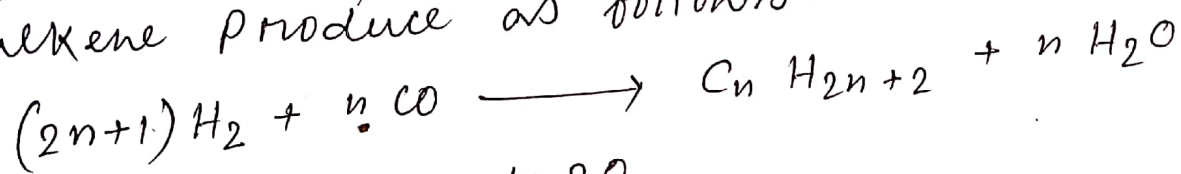


## Fischer - Tropsch Process

The Fischer-Tropsch Process is a chemical reaction which converts a mixture of CO and  $H_2$  into liquid hydrocarbons. These reaction occurs in presence of metal catalysts, typically  $150-300^\circ C$  and pressures of one to several tens of atmosphere. This process was first developed by Franz Fischer and Hans Tropsch in 1925.

### Reaction Mechanism:

This process involves a series of chemical reactions that produce a variety of hydrocarbons, ideally having a formula  $(C_n H_{2n+2})$ . The alkene produce as follows -



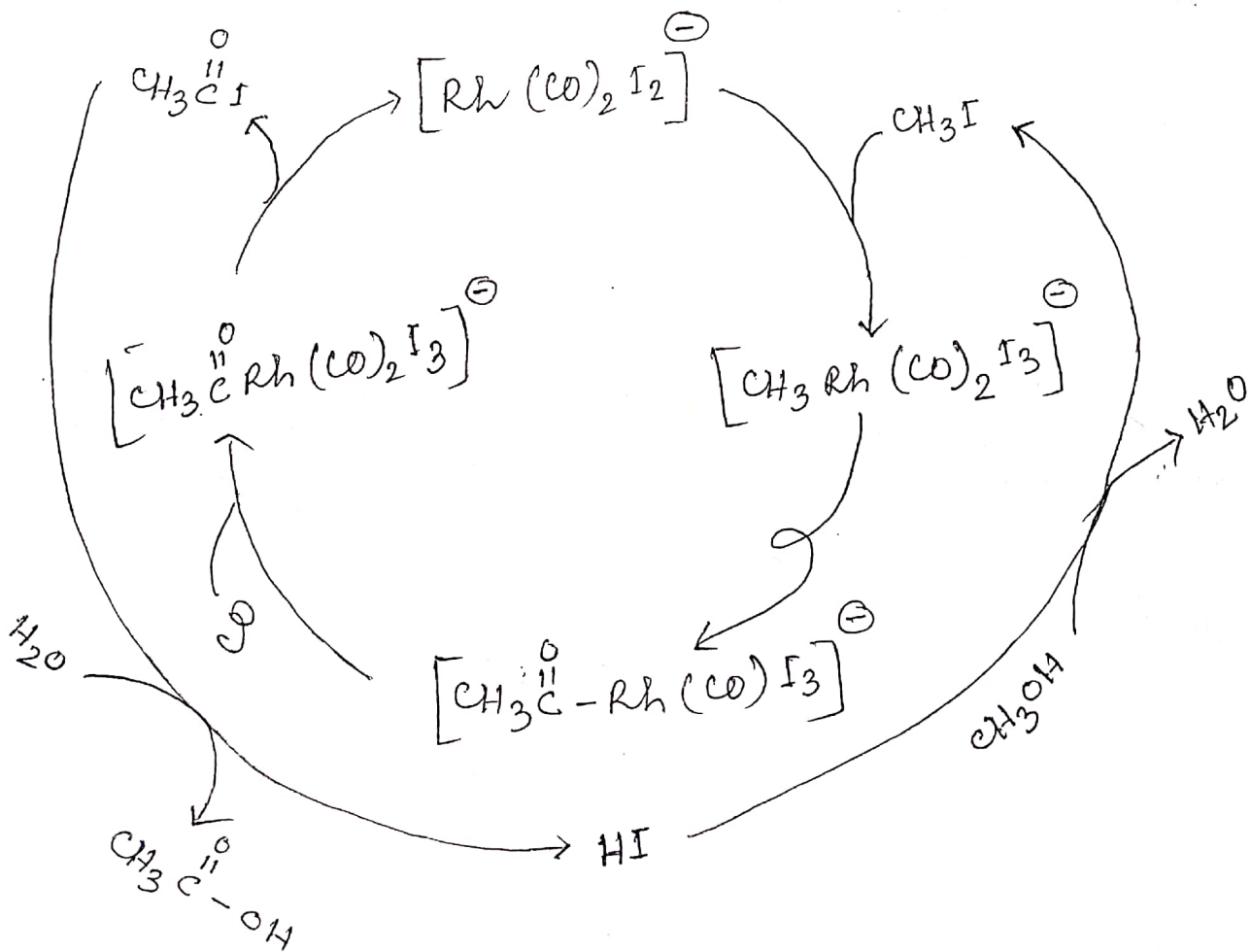
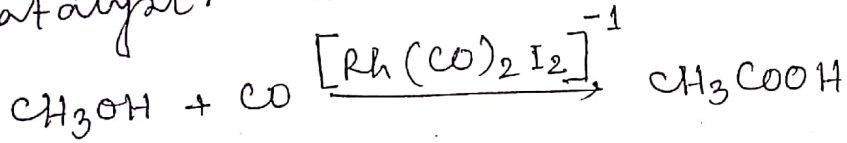
$$n = 10 \text{ to } 20.$$

This reaction methane is unwanted. Most of the alkene produced tend to be straight-chain. In addition to alkane formation, competing reaction given a small amounts of alkenes, as well as alcohols and other oxygenated hydrocarbons.

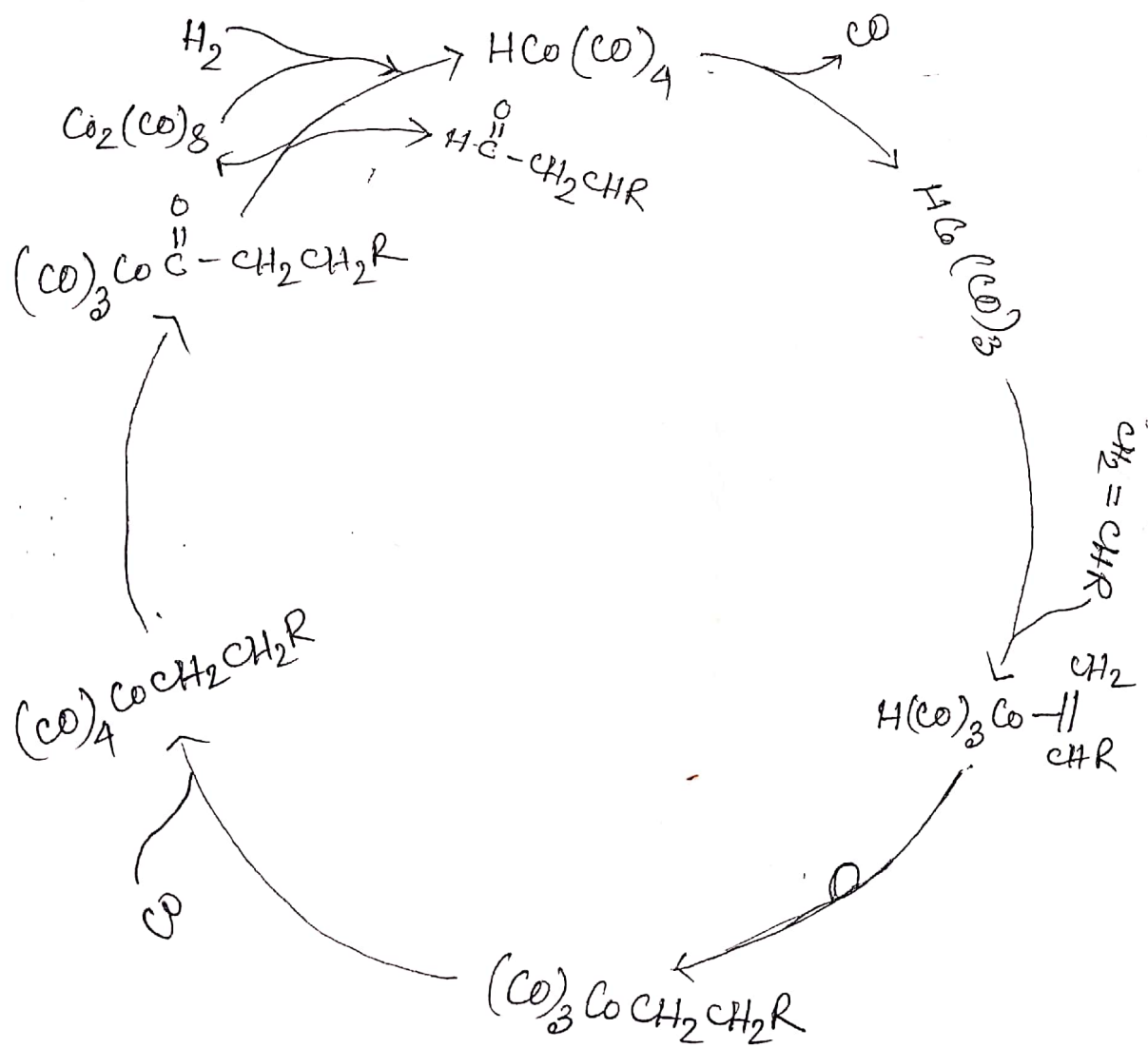
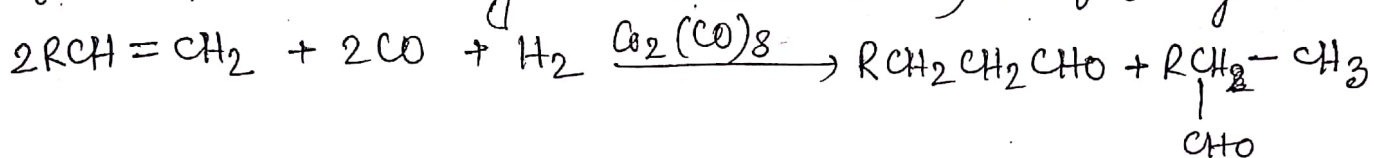
\* The Fischer-Tropsch process also converts these gases into synthetic lubricants oil and synthetic fuel.

Catalyst: Iron and Cobalt catalyst.

Monorhanto Acetic Acid: It is a Homogeneous catalyst; conversion of  $\text{CH}_3\text{OH}$  to acetic acid in presence of Rh-catalyst.



Hydroformylation: The reaction of an alkene with CO and H<sub>2</sub>, catalysed by Cobalt or Rhodium salts, to form an aldehyde is called hydroformylation.



Wacker Process: Formation of  $\text{CH}_3\text{CHO}$  by the catalytic addition of oxygen to an alkene.

