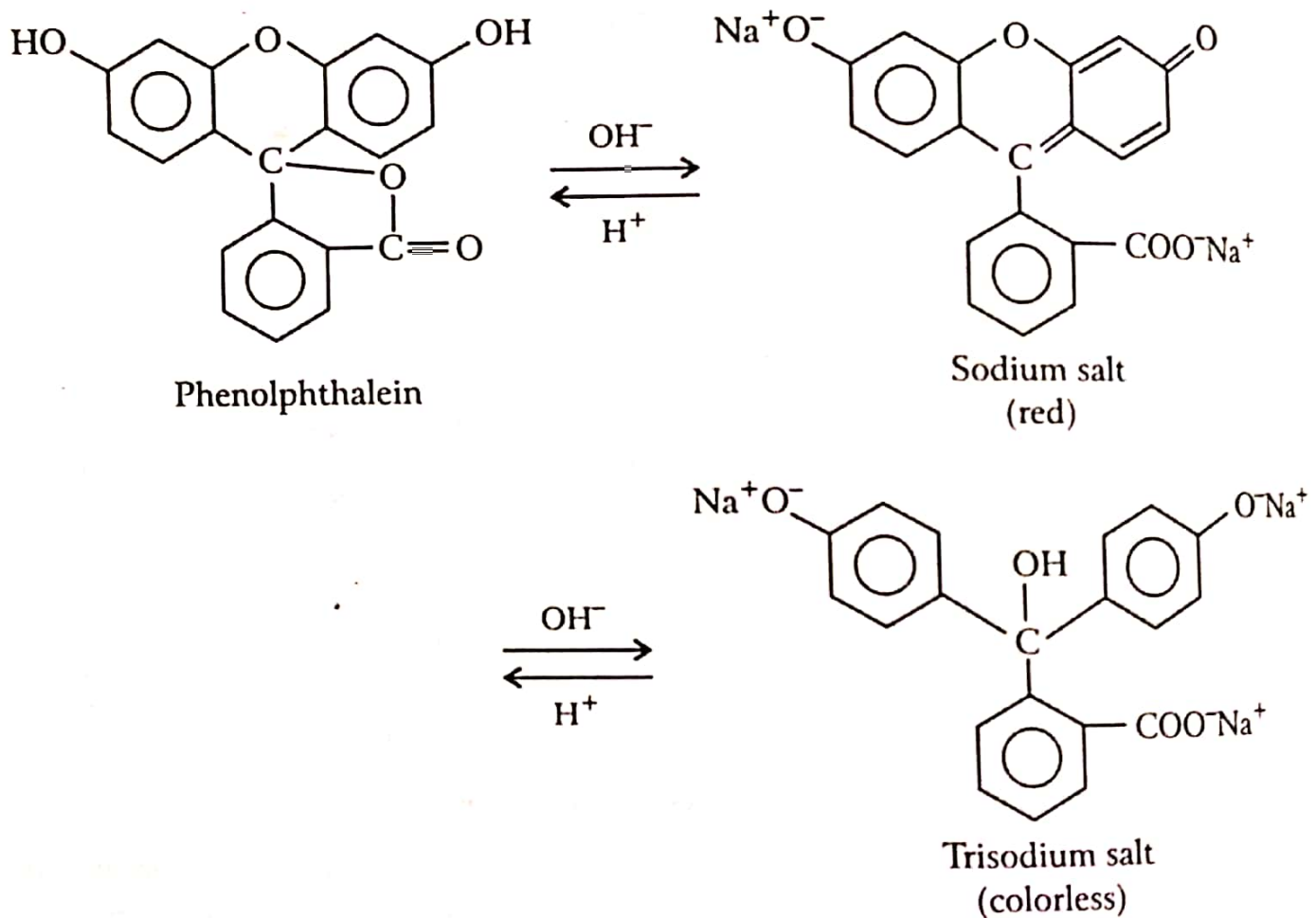
Phenolphthalein

Phenolphthalein is not a dye. It is a colorless solid, having a mp 261°C. It is famously used as an indicator in acid base titration reactions.



Phenolphthalein is prepared by condensing two moles of phenol with one mole of phthalic anhydride in the presence of zinc chloride at 120° C, as shown above.

Phenolphthalein is insoluble in water, but dissolves in alkalis to form deep red solution. This is due to the formation of a disodium salt, the ion of which is colored because of resonance. When excess of strong alkali is added, the solution of phenolphthalein becomes colorless. This is attributed to the formation of a trisodium salt, the ion of which is colorless because of loss of quinoid structure.



Due to the color changes shown above, phenolphthalein is used as an indicator in acid-base titrations. Moreover, phenolphthalein is an extremely powerful laxative and this accounts for its extensive use as a denaturant for laboratory alcohol.