The desired conversion requires oxidation of toluene that can be achieved by any of the following means, as illustrated by the images. You can use aqueous solution of potassium permanganate, or hydrogen peroxide.

The copper-based binary metal oxides and iron-copper binary oxide are found to be the best catalyst for the liquid phase oxidation of toluene to benzaldehyde and than benzoic acid. The oxidation of benzaldehyde to benzoic acid can be prevented by the use of pyridine. Another catalyst used for gas phase selective catalytic oxidation of toluene to form Benzaldehyde in the presence of V2O5-Ag2O/-Al2O3 catalyst. The peroxide solution and trimethylacetic acid also act as good oxidising agent for toluene to form benzoic acid.

Partial oxidation of toluene in the presence of manganese dioxide and dilute sulfuric acid at 208 K temperature also forms benzaldehyde. Similarly the oxidation in the presence of chromic acid and anhydride forms benzaldehyde through benzylideneacetate.